THE AMERICAN ASSOCIATION OF

ENDOCRINE SURGEONS

Thirty-Sixth Annual Meeting

MAY 17-19, 2015

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Nashville, TN

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THE AMERICAN ASSOCIATION OF

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2016

April 10-12, 2016
Baltimore, Maryland
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2017

TBD
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2019

Los Angeles, California
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THE OLIVER COPE MERITORIOUS ACHIEVEMENT AWARD RECIPIENTS

In April of 1984 at the American Association of Endocrine Surgeons Meeting in Kansas City, Drs. Edward Kaplan, Jack Monchik, Leonard Rosoff, Norm Thompson and Stuart Wilson proposed to the Council a new achievement award. The award honors a member of the AAES in recognition for contributions in the field of endocrine surgery as an investigator, teacher and clinical surgeon. It is not an annual award but is to be given to members of our Association who truly aspire to the spirit of this award.

On April 15, 1985 at the annual meeting of the AAES in Toronto, our President, Leonard Rosoff announced the first member to receive this award, Dr. Oliver Cope. In giving this award to Dr. Cope the decision of the Council was that from this day forward the award would be known as the Oliver Cope Meritorious Achievement Award for the American Association of Endocrine Surgeons.

Oliver Cope, MD

Professor of Surgery, Harvard University and the Massachusetts General Hospital

Awarded in Ontario in April 1985.

Stanley R. Friesen, MD, PhD

Professor of Surgery, University of Kansas

Awarded in Detroit, MI in April 1994.
Dr. Friesen served as the President of our Association in 1983.

Norman W. Thompson, MD

Henry King Ransom Professor of Surgery, University of Michigan

Awarded in Atlanta, GA in April 2001.
Dr. Thompson served as our inaugural President in 1980 and also in 1981.

THE OLIVER COPE MERITORIOUS ACHIEVEMENT AWARD RECIPIENTS CONT.

Jon A. van Heerden, MD

Professor of Surgery Mayo Clinic

Awarded in Charlottesville, NC in April 2004.
Dr. van Heerden served as our Recorder from 1987-1989, as our Vice-President in 1994, and as President in 1996.

Orlo H. Clark, MD

Professor of Surgery, UCSF Mount Zion Medical Center

Awarded in New York, NY in May 2006.
Dr. Clark served as our inaugural Vice President in 1980 and also in 1981, and as President in 1993.

Edwin L. Kaplan, MD

Professor of Surgery, University of Chicago

Awarded in Madison, WI in May 2009.
Dr. Kaplan served as our President in 1982.

George L. Irvin, III, MD

Professor Emeritus of Surgery, University of Miami

Awarded in Pittsburgh, PA in April 2010.
Dr. Irvin served as our Recorder from 1993-1996, as Vice President in 1996 and as President in 1998

HONORARY MEMBERS

Individuals who have made outstanding contributions to the discipline of Endocrine Surgical Disease

J. Aidan Carney, Pathologist

Stuart D. Flynn, Pathologist

Ian D. Hay, Endocrinologist

Virginia A. LiVolsi, Pathologist

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RESIDENT/FELLOW RESEARCH AWARD WINNERS & POSTER COMPETITION WINNERS

The AAES Resident/Fellow Research Award was established in 1990 to encourage interest in endocrine surgery by those training as students and residents in general surgery. Presented work may be honored in either the Clinical or Basic Research categories.

The AAES Poster Competition was established in 2007.

1990

Michael J. Demeure – San Francisco, California
"Actin Architecture of Cultured Human Thyroid Cancer Cells: Predictor of Differentiation?"

Gerard M. Doherty – Bethesda, Maryland
"Time to Recovery of the Hypothalamic-Pituitary-Adrenal Axis After Curative Resection of Adrenal Tumors in Patients with Cushing's Syndrome"

1992

Rodney Pommier – New York, New York
"Eleven Year Experience with Adrenocortical Carcinoma"

1996

Jennifer Meko – St. Louis, Missouri
"Evaluation of Somatostatin Receptor Scintigraphy in Detecting Neuroendocrine Tumors"

Beth A. Ditkoff – New York, New York
"Detection of Circulating Thyroid Cells in Peripheral Blood"

1997

Herbert Chen – Baltimore, Maryland
"Implanted Programmable Insulin Pumps: 153 Patient Years of Surgical Experience"

K. Michael Barry – Rochester, Minnesota
"Is Familial Hyperparathyroidism a Unique Disease"

RESIDENT/FELLOW RESEARCH AWARD WINNERS & POSTER COMPETITION WINNERS CONTINUED

1998

Julie Ann Sosa – Baltimore, Maryland
"Cost Implications of the Different Management Strategies for Primary Hyperparathyroidism in the US"

David Litvak – Galveston, Texas
"A Novel Cytotoxic Agent for Human Carcinoid"

1999

Andrew Feldman – Bethesda, Maryland
"Results of Heterotrophic Parathyroid Autotransplantation: A 13 Year Experience"

Alan Dackiw – Houston, Texas
"Screening for MENI Mutations in Patients with Atypical Multiple Endocrine Neoplasia"

2000

Electron Kebebew – San Francisco, California
"ID1 Proteins Expressed in Medullary Thyroid Cancer"

2001

Nestor F. Esnaola – Houston, Texas
"Optimal Treatment Strategy in Patients with Papillary Thyroid Cancer: A Decision Analysis"

Katherine T. Morris – Portland, Oregon
"High Dehydroepiandrosterone-Sulfate Predicts Breast Cancer Progression During New Aromatase Inhibitor Therapy and Stimulates Breast Cancer Cell Growth in Tissue Culture: A Renewed Role for Adrenalectomy"

2002

Rasa Zarnegar – San Francisco, California
"Increasing the Effectiveness of Radioactive Iodine Therapy in the Treatment of Thyroid Cancer Using Trichostatin A (TSA), A Histone Deacetylast (HDAC)"

Denise M. Carneiro – Miami, Florida
"Rapid Insulin Assay for Intraoperative Confirmation of Complete Resection of Insulinomas"

RESIDENT/FELLOW RESEARCH AWARD WINNERS & POSTER COMPETITION WINNERS CONTINUED

2003

Petra Musholt – Hanover, Germany
"RET Rearrangements in Archival Oxyphilic Thyroid Tumors: New Insights in Tumorigenesis and Classification of Hürthle Cell Carcinoma"

Tina W.F. Yen – Houston, Texas
"Medullary Thyroid Carcinoma: Results of a Standardized Surgical Approach in a Contemporary Series of 79 Consecutive Patients from The University of Texas, M. D. Anderson Cancer Center in Houston"

2004

Rebecca S. Sippel – Madison, Wisconsin
"Does Propofol Anesthesia Affect Intra-Operative Parathyroid Hormone Levels During Parathyroidectomy?: A Randomized Prospective Trial"

David Finley – New York, New York
"Molecular Analysis of Hürthle Cell Neoplasms by Gene Profiling"

2005

Mark Cohen – St. Louis, Missouri
"Long-Term Functionality of Cryopreserved Parathyroid Autografts: A 13-Year Prospective Analysis"

Kepal N. Patel – New York, New York
"MUC1 Plays a Role in Tumor Maintenance in Aggressive Thyroid Carcinomas"

2006

Kyle Zanocco – Chicago, Illinois
"Cost-Effectiveness Analysis of Minimally Invasive Parathyroidectomy for Asymptomatic Primary Hyperparathyroidism"

Ashley Kappes Cayo – Madison, Wisconsin
"Lithium Ions: a Novel Agent for the Treatment of Pheochromocytomas and Paragangliomas"

RESIDENT/FELLOW RESEARCH AWARD WINNERS & POSTER COMPETITION WINNERS CONTINUED

2007

Tracy S. Wang – New Haven, Connecticut
"How Many Endocrine Surgeons Do We Need?"

David Yu Greenblatt – Madison, Wisconsin
"Valproic Acid Activates Notch1 Signaling and Inhibits Growth in Medullary Thyroid Cancer Cells"

2008

Elizabeth G. Grubbs – Houston, Texas
"Preoperative Vitamin D (VITD) Replacement Therapy in Primary Hyperparathyroidism (PHPT): Safe But Beneficial?"

Linwah Yip – Pittsburgh, Pennsylvania
"Loss of Heterozygosity of Selected Tumor Suppressor Genes in Parathyroid Carcinoma"

POSTER: Pierre Leyre – Poiters, France
"Does the Risk of Compressive Hematoma After Thyroidectomy Authorize One-Day Surgery?"

2009

Insoo Suh – San Francisco, California
"Candidate Germline Alterations Predisposing to Familial Nonmedullary Thyroid Cancer Map to Distinct Loci on Chromosomes 1 and 6"

Susan C. Pitt – Madison, Wisconsin
"Tertiary Hyperparathyroidism: Is Less Than a Subtotal Resection Ever Appropriate? A Study of Long-term Outcomes"

POSTER: Matthew Nehs – Boston, Massachusetts
"Inhibition of B-RAFV600 Oncoprotein Prevents Cell Cycle Progression and Invasion In Vitro and Reduces Tumor Growth and Metastasis in an In Vivo Orthotopic Model of Thyroid Cancer"

POSTER: Bian Wu – Los Angeles, California
"Utilization of Parathyroidectomy in the Elderly: A Population-Based Study"

RESIDENT/FELLOW RESEARCH AWARD WINNERS & POSTER COMPETITION WINNERS CONTINUED

2010

David T. Hughes – Ann Arbor, Michigan
"Routine Central Lymph Node Dissection For Papillary Thyroid Cancer"

Matthew A. Nehs – Boston, Massachusetts
"Thyroidectomy With Neoadjuvant Plx4720 Extends Survival And Decreases Tumor Burden In An Orthotopic Mouse Model Of Anaplastic Thyroid Cancer"

POSTER: Aarti Mathur – Bethesda, Maryland
"Adrenal Venous Sampling in Primary Hyperaldosteronism: Standardizing A Gold Standard"

2011

Paxton V. Dickson – Houston, Texas
"Achieving Eugastrinemia in MEN1 Patients: Both Duodenal Inspection and Formal Lymph Node Dissection are Important"

Matthew Nehs – Boston, Massachusetts
"Necroptosis is a Novel Mechanism of Radiation-Induced Cell Death in Anaplastic Thyroid Cancer and Adrenocortical Cancer"

POSTER: Luc G.T. Moris – New York, New York
"Rising Incidence of Second Primary Cancer in Low-Risk Patients Receiving Radioactive Iodine Therapy"

2012

Ashley K. Cayo – Milwaukee, Wisconsin
"Predicting the Need for Calcium and Calcitriol Supplementation After Total Thyroidectomy: Results of a Prospective, Randomized Study"

Thomas J. Quinn – Bronx, New York
"Pasireotide (Som230) Is Effective for the Treatment of Pancreatic Neuroendocrine Tumors in a Multiple Endocrine Neoplasia Type 1 Conditional Knockout Mouse Model"

POSTER: Kevin Shepet – Madison, Wisconsin
"Parathyroid Cryopreservation Following Parathyroidectomy: A Worthwhile Practice?"

RESIDENT/FELLOW RESEARCH AWARD WINNERS & POSTER COMPETITION WINNERS CONTINUED

2013

Kai-Pun Wong – Hong Kong
"A Prospective Evaluation of Surgeon-Performed Transcutaneous Laryngeal Ultrasonography in Assessing Vocal Cord Function Before and After Thyroidectomy"

Scott K. Sherman – Iowa City, Iowa
"Gastric Inhibitory Polypeptide Receptor: A Future Alternative to Somatostatin Type 2 Receptor Imaging and Treatment in Neuroendocrine Tumors?"

POSTER: Sara Murray – Madison, Wisconsin
"Timing of Symptom Improvement After Parathyroidectomy"

2014

Heather Wachtel – Philadelphia, Pennsylvania
"Long-term Blood Pressure Control in Patients Undergoing Adrenalectomy for Primary Hyperaldosteronism"

Jessica Maxwell – Iowa City, Iowa
"A Practical Method to Determine the Site of Unknown Primary in Metastatic Neuroendocrine Tumors"

POSTER: Ben James – Chicago, Illinois
"A Novel Ultra-Rapid PTH Assay to Distinguish Parathyroid from Non-Parathyroid Tissue"

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Dr. Paul LoGerfo passed away September 16, 2003 during his tenure as President of the AAES. Dr. LoGerfo was very interested in education and clinical research, and in his honor the AAES established the Educational Research Fund to support educational and research activities of the Membership. As of press time, the following members and organizations contributed in 2014-2015:

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Kevin Zirkle

Donations may be made online at www.aaesfoundation.org

PAST MEETINGS

1980 **Ann Arbor, Michigan**
Local Arrangements Chair: Norman W. Thompson

1981 **Washington, DC**
Local Arrangements Chair: Glenn Geelhoed

1982 **Houston, Texas**
Local Arrangements Chair: Robert C. Hickey

1983 **San Francisco, California**
Local Arrangements Chair: Orlo Clark

1984 **Kansas City, Kansas**
Local Arrangements Chair: Stanley R. Friesen

1985 **Toronto, Ontario, Canada**
Local Arrangements Chair: Irving Rosen

1986 **Rochester, Minnesota**
Local Arrangements Chair: Jon A. van Heerden

1987 **Chicago, Illinois**
Local Arrangements Chair: Edwin L. Kaplan

1988 **Boston, Massachusetts**
Local Arrangements Chair: Blake Cady

1989 **Chapel Hill, North Carolina**
Local Arrangements Chair: Robert D. Croom

1990 **Cleveland, Ohio**
Local Arrangements Chair: Caldwell B. Esselstyn

1991 **San Jose, California**
Local Arrangements Chair: Maria Allo

1992 **Miami, Florida**
Local Arrangements Chair: George L. Irvin, III

1993 **Williamsburg, Virginia**
Local Arrangements Chair: H. Heber Newsome

1994 **Detroit, Michigan**
Local Arrangements Chair: Gary B. Talpos

1995 **Philadelphia, Pennsylvania**
Local Arrangements Chair: John Kukora

1996 **Napa, California**
Local Arrangements Chair: Quan-Yang Duh

1997 **Baltimore, Maryland**
Local Arrangements Chair: Robert Udelsman

PAST MEETINGS CONTINUED

1998 **Orlando, Florida**
Local Arrangements Chair: Peter J. Fabri

1999 **New Haven, Connecticut**
Local Arrangements Chair: Barbara Kinder

2000 **Joint Meeting: London, United Kingdom/Lille, France**
Local Arrangements Chair: Jack Monchik

2001 **Atlanta, Georgia**
Local Arrangements Chair: Collin Weber

2002 **Banff, Alberta, Canada**
Local Arrangements Chair: Janice L. Pasieka

2003 **San Diego, California**
Local Arrangements Chairs: Jay K. Harness & John Kukora

2004 **Charlottesville, Virginia**
Local Arrangements Chair: John B. Hanks

2005 **Cancun, Mexico**
Local Arrangements Chair: Miguel F. Herrera

2006 **New York, New York**
Local Arrangements Chair: Ashok R. Shaha

2007 **Tucson, Arizona**
Local Arrangements Chair: Michael J. Demeure

2008 **Monterey, California**
Local Arrangements Chair: Quan-Yang Duh

2009 **Madison, Wisconsin**
Local Arrangements Chair: Herbert Chen

2010 **Pittsburgh, Pennsylvania**
Local Arrangements Chair: Sally E. Carty

2011 **Houston, Texas**
Local Arrangements Chair: Nancy D. Perrier

2012 **Iowa City, Iowa**
Local Arrangements Chair: Ronald Weigel

2013 **Chicago, Illinois**
Local Arrangements Chair: Peter Angelos

2014 **Boston, Massachusetts**
Local Arrangements Chair: Richard A. Hodin

SPECIAL SESSIONS

INTERESTING CASES – INTEGRATIVE ENDOCRINE SURGERY: CROSSING PRACTICE LINES TO IMPROVE CARE

SUNDAY, MAY 17, 2015 ■ 8:15 AM – 11:00 AM

Ballroom A on the 4th floor of the Music City Center
(located directly across the street from the Omni Hotel)

COORDINATOR: William B. Inabnet III, MD

8:15 am – 9:00 am

AACE /AAES Joint Review of Cases on Hyperparathyroidism

MODERATOR: Nancy D. Perrier, MD
PANELISTS: Mira Milas, MD & Shonni Silverberg, MD

9:15 am – 10:00 am

AACE /AAES Joint Review of Cases on Thyroid Cancer Management

MODERATOR: Carmen C. Solorzano, MD
PANELISTS: R. Michael Tuttle, MD & Gregory Randolph, MD

10:15 am – 11:00 am

AACE /AAES Joint Review of Cases on Adrenal Nodules

MODERATOR: Gerard M. Doherty, MD
PANELISTS: Clive Grant, MD & Gary Hammer, MD

AAES PARATHYROID GUIDELINES UPDATE

SUNDAY, MAY, 17, 2015 ■ 4:00 PM – 4:30 PM

Ballroom A-E

The AAES formed an ad hoc committee to help draft a set of Parathyroid Guidelines for our membership. Come to this great session to hear an update on their progress and learn more about this valuable resource that will soon be available to us.

AMERICAN ASSOCIATION OF ENDOCRINE SURGEONS OUTCOMES PROGRAM (AAESOP)

TUESDAY, MAY 19, 2015 ■ 6:30 AM – 7:45 AM

Ballroom A-E

The American Association of Endocrine Surgeons Outcomes Program (AAESOP) was created to unite members of the AAES interested in health services/outcomes research in Endocrine Surgery with a common purpose of collaborative research, mentorship, and friendship. AAESOP is holding a session on Tuesday morning that is open to all members of the AAES. Come learn more about Health Services Research and how you can get more involved.

HISTORICAL LECTURER

"The Glands of Owen... Who Was Owen?"

Robert Beazley, MD
Boston University

SUNDAY, MAY 17, 2015 ■ 1:45 PM – 2:15 PM
Broadway Ballroom A-E

Dr. Robert M. Beazley is Professor Emeritus of Surgery and Endocrinology at the Boston University School of Medicine. A graduate of Maryland School of Medicine, he did his internship at the Baltimore City Hospitals followed by two years of service in the U.S. Navy attached to the Antarctic Support Activities as the Officer in Charge of the Amundsen-Scott South Pole Station.

Dr. Beazley returned to the University of Maryland to complete a General Surgery Residency. He joined the full time faculty in 1970 before moving to the Surgery Branch of National Cancer Institute as a Senior Investigator. In August 1975 he joined Dr. Isidore Cohn in the Department of Surgery at LSU, New Orleans as the head of the Section of Surgical oncology. Dr. Beazley left LSU in 1988 to become the Chief of Surgical Oncology and Endocrine Surgery at Boston University retiring from active clinical practice in 2004.

Currently, he attends various BU undergraduate courses especially those in history, serving as Assistant Dean in the BU Medical School Office of Student Affairs, prosecting in the anatomy laboratory, advising the Boston University Medical School History Society as well as pursuing his teenage hobby of woodworking.

HISTORICAL LECTURERS AT RECENT MEETINGS

2009 **Edwin L. Kaplan, MD**
University of Chicago
Radiation Induced Thyroid Cancer – A Chicago Experience

2010 **Norman W. Thompson, MD**
University of Michigan
The Time Was Right

2011 **Jon A. van Heerden, MD**
Medical University of South Carolina
Pheochromocytoma Resection: Now and Then

2012 **Murray F. Brennan, MD**
Memorial Sloan-Kettering Cancer Center
Re-Operative Parathyroid Surgery Circa 1975

2013 **Orlo H. Clark, MD**
University of California, San Francisco
Recognition of Endocrine Glands and Abnormalities by Artists and Surgeons

2014 **Patricia J. Numann, MD**
SUNY Upstate Medical University
Ode to an Indian Rhinoceros

INVITED LECTURER

"Translating Adrenal Stem Cells: Implications for Adrenal Disease"

Gary Hammer, MD, PhD
University of Michigan

MONDAY, MAY 18, 2015 ■ 8:00 AM – 8:40 AM

Broadway Ballroom A-E

Gary D. Hammer, MD, PhD serves as Director of the Endocrine Oncology Program in the Comprehensive Cancer Center at the University of Michigan. The Program is recognized for its excellence in research and treatment of adrenal cancer. He is also Director of the University's Center for Organogenesis that brings together basic scientists and clinicians focused on organ – specific problems spanning developmental disorders to cancer. Research projects in his laboratory are aimed at elucidating mechanisms by which growth factor signaling and transcriptional programs initiate adrenal – specific growth and differentiation with an emphasis on dysregulated growth of adrenocortical stem/progenitor cells in development and cancer.

INVITED LECTURERS AT RECENT MEETINGS

1991 **Gregory B. Bulkley, MD**
Johns Hopkins University, Baltimore, Maryland
Endothelial Xanthine Oxidase: a Radical Transducer of Signals and Injury

1992 **Donald Coffey, PhD**
Bethesda, Maryland
New Concepts Concerning Cancer

1993 **John L. Doppman, MD**
National Institutes of Health, Bethesda, Maryland
Recent Advances in Endocrinologic Imaging

1994 **Gordon J. Strewler, MD**
San Francisco, California
The Parathyroid Hormone Related Protein: Clinical and Basic Studies of a Polyfunctional Protein

1995 **Ivor M.D. Jackson, MD**
Providence, Rhode Island
Regulation of TSH Secretion: Implications for Disorders of the Thyroid Function

1996 **Victor E. Gould, MD**
Rush-Presbyterian-Medical Center, Chicago, Illinois
The Diffuse Neuroendocrine System: Evolution of the Concept and Impact on Surgery

1997 **Bertil Hamberger, MD, PhD**
Karolinska Institute, Stockholm, Sweden
The Nobel Prize

1998 **Susan Leeman, PhD**
Boston University, Boston, Massachusetts
The NeuroPeptides: Substance P and Neurotensin

1999 **James Hurley, MD**
Cornell University, New York, New York
Post-Operative Management of Differentiated Thyroid Cancer

INVITED LECTURERS AT RECENT MEETINGS CONTINUED

2000 **James Shapiro, MD**
University of Alberta, Edmonton, Alberta
Pancreatic Islet Cell Transplantation

2001 **Andrew F. Stewart, MD**
University of Pittsburgh, Pittsburgh, Pennsylvania
Parathyroid Hormone-Related Protein: From Hypercalcemia of Malignancy to Gene Therapy from Diabetes

2002 **William F. Young Jr., MD**
Mayo Clinic, Rochester, Minnesota
Adrenal-Dependent Hypertension: Diagnostic Testing Insights

2003 **Sissy M. Jhiang, MD**
The Ohio State University, Columbus, Ohio
Lessons From Thyroid Cancer: Genetics and Gene Therapy

2004 **Edward R. Laws Jr, MD**
University of Virginia, Charlottesville, Virginia
The Diagnosis and Management of Cushing's Disease

2005 **David Duick, MD**
Phoenix, Arizona
Thyroid Nodules and Mild Primary Hyperparathyroidism: Examples of Clinical Perplexities or Unresolvable Conundrums

2006 **Michael Bliss, PhD**
University of Toronto, Ontario, Canada
Harvey Cushing and Endo-Criminology

2007 **Virginia A. Livolsi, MD**
University of Pennsylvania, Philadelphia, Pennsylvania
Thyroid Nodule FNA and Frozen Section: Partners or Adversaries

2008 **F. John Service, MD, PhD**
Mayo Clinic, Rochester, Minnesota
Hypoglycemia in Adults – 80th Anniversary of Hyperinsulinism

INVITED LECTURERS AT RECENT MEETINGS CONTINUED

2009 **Jeffrey M. Trent, PhD**
Translation Genomics Research Institute, Phoenix, Arizona
Integrating Genetics, Genomics, and Biology Towards a More Personalized Medicine

2010 **Alexander J.B. McEwan, MB**
University of Alberta, Edmonton, Alberta, Canada
The State of the Art of Radionucleotide Imaging and Therapy in Patients with Neuroendocrine Tumors

2011 **Allan H. (Bud) Selig**
9th Commissioner of Major League Baseball
Major League Baseball – 2011 Economic and Health Related Issues

2012 **Atul A. Gawande, MD, MPH**
Brigham and Women's Hospital
Strategies for Improving Surgical Performance

2013 **Anders O.J. Bergenfelz, MD, PhD**
Lund University Hospital
Quality Control in Clinical Practice and Postgraduate Education in Endocrine Surgery

2014 **Yuri E. Nikiforov, MD, PhD**
University of Pittsburgh School of Medicine
Progress in Genomic Markers for Thyroid Cancer: How Does if Affect Patient Management?

CONFERENCE INFORMATION

ACCREDITATION

LEARNING OBJECTIVES

This activity is designed for all endocrine surgeons seeking the latest developments in endocrine surgical technique and its related research. The intent of the program is to improve the quality of patient care and improve overall patient safety. Audience participation and interaction will be encouraged. The content and format of the program have been determined based on evaluations and suggestions of attendees of previous programs.

At the completion of this activity, attendees will:

1. Participate in discussions, and explain current developments in the science and clinical practice of endocrine surgery.
2. Be able to explain practical new approaches and solutions to relevant concepts and problems in endocrine surgical care.
3. Have additional working knowledge to assist them with their existing and growing endocrine practice.
4. Possess additional information and recent developments as they relate to recently established guidelines and procedures.
5. Understand the role of surgery and the latest therapeutic approaches for patients with adrenocortical carcinoma.

ACCREDITATION STATEMENT

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through the joint providership of the American College of Surgeons and the American Association of Endocrine Surgeons. The American College of Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

AMA PRA CATEGORY 1 CREDITS™

The American College of Surgeons designates this live activity for a maximum of **15.75 *AMA PRA Category 1 Credits***™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Of the *AMA PRA Category 1 Credits*™ listed above, a maximum of **8.50** credits meet the requirements for Self-Assessment.

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AMERICAN COLLEGE OF SURGEONS
DIVISION OF EDUCATION
Accredited with Commendation by the Accreditation Council for Continuing Medical Education

DISCLOSURE INFORMATION

In compliance with the ACCME Accreditation Criteria, the American College of Surgeons, as the accredited provider of this activity, must ensure that anyone in a position to control the content of the educational activity has disclosed all relevant financial relationships with any commercial interest. All reported conflicts are managed by a designated official to ensure a bias-free presentation. Please see the insert to this program for the complete disclosure list.

CME CERTIFICATES AND EVALUATION FORMS

You may complete your attendance verification, meeting evaluation and self-assessment posttest online. You will receive your electronic CME certificate after completing the evaluation and posttests. Your final CME hours will be submitted to the ACS. Members of the ACS will have their credits posted to the ACS website around 30 days post-activity.

Claim your CME credits here: **http://aaes.goldstarvoa.com**.

The American Board of Surgery requirement for fulfillment of MOC Part 2 is the completion of a minimum of 90 hours of *AMA PRA Category 1 Credit™* over a three year cycle. At least 60 of the 90 hours must include a self-assessment activity–a written Q&A exercise (paper or online) that assesses the surgeon's understanding of the material presented during the CME program. A score of 75% or higher must be attained on the self-assessment exercise. Multiple attempts are permitted.

SUNDAY, MAY 17, 2015	**CME**	**SA**
INTERESTING CASES with AACE	3	0
LUNCH WORKSHOP: How to Build an Endocrine Surgery Practice	2	0
CESQIP UPDATE	0.25	0
SCIENTIFIC SESSION # 1	1.25	1.25
HISTORICAL LECTURE: The Glands of Owen…Who was Owen?	1	0
Daily Total	**7.50**	**1.25**
MONDAY, MAY 18, 2015		
PRESIDENT'S INVITED LECTURER: Translating Adrenal Stem Cells: Implications for Adrenal Disease	0.75	0
SCIENTIFIC SESSION # 2	1	1
SCIENTIFIC SESSION # 3	1.25	1
SCIENTIFIC SESSION # 4	1.25	1.25
SCIENTIFIC SESSION # 5	1	1
Daily Total	**5.25**	**4.25**
TUESDAY, MAY 19, 2015		
SCIENTIFIC SESSION # 6	1	1
SCIENTIFIC SESSION # 7	1	1
SCIENTIFIC SESSION # 8	1	1
Daily Total	**3**	**3**
Meeting Total	**15.75**	**8.50**

HOTEL INFORMATION

HOTEL INFORMATION

THE OMNI NASHVILLE HOTEL, 250 Fifth Avenue South, Nashville, TN, 37203
T: 615-782-5300 ■ W: www.omnihotels.com/hotels/nashville

WEATHER

Temperatures in mid-May range from the mid 70s and low 80s. A more accurate weather forecast can be found closer to the date of the meeting at www.weather.com.

AIRPORT INFORMATION

The Omni Nashville Hotel is located 7 miles away from Nashville International Airport.

TRANSPORTATION FROM THE AIRPORT

Taxi Service: There is a flat rate of $25 to the downtown area, plus an additional passenger charge of $1 when the accompanying passenger and the original passenger are proceeding to same destination.

Shuttle Service: Approximately $20 per person; 24-hour service is available.

MTA Bus: Tourists, residents and business travelers now have a convenient and inexpensive way to travel to and from the Nashville International Airport and downtown Music City. For just $1.60, you can ride the Nashville MTA's route 18 Airport/Elm Hill Pike bus between the Nashville International Airport and Downtown Music City. Visit the MTA website or call 615-862-5950 for more information on schedules and pickup locations.

OTHER TRANSPORTATION AROUND DOWNTOWN

Downtown Circulator: Nashville's new clean diesel hybrid Downtown Circulator offers travelers a free and convenient way to get around downtown and The Gulch. The Green Circuit takes you between The Gulch and Riverfront Station. The Blue Circuit runs south to north serving key destinations between the Schermerhorn Symphony Center and Bicentennial Mall. The Purple Circuit runs primarily south of Broadway along Hermitage and Second Avenues and serves key destinations between Riverfront Station and the Richard H. Fulton Complex. It's a great new way for locals and visitors alike to move around the downtown area with ease. Visit the Downtown Circulator website for circuit maps and schedule.

CONTACTS

CARMEN C. SOLORZANO, MD, Local Arrangements Chair
E: carmen.solorzano@vanderbilt.edu

AMERICAN ASSOCIATION OF ENDOCRINE SURGEONS
11300 W. Olympic Blvd., Suite 600, Los Angeles, CA 90064
T: 310-986-6452 ■ F: 310-437-0585 ■ E: meetings@endocrinesurgery.org
W: www.endocrinesurgery.org

AGENDA

AGENDA

FRIDAY, MAY 15, 2015

7:00 am – 5:30 pm *Broadway Ballroom A-B*

Endocrine Surgery University

An educational activity for fellows in Surgical Endocrinology

COURSE DIRECTOR

Mira M. Milas, MD – *Oregon Health and Science University*

COURSE FACULTY/PANELISTS

- Gerard Doherty, MD – *Boston University*
- Paul G. Gauger, MD – *University of Michigan*
- James Lee, MD – *Columbia University Medical Center*
- Rebecca S. Sippel, MD – *University of Wisconsin*
- Samuel K. Snyder, MD – *Scott and White Clinic*
- Jon van Heerden, MD – *Medical University of South Carolina*
- *T*racy S. Wang, MD, MPH – *Medical College of Wisconsin*
- Martha A. Zeiger, MD, FACE – *Johns Hopkins University School of Medicine*

6:30 pm – 8:30 pm *Broadway Ballroom A-B*

ESU Dinner

Invitation Only

SATURDAY, MAY 16, 2015

7:00 am – 12:00 pm *Broadway Ballroom A-B*

Endocrine Surgery University

CONTINUED

1:00 pm – 6:00 pm *Hermitage Golf Club*

AAES Annual Golf Tournament

Transportation arrangements on own

2:00 pm – 6:00 pm *The Sequoia Club*

AAES Annual Tennis Tournament

Transportation arrangements on own

2:00 pm – 6:00 pm *Broadway Ballroom C*

AAES Council Meeting

2:00 pm – 7:00 pm *5th Avenue Foyer*

Registration Open

7:30 pm – 10:30 pm *Legends Ballroom*

AACE Gala Event

Separate fee required

SUNDAY, MAY 17, 2015

6:00 am
AAES Annual Fun Run/Walk
Meet in Lobby of the Omni Hotel @ 6:00 am

6:00 am – 6:00 pm *5th Avenue Foyer*
Registration Open

6:30 am – 8:00 am *Music Row 4*
AAES Foundation Board Meeting

8:15 am – 11:00 am *Ballroom A – 4th floor of the Music City Center*
Combined Case Presentation Sessions with AACE Meeting
Thyroid, Parathyroid and Adrenal

11:00 pm – 1:00 pm *Broadway Ballroom A-E*
Lunch On Your Own
Lunch Workshop by Community Surgeons Committee
"How to Build an Endocrine Surgery Practice" (RSVP and Additional Fee)

11:45 am – 12:45 pm *Music Row 1*
CESQIP Committee Meeting

1:00 pm – 1:30 pm *Broadway Ballroom A-E*
AAES Opening Session

1:30 pm – 1:40 pm *Broadway Ballroom A-E*
CESQIP Update

1:40 pm – 3:00 pm *Broadway Ballroom A-E*
SCIENTIFIC SESSION I: Papers 1-5
MODERATORS: Rebecca S. Sippel, MD – *University of Wisconsin*
& Rachel Kelz, MD – *University of Pennsylvania*

3:00 pm – 3:30 pm *Broadway Ballroom F*
Afternoon Break, Exhibits and Poster Viewing

3:30 pm – 4:00 pm *Broadway Ballroom A-E*
HISTORICAL LECTURER: "The Glands of Owen… Who was Owen?"
SPEAKER: Robert Beazley, MD – *Emeritus Professor, Boston University*

4:00 pm – 4:30 pm *Broadway Ballroom A-E*
Parathyroidectomy Guidelines Update

4:30 pm – 6:00 pm *Broadway Ballroom F*
Poster Walk Around and Poster Judging
Exhibits Open

4:30 pm – 6:00 pm *Broadway Ballroom A-E*
Allied Health Care Symposium
MODERATOR: Allan Siperstein, MD – *Cleveland Clinic*

6:00 pm – 8:00 pm *ACME Feed and Seed (101 Broadway Street)*
President's Reception

MONDAY MAY 18, 2015

7:00 am – 7:00 pm *5th Avenue Foyer*
Registration Open

7:00 am – 8:00 am *Broadway Ballroom F*
Breakfast and Exhibits Open

7:00 am – 8:00 am *Broadway Ballroom H*
Community Based Surgeons Committee Meeting

7:00 am – 8:00 am *Broadway Ballroom J*
Education & Research Committee Meeting

7:00 am – 8:00 am *Broadway Ballroom G*
New Member Breakfast
By invitation only

8:00 am – 8:40 am *Broadway Ballroom A-E*
PRESIDENT'S INVITED LECTURER:
"**Translating Adrenal Stem Cells: Implications for Adrenal Disease"**
SPEAKER: Gary Hammer, MD – *Professor of Medicine, University of Michigan*

8:40 am – 9:45 am *Broadway Ballroom A-E*
SCIENTIFIC SESSION II: Papers 6-9
MODERATORS: Sanziana A. Roman, MD – *Duke University*
& Denise Carneiro-Pla, MD – *University of South Carolina*

9:45 am – 10:15 am *Broadway Ballroom F*
Morning Break, Exhibits and Poster Viewing

10:15 am – 11:20 am *Broadway Ballroom A-E*
SCIENTIFIC SESSION III: Papers 10-13
MODERATORS: William B. Inabnet III, MD – *Mount Sinai Medical Center*
& Dina Elaraj, MD – *Northwestern University*

11:20 am – 12:15 pm *Broadway Ballroom A-E*
PRESIDENTIAL ADDRESS: "General Surgery as a Foundation:
How to Build Successful Careers in (Endocrine) Surgery"
SPEAKER: Gerard M. Doherty, MD – *Boston University*

12:15 pm – 1:45 pm
Lunch On Your Own
Exhibits Open

1:00 pm – 1:45 pm *Broadway Ballroom H*
Accreditation Committee Meeting

1:00 pm – 1:45 pm *Broadway Ballroom J*
IT & Website Committee Meeting

1:45 pm – 3:00 pm *Broadway Ballroom A-E*
SCIENTIFIC SESSION IV: Papers 14-18
MODERATORS: Thomas J. Fahey, MD – *NYPH, Weill Cornell*
& Tobias Carling, MD, PhD – *Yale University*

3:00 pm – 3:30 pm *Broadway Ballroom F*
Afternoon Break, Exhibits and Poster Viewing

3:30 pm – 4:35 pm *Broadway Ballroom A-E*
SCIENTIFIC SESSION V: Papers 19-22
MODERATORS: Kepal N. Patel, MD – *New York University*
& Kelly L. McCoy, MD – *University of Pittsburgh*

4:35 pm – 5:35 pm *Broadway Ballroom G-H*
AAES Business Meeting
For members only

6:30 pm *Broadway Foyer West + Broadway Ballroom A-E*
Reception and Gala Dinner

TUESDAY MAY 19, 2015

6:30 am – 7:45 am *Broadway Ballroom A-E*
AAES Outcomes Group
Open to all meeting attendees

Overview of Health Services Research (What is health services research?, How can you get involved?, How can we foster collaborations and mentorship?)

Prioritizing Goals for AAESOP

7:00 am – 12:00 pm *5th Avenue Foyer*
Registration Open

7:00 am *Broadway Ballroom F*
Breakfast and Exhibits Open

7:00 am – 8:00 am *Music Row 1*
Fellowship Committee Meeting

8:00 am – 9:05 am *Broadway Ballroom A-E*
SCIENTIFIC SESSION VI: Papers 23-26
MODERATORS: Steven K. Libutti, MD – *Albert Einstein College of Medicine*
& Melanie Goldfarb, MD – *John Wayne Cancer Institute*

9:05 am – 9:30 am *Broadway Ballroom F*
Morning Break, Exhibits and Poster Viewing

9:30 am – 10:35 am *Broadway Ballroom A-E*
SCIENTIFIC SESSION VII: Papers 27-30
MODERATORS: Juan Pablo Pantoja, MD – *Instituto Nacional de Ciencias Medicas*
& Shelby A Holt, MD – *UT Southwestern*

10:35 am – 11:00 am *Broadway Ballroom F*
Morning Break, Exhibits and Poster Viewing

11:00 am – 12:05 pm *Broadway Ballroom A-E*
SCIENTIFIC SESSION VIII: Papers 31-34
MODERATORS: Samuel K. Synder, MD – *Texas A&M University*
& Alexander L. Shifrin, MD – *Jersey Shore University*

12:05 pm
Meeting Ajourn

SCIENTIFIC PROGRAM

★ Denotes Resident/Fellow Research Award Competition Paper

NOTE: Author listed in **BOLD** is the presenting author

SCIENTIFIC PROGRAM

SUNDAY, MAY 17, 2015

8:15 am – 11:00 am *Ballroom A – 4th floor of the Music City Center*

Combined Case Presentation Sessions with AACE Meeting

Thyroid, Parathyroid and Adrenal

11:00 pm – 1:00 pm *Broadway Ballroom A-E*

Lunch On Your Own

Lunch Workshop by Community Surgeons Committee

"How to Build an Endocrine Surgery Practice" (RSVP and Additional Fee)

1:00 pm – 1:30 pm *Broadway Ballroom A-E*

AAES Opening Session

- **Welcome** – Gerard Doherty, MD – *Chair Dept of Surgery, Boston University and President of the AAES* & R. Daniel Beauchamp, MD – *Chairman, Section of Surgical Sciences and Surgeon-in-Chief, Vanderbilt University Hospital*
- **New Member Introductions**
- **Paul LoGerfo Education Research Presentation** – 2014 Awardee: Michael T. Stang, MD – *Assistant Professor of Surgery, University of Pittsburgh School of Medicine*
- **Announcement of 2015 Paul LoGerfo Award Winners** – To be presented by John Olson, MD, Baltimore, MD

1:30 pm – 1:40 pm *Broadway Ballroom A-E*

CESQIP Update

SPEAKER: William B. Inabnet III, MD

1:40 pm – 3:00 pm *Broadway Ballroom A-E*

SCIENTIFIC SESSION I: Papers 1-5

MODERATORS: Rebecca S. Sippel, MD & Rachel Kelz, MD, MSCE

1:40 pm – 1:55 pm

★ **01.** MAPPING ENDOCRINE SURGERY: WORKFORCE ANALYSIS OF THE LAST SIX DECADES

Vikram D Krishnamurthy, MD, Allan Siperstein, MD, Joyce J Shin, MD – *The Cleveland Clinic Foundation*

1:55 pm – 2:10 pm

★ **02.** DEFINING EFFECTIVE DECISION-MAKING DURING THYROIDECTOMY USING AN INTERNATIONAL EXPERT CONSENSUS

Amin Madani, MD[1], Yusuke Watanabe, MD[1], Quan-Yang Duh, MD[2], Michael C Singer, MD[3], Daniel T Ruan, MD4, Roger Tabah, MD[1], Elliot Mitmaker, MD[1] – *[1]McGill University, Montreal, QC, [2]University of California, San Francisco, San Francisco, CA, [3]Henry Ford Health System, Detroit, MI, [4]Brigham and Women's Hospital, Boston, MA*

2:10 pm – 2:25 pm

★ **03.** GENOME-WIDE ANALYSIS OF DIFFERENTIALLY EXPRESSED MIRNA IN BRAF INHIBITOR RESISTANT AND PARENTAL HUMAN THYROID CANCER CELL LINES
Shohreh Varmeh, Pierre Vanden Borre, Viswanath Gunda, **Eran Brauner**, Tammy Holm, Yangun Wang, Ruslan Sadreyev, Sareh Parangi – *Department of Surgery, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts*

2:25 pm – 2:40 pm

★ **04.** COST DISPARITY BETWEEN HEALTHCARE SYSTEMS - IT'S NOT THE SURGEONS: A COST ANALYSIS OF THYROID CANCER CARE BETWEEN THE U.S. AND FRANCE
Brendan M Finnerty, MD[1], Laurent Brunaud, MD[2], Eric Mirallie, MD[3], Caitlin McIntyre, MD[1], Anna Aronova, MD[1], Thomas J Fahey, III, MD[1], Rasa Zarnegar, MD[1] – *[1]New York Presbyterian Hospital - Weill Cornell Medical College, [2]University de Lorraine, CHU Nancy Brabois, [3]CCDE, IMAD, Centre Hospitalier Universitaire, Nantes-Hotel Dieu*

2:40 pm – 2:55 pm

★ **05.** SAME THYROID CANCER, DIFFERENT NATIONAL PRACTICE GUIDELINES: WHEN DISCORDANT ATA AND NCCN GUIDELINES MAY BE ASSOCIATED WITH COMPROMISED PATIENT OUTCOME
Mohamed Abdelgadir Adam, MD, Randall Scheri, MD, Sanziana Roman, MD, Julie A Sosa, MD – *Department of Surgery, Duke University Medical Center*

3:00 pm – 3:30 pm *Broadway Ballroom F*
Afternoon Break, Exhibits and Poster Viewing

3:30 pm – 4:00 pm *Broadway Ballroom A-E*
HISTORICAL LECTURER: "The Glands of Owen… Who was Owen?"
SPEAKER: Robert Beazley, MD – *Emeritus Professor, Boston University*
INTRODUCTION BY: Gerard Doherty, MD

4:00 pm – 4:30 pm *Broadway Ballroom A-E*
Parathyroidectomy Guidelines Update
SPEAKERS: Sally Carty, MD, James Lee, MD, Dan Ruan, MD, Tracy Wang, MD, MPH, & Scott Wilhelm, MD

4:30 pm – 6:00 pm *Broadway Ballroom F*
Poster Walk Around and Poster Judging
POSTER SESSION CHAIR: Phil Haigh, MD – *Kaiser Permanente Los Angeles, CA*
POSTER COMPETITION JUDGES: Sally Carty, MD, Miguel Herrera, MD, PhD, Douglas Evans, MD, Janice Pasieka, MD, Michael Demeure, MD, MBA, Geoffrey Thompson, MD, Christopher McHenry, MD, Quan-Yang Duh, MD, Clive Grant, MD, & Orlo Clark, MD

4:30 pm – 6:00 pm *Broadway Ballroom A-E*

Allied Health Care Symposium

MODERATOR: Allan Siperstein, MD – *Cleveland Clinic*

Introduction

SPEAKERS: Sarah Schaefer, NP – *University of WI-Madison*
& Allan Siperstein, MD – *Cleveland Clinic*

The Secret Weapon of Care Coordination Before and After Total Thyroidectomy

SPEAKER: Courtney Balentine, MD – *University of WI-Madison*

Streamlining the Inpatient Care of the Postoperative Endocrine Patient

SPEAKER: Sarah Misustin, PA-C – *Medical College of Wisconsin*

Role of Nurses and APPs in Endocrine Surgery

SPEAKER: Sarah Schaefer, NP – *University of WI-Madison*

Optimizing Efficiency from Initial Call to Consult to the Operating Room

Panel Discussion

PANELISTS

- Maureen Bell, RN – *Cleveland Clinic*
- Patricia Donovan RN, MBA – *Yale University*
- Jennifer Isorena, NP – *University of California, Los Angeles*
- Ginny Simpson, NP – *University of Virginia*

MONDAY MAY 18, 2015

8:00 am – 8:40 am *Broadway Ballroom A-E*

PRESIDENT'S INVITED LECTURER: "Translating Adrenal Stem Cells: Implications for Adrenal Disease"

SPEAKER: Gary Hammer, MD – *University of Michigan*
INTRODUCTION BY: Gerard M. Doherty, MD – *Boston University*

8:40 am – 9:45 am *Broadway Ballroom A-E*

SCIENTIFIC SESSION II: Papers 6-9

MODERATORS: Sanziana A. Roman, MD – *Duke University*
& Denise Carneiro-Pla, MD – *University of South Carolina*

8:40 am – 8:55 am

★ **06.** SHOULD SPECIFIC PATIENT CLINICAL CHARACTERISTICS DISCOURAGE ENDOCRINE SURGEONS FROM PERFORMING LAPAROSCOPIC TRANSABDOMINAL ADRENALECTOMY?

Konstantinos P Economopoulos, MD, PhD, Roy Phitayakorn, MD, MHPE, Carrie C Lubitz, MD, MPH, Peter M Sadow, MD, Sareh Parangi, MD, Antonia E Stephen, MD, Richard A Hodin, MD – *Massachusetts General Hospital, Harvard Medical School*

8:55 am – 9:10 am

★ **07.** FLUORESCENCE DETECTION OF THE PARATHYROID GLAND: REALIZING THE POTENTIAL FOR INTRAOPERATIVE GUIDANCE

Melanie A McWade, MS[1], James T Broome, MD[2], Carmen C Solorzano, MD[1], Anita Mahadevan-Jansen[1] – *[1]Vanderbilt University, [2]Saint Thomas Hospital*

9:10 am – 9:25 am

★ **08.** PARATHYROIDECTOMY IS UNDERUTILIZED IN PATIENTS WITH TERTIARY HYPERPARATHYROIDISM AFTER RENAL TRANSPLANTATION

Irene Lou, MD, David Foley, MD, Glen Leverson, PhD, Rebecca Sippel, MD, David F Schneider, MD, Herbert Chen, MD – *University of Wisconsin, Madison*

9:25 am – 9:40 am

★ **09.** DOES IMPOTENCE IMPROVE AFTER PARATHYROIDECTOMY IN MEN WITH PRIMARY HYPERPARATHYROIDISM?

Jenny Y Yoo, Linwah Yip, Michaele J Armstrong, Sally E Carty, Meghan L Kelley, Michael T Stang, Kelly L McCoy – *University of Pittsburgh*

9:45 am – 10:15 am *Broadway Ballroom F*

Morning Break, Exhibits and Poster Viewing

10:15 am – 11:20 am *Broadway Ballroom A-E*

SCIENTIFIC SESSION III: Papers 10-13

MODERATORS: William B. Inabnet III, MD – *Mount Sinai Medical Center*
& Dina Elaraj, MD – *Northwestern University*

10:15 am – 10:30 am

★ **10.** COSYNTROPIN STIMULATION TESTING ON POSTOPERATIVE DAY 1 ALLOWS FOR SELECTIVE GLUCOCORTICOID REPLACEMENT THERAPY IN PATIENTS UNDERGOING ADRENALECTOMY FOR HYPERCORTISOLISM: RESULTS OF A NOVEL, MULTIDISCIPLINARY-DERIVED INSTITUTIONAL PROTOCOL

Diana I Ortiz, MD, James W Findling, MD, Ty B Carroll, MD, Bradley R Javorsky, MD, Azadeh A Carr, MD, Douglas B Evans, MD, Tina W Yen, MD, MS, Tracy S Wang, MD, MPH – *Medical College of Wisconsin*

10:30 am – 10:45 am

★ **11.** DNA COPY AMPLIFICATION AND OVEREXPRESSION OF KCC4 IN ADRENOCORTICAL CARCINOMA

Taylor C Brown, MD[1], James M Healy, MD[1], Christofer C Juhlin, MD, PhD[2], Adam Stenman, MD[2], Jill C Rubinstein, MD, PhD[1], Reju Korah, PhD[1], Tobias Carling, MD, PhD[1] – *[1]Yale Endocrine Neoplasia Laboratory, Department of Surgery, Yale University School of Medicine, [2]Department of Oncology-Pathology, Karolinska University Hospital*

10:45 am – 11:00 am

★ **12.** DIAGNOSTIC UTILITY OF ADRENAL VENOUS SAMPLING DATA FOR PRIMARY ALDOSTERONISM DESPITE FAILED RIGHT-SIDED ADRENAL VEIN CANNULATION

Jesse D Pasternak, MD[1], Irene Epelboym, MD[2], Natalie Seiser, MD, PhD[1], Matt Wingo, BS[2], Max Herman, BS[2], Vanessa Cowan, MD[2], Jessica E Gosnell, MD[1], Wen T Shen, MD[1], Robert K Kerlan, MD[1], James A Lee, MD[2], Quan-Yang Duh, MD[1], Insoo Suh, MD[1] – *[1]University Of California - San Francisco, [2]Columbia University*

11:00 am – 11:15 am

★ **13.** SELECTIVE STRATEGY FOR INTENSIVE MONITORING AFTER PHEOCHROMOCYTOMA RESECTION

Cassandre E Benay, MD, MSc, Mehdi Tahiri, MD, Lawrence Lee, MD, PhD, Evangelina Theodosopoulos, Liane S Feldman, MD, CM, Elliot Mitmaker, MD – *McGill University*

11:20 am – 12:15 pm *Broadway Ballroom A-E*

PRESIDENTIAL ADDRESS: "General Surgery as a Foundation: How to Build Successful Careers in (Endocrine) Surgery"

SPEAKER: Gerard M. Doherty, MD – *Boston University*
INTRODUCTION BY: William B. Inabnet, III – *Icahn School of Medicine at Mount Sinai*

12:15 pm – 1:45 pm
Lunch On Your Own

1:45 pm – 3:00 pm *Broadway Ballroom A-E*

SCIENTIFIC SESSION IV: Papers 14-18

MODERATORS: Thomas J. Fahey, MD – *NYPH, Weill Cornell*
& Tobias Carling, MD, PhD – *Yale University*

1:45 pm – 2:00 pm

★ **14.** PROSPECTIVE EVALUATION AND TREATMENT OF FAMILIAL CARCINOID SMALL INTESTINE NEUROENDOCRINE TUMORS (SI-NETS)

Saïd C Azoury, MD[1], Yasmine Assadipour, MD[1], David M Straughan, MD[1], Apurva N Trivedi, MD[2], Ramona M Lim, MD[2], Grishma Joy, MD[2], Mark T Voellinger, MD[2], Derek M Tang[2], Aradhana M Venkatesan, MD[3], Clara C Chen, MD[3], Adeline Louie, MD[3], Martha M Quezado, MD[4], Joanne Forbes, MS, CRNP[2], Stephen A Wank, MD[2], Marybeth S Hughes, MD[1] – *[1]Thoracic and GI Oncology Branch, National Cancer Institute, National Institutes of Health, [2]Digestive Diseases Branch, National Institute of Diabetes, Kidney and Digestive Diseases, NIH, [3]Radiology and Imaging Sciences, National Institutes of Health, [4]Laboratory of Pathology, National Cancer Institute, National Institutes of Health*

2:00 pm – 2:15 pm

★ **15.** RESULTS OF LIVER-DIRECTED SURGERY IN NEUROENDOCRINE METASTASES: SUPPORT FOR USE OF PARENCHYMAL-SPARING DEBULKING PROCEDURES

Jessica E Maxwell, MD, MBA, Scott K Sherman, MD, Thomas M O'Dorisio, MD, Andrew M Bellizzi, MD, James R Howe, MD – *University of Iowa*

2:15 pm – 2:30 pm

★ **16.** SURGICAL RESECTION OF PRIMARY TUMOR SITE IS ASSOCIATED WITH IMPROVED SURVIVAL IN METASTATIC NON-FUNCTIONING PANCREATIC NEUROENDOCRINE TUMORS

Xavier M Keutgen, MD, Naris Nilubol, MD, Glanville Joanne, MD, Sadowski M Samira, MD, Liewehr J David, MS, Venzon J David, PhD, Steinberg M Seth, MD, Kebebew Electron, MD – *National Cancer Institute*

2:30 pm – 2:45 pm

★ **17.** CONTINUOUS INFUSION OF OCTREOTIDE DOES NOT PREVENT INTRAOPERATIVE CARCINOID CRISES

Mary E Condron, MD, SuEllen J Pommier, PhD, Rodney F Pommier, MD – *Oregon Health & Science University*

2:45 pm – 3:00 pm

★ **18.** RESECTION VERSUS EXPECTANT MANAGEMENT OF SMALL INCIDENTALLY DISCOVERED NON-FUNCTIONAL PANCREATIC NEUROENDOCRINE TUMORS (PNETS)

Alex M Rosenberg, BA, Patricia Friedmann, MS, Jaydira Del Rivero, MD, Steven K Libutti, MD, Amanda Laird, MD – *Albert Einstein College of Medicine*

3:00 pm – 3:30 pm *Broadway Ballroom F*
Afternoon Break, Exhibits and Poster Viewing

3:30 pm – 4:35 pm *Broadway Ballroom A-E*
SCIENTIFIC SESSION V: Papers 19-22
MODERATORS: Kepal N. Patel, MD – *New York University*
& Kelly L. McCoy, MD – *University of Pittsburgh*

3:30 pm – 3:45 pm
★ **19.** CHARACTERIZING THE ACOUSTIC HALLMARKS OF UNILATERAL VOCAL FOLD PARALYSIS ON A MOBILE DEVICE
Owain R Hughes[1], Marina Baki[2], John S Rubin[4], Gary Wood[4], George Mochloulis[1], Sandhu Guri[3], Martin A Birchall[4] – *[1]Lister Hospital, Stevenage, [2]Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia, [4]Royal National Throat Nose and Ear Hospital, [3]Charing Cross Hospital, London*

3:45 pm – 4:00 pm
★ **20.** IMPACT OF MALIGNANCY RATES ON COST-EFFECTIVENESS OF GENE EXPRESSION CLASSIFIER TESTING FOR INDETERMINATE THYROID NODULES
James X Wu, MD, Raymond Lam, Michael W Yeh, MD – *UCLA David Geffen School of Medicine*

4:00 pm – 4:15 pm
★ **21.** NOVEL HSP90 INHIBITORS EFFECTIVELY TARGET THYROID CANCER STEM CELL FUNCTION PREVENTING EPITHELIAL-MESENCHYMAL TRANSITION AND MIGRATION.
Peter T White, MD[1], Chitra Subramanian, PhD, MBA[1], Huiping Zhang, PhD[2], Huiping Zhao, PhD[2], Barbara N Timmermann, PhD[2], Brian Blagg, PhD[2], Mark S Cohen, MD[1] – *[1]University of Michigan, [2]University of Kansas*

4:15 pm – 4:30 pm
★ **22.** PREDICTORS OF CENTRAL LYMPH NODE METASTASIS IN PAPILLARY THYROID CARCINOMA: A NATIONAL CANCER DATA BASE (NCDB) STUDY
Paritosh Suman, MD, Edward Wang, PhD, Tricia Moo-Young, MD, Richard A Prinz, MD, David J Winchester, MD – *NorthShore University HealthSystem*

4:35 pm – 5:35 pm *Broadway Ballroom G-H*
AAES Business Meeting
For members only

TUESDAY MAY 19, 2015

8:00 am – 9:05 am *Broadway Ballroom A-E*

SCIENTIFIC SESSION VI: Papers 23-26

MODERATORS: Steven K. Libutti, MD – *Albert Einstein College of Medicine* & Melanie Goldfarb, MD – *John Wayne Cancer Institute*

8:00 am – 8:15 am

23. INTRAOPERATIVE HIGH-DOSE CALCIUM STIMULATION TEST IN PATIENTS WITH SPORADIC MEDULLARY THYROID CARCINOMA IS HIGHLY ACCURATE IN PREDICTING LATERAL NECK METASTASES

Carmela De Crea, MD, Marco Raffaelli, MD, Valentina Milano, MD, Cinzia Carrozza, MD, Cecilia Zuppi, MD, Rocco Bellantone, MD, Celestino P Lombardi, MD – *Università Cattolica del Sacro Cuore - Policlinico A. Gemelli*

8:15 am – 8:30 am

24. BLOOD MEASUREMENT OF NEUROENDOCRINE TUMOR GENE TRANSCRIPTS DEFINES THE EFFECTIVENESS OF SURGICAL RESECTION AND ABLATION STRATEGIES

Irvin M Modlin[1], Mark Kidd[1], Ronald R Salem[2], Andrea Frilling[3], Daniele Alaimo[1], Panagiotis Drymousis[1], Stephen Callahan[1], Nancy S Teixeira[1], Lei Wang[3], Omar Faiz[3], Lisa Bodei[4], Ignat Drozdov[1] – *[1]Wren Laboratories, [2]Yale University School of Medicine, [3]Imperial College London, [4]European Institute of Oncology (IEO)*

8:30 am – 8:45 am

25. HDL NANOPARTICLES: A NOVEL THERAPEUTIC STRATEGY FOR ADRENOCORTICAL CARCINOMAS

Chitra Subramanian, PhD, MBA, Rui Kuai, Anna Schwendeman, PhD, **Mark S Cohen, MD** – *University of Michigan*

8:45 am – 9:00 am

26. A NOVEL LATERAL-APPROACH LARYNGEAL ULTRASOUND FOR VOCAL CORD EVALUATION

Jung-Woo Woo, MD, MS[1], **Hyunsuk Suh, MD**[2], Ra-Yeong Song, MD[1], Joon-Hyop Lee, MD1, Hyeong Won Yu, MD, MS[1], Su-jin Kim, MD, MS1, Young Jun Chai, MD, MS[3], June Young Choi, MD, MS[4], Kyu Eun Lee, MD, PhD[1], Yeo-Kyu Youn, MD, PhD[1] – *[1]Department of Surgery, Seoul National University Hospital and College of Medicine, [2]Department of Surgery, Mount Sinai Beth Israel Hospital, Icahn School of Medicine at Mount Sinai, [3]Department of Surgery, Boramae Medical Center, [4]Department of Surgery, Seoul National University Bundang Hospital*

9:05 am – 9:30 am *Broadway Ballroom F*

Morning Break, Exhibits and Poster Viewing

9:30 am – 10:35 am *Broadway Ballroom A-E*

SCIENTIFIC SESSION VII: Papers 27-30

MODERATORS: Juan Pablo Pantoja, MD – *Instituto Nacional de Ciencias Medicas* & Shelby A Holt, MD – *UT Southwestern*

9:30 am – 9:45 am

27. MINIMAL IMPACT OF CALCIMIMETICS ON THE MANAGEMENT OF HYPERPARATHYROIDISM IN CHRONIC DIALYSIS

L Brunaud[1], C Ayav[1], W Ngueyon Sime[1], C Nomine-Criqui[1], P Filipozzi[1], A Aronova[2], R Zarnegar[2], M Kessler[1], L Frimat[1] – *[1]University of Lorraine - CHU Nancy, [2]Weill Cornell Medical Center*

9:45 am – 10:00 am

28. A PILOT STUDY INVESTIGATING THE EFFECT OF PARATHYROIDECTOMY ON VASCULAR COMPLIANCE AND CORONARY ARTERY CALCIFICATION IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM

Cem Dural, MD, George Thomas, MD, Alexis K Okoh, Paul Shoenhagen, MD, Kupra Doshi, MD, Sandra Halliburton, **Eren Berber, MD** – *Cleveland Clinic*

10:00 am – 10:15 am

29. PARATHYROID ADENOMECTOMY RESULTS IN DECREASE IN THE CONCENTRATION OF FIBROBLAST GROWTH FACTOR-23, A POSSIBLE RISK FACTOR OF ATHEROSCLEROSIS

Inga-Lena Nilsson, MD, PhD, Sophie Norenstedt, MD, PhD, Jan Zedenius, Fredrik Granath, PhD, Ylva Pernow – *Karolinska Institutet*

10:15 am – 10:30 am

30. POST-THYROIDECTOMY HYPOCALCEMIA IS RELATED TO PARATHYROID DYSFUNCTION EVEN IN PATIENTS WITH NORMAL PTH LEVELS EARLY AFTER SURGERY

Marco Raffaelli, MD, Carmela De Crea, MD, Gerardo D'Amato, MD, Umberto Moscato, MD, Chiara Bellantone, MD, Cinzia Carrozza, MD, Celestino P Lombardi, MD – *Università Cattolica del Sacro Cuore - Policlinico A. Gemelli*

10:35 am – 11:00 am *Broadway Ballroom F*

Morning Break, Exhibits and Poster Viewing

11:00 am – 12:05 pm *Broadway Ballroom A-E*

SCIENTIFIC SESSION VIII: Papers 31-34

MODERATORS: Samuel K. Synder, MD – *Texas A&M University*
& Alexander L. Shifrin, MD – *Jersey Shore University*

11:00 am – 11:15 am

31. IMPACT OF VOCAL CORD ULTRASONOGRAPHY ON ENDOCRINE SURGERY PRACTICES
Denise Carneiro-Pla, MD[1], Carmen C Solorzano, MD[2], Scott M Wilhelm, MD[3] – *[1]Medical University of South Carolina, [2]Vanderbilt Medical Center, [3]University Hospitals/Case Medical Center*

11:15 am – 11:30 am

32. INCREASED INCIDENCE OF BREAST CANCER AMONG THYROID CANCER SURVIVORS: AN ANALYSIS OF THE SEER 9-DATABASE
Jennifer H Kuo, MD, John A Chabot, MD, Mary Beth Terry, PhD, James A Lee, MD – *Columbia University*

11:30 am – 11:45 am

33. INTEGRIN-LINKED KINASE ACTIVATES AKT SIGNALING IN THYROID CANCER CELLS AND IS A POTENTIAL THERAPEUTIC TARGET
Lawrence A Shirley, MD[1], Ming-Chen Yang, PhD[2], Motoyasu Saji, PhD[3], John Phay, MD[1], Matthew Ringel, MD[3], Ching-Shih Chen, PhD[2] – *[1]The Ohio State University Wexner Medical Center Division of Surgical Oncology, [2]The Ohio State University College of Pharmacy, [3]The Ohio State University Wexner Medical Center*

11:45 am – 12:00 pm

34. MINIMAL EXTRATHYROID EXTENSION IN PAPILLARY THYROID CARCINOMA DOES NOT RESULT IN INCREASED RATES OF EITHER CAUSE-SPECIFIC MORTALITY OR POST-OPERATIVE TUMOR RECURRENCE.
Ian D Hay, MD, PhD, Tammi R Johnson, Geoffrey B Thompson, Thomas J Sebo, Megan E Reinalda – *Mayo Clinic*

12:05 pm
Meeting Adjourn

ABSTRACTS

★ *Denotes Resident/Fellow Research Award Competition Paper*

NOTE: Author listed in **BOLD** *is the presenting author*

NOTES

★ 01. MAPPING ENDOCRINE SURGERY: WORKFORCE ANALYSIS OF THE LAST SIX DECADES

Vikram D. Krishnamurthy, MD, Allan Siperstein, MD, Joyce J. Shin, MD

The Cleveland Clinic Foundation

BACKGROUND: With evolving specialization in Endocrine Surgery (ES), we analyzed the influence of the American Association of Endocrine Surgeons (AAES) on workforce demographics over time.

METHODS: 2012 CMS Provider Datasets were used to identify high-volume (HV) providers (defined as >50 cases/year) for 16 CPT codes of thyroidectomy/parathyroidectomy. Each provider was characterized by region, gender, training, year entering practice, AAES membership, and teaching affiliation. Providers were categorized as General Surgeons (GS) or ENT; Fellowship trained (FT) or Non-fellowship trained (NFT). Fellowships included ES, Surgical Oncology, and Head & Neck. Year entering practice was categorized by generation: G1 (before 1982), G2 (1983-1992), G3 (1993-2002), and G4 (2003-2012). Univariate analysis was performed using JMP Pro 10 software.

RESULTS: We identified 393 HV surgeons in 47 states entering practice between 1952-2011. Surgeons comprise 68% GS and 32% ENT. Regardless of specialty, FT surgeons (35%) perform 42% of cases and NFT (65%) perform 58% of cases. More FT surgeons are in Northeast, West, and Midwest than Southeast and Southwest [p<0.0001]. FT GS significantly increase over generations (18% G1 vs. 61% G4) [p<0.0001] vs. FT ENT (13% G1 vs. 17% G4) [p<0.2]. Overall, GS are majority in G1 (81%), decrease in G2 (67%) and G3 (57%), but rebound by G4 (72%) [p<0.02]. ES fellowship-trained GS (5.1% G1 vs. 53% G4) and AAES membership (25% G1 vs. 58% G4) increase over generations [p<0.0001]. Female representation increases over generations (4% G1 vs. 34% G4) and especially within AAES [p<0.0001]. More teaching surgeons and AAES members are in the Northeast and Midwest than Southeast, West, and Southwest [p<0.0001]. G4 surgeons are more likely GS (72%), ES fellowship graduates (53%), teaching affiliated (57%), and AAES members (58%) than earlier generations [p<0.005].

CONCLUSION: The proportion of high-volume general surgeons was decreasing - until the last decade. This change corresponds with fellowship trained AAES surgeons entering the workforce. AAES displays exemplary female representation within surgery. Placing more fellowship trained AAES surgeons into disparate regions can improve access to specialty care. The AAES can play a leadership role in expanding placement of fellowship trained high-volume surgeons into both academic and community practices.

NOTES

★ 02. DEFINING EFFECTIVE DECISION-MAKING DURING THYROIDECTOMY USING AN INTERNATIONAL EXPERT CONSENSUS

Amin Madani, MD[1], Yusuke Watanabe, MD[1], Quan-Yang Duh, MD[2], Michael C. Singer, MD[3], Daniel T. Ruan, MD[4], Roger Tabah, MD[1], Elliot Mitmaker, MD[1]

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BACKGROUND: Effective intra-operative decision-making is a fundamental component of surgical proficiency. Yet, methods for teaching and assessing decision-making are non-systematic, subjective and prone to error. There is a need for educational curricula to teach expert decision-making and assessment tools to evaluate trainees' ability to avoid intra-operative complications during critical steps of a thyroidectomy. The objective of this study is to define expert thyroid surgeons' thought habits, behaviors and knowledge that contribute to effective decisions during thyroidectomy.

METHOD: Cognitive task analyses (CTA) for thyroidectomy were performed with semi-structured interviews of thyroid surgery experts to elicit critical decisions, distinct maneuvers and situational awareness required for error prevention. Verbal data was transcribed verbatim, coded and categorized according to themes, which were synthesized into CTA statements. Once qualitative data reached saturation, 26 experts were invited to complete an online, iterative and anonymous survey ranking each statement on a 7-point Likert scale in terms of importance. Expert consensus was predefined as Cronbach's $\alpha \geq 0.80$. Once consensus was achieved, the survey was terminated and statements were ranked by mean score (data expressed as mean).

RESULTS: Fifty-eight statements were synthesized from 5 interviews (1-2 hours each) and categorized into 8 sections [preparation (N=8), incision/exposure (N=11), general considerations (N=3), middle thyroid vein (N=1), superior pole (N=5), inferior pole (N=5), posterolateral dissection (N=19), closure (N=6)] and subtasks for the operation. Seventeen (65%) experts from 3 countries participated. Consensus was achieved following 1 voting round (Cronbach's α=0.94). Highest weighted sections included "Superior Pole Dissection" and "Posterolateral Dissection". Highest-rated statements were: "For total thyroidectomy, dissection is started on side of greatest pathology" (6.43), "If thyroid is invading anterior strap muscles, perform en-bloc resection" (6.29), "If several branches of recurrent laryngeal nerve (RLN) become evident, follow most medial/anterior branch (motor branch)" (6.00), "Trace RLN cephalad until its insertion into the larynx while progressively dissecting the thyroid gland" (5.92), and "Avoid ligating/clamping structures before RLN has been identified" (5.77).

CONCLUSION: Despite variability amongst experts, consensus was achieved characterizing fundamental steps in decision-making during thyroidectomy. This cognitive map can serve as a general guide for educators to teach expert decision-making and for evaluating trainee performance.

NOTES

★ 03. GENOME-WIDE ANALYSIS OF DIFFERENTIALLY EXPRESSED MIRNA IN BRAF INHIBITOR RESISTANT AND PARENTAL HUMAN THYROID CANCER CELL LINES

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BACKGROUND: BRAF(V600E) inhibitors provide a novel strategy to treat patients with BRAF(V600E) mutated aggressive thyroid cancers. Early experience with BRAF(V600E) inhibitors indicates that both intrinsic and acquired resistance can emerge after treatment. The process of resistance is heterogeneous, caused by genetic, metabolic, and phenotypic diversity, and poses a significant challenge. Identification of additional mechanisms of resistance is crucial. MicroRNAs are involved in development of resistance to a variety of drugs in other malignancies but have never been studied in BRAF resistant thyroid cancers.

METHODS: To establish BRAF inhibitor (PLX4720) resistant cells, human 8505c anaplastic (ATC) and BCPAP papillary (PTC) thyroid cancer cells were exposed to increasing concentrations of PLX4720 until resistant lines 8505c-R and BCPAP-R were established 7 and 2 months after initial exposure, respectively. We compared the miRNA expression profiles of 8505c and its PLX4720-resistant counterpart (8505c-R) using Illumina deep sequencing. Functional annotation and pathway analyses of the putative and experimentally validated target genes were performed.

RESULTS: The IC50 of 8505c-R and BCPAP-R cell lines were 37 and 13 mM respectively, 3 and 2 fold higher than their corresponding parental cells. Resistant lines also showed marked insensitivity of BRAF downstream effectors to PLX4720, as shown by phosphorylation of MEK1/2 on Ser217/221 and ERK1/2 on T202/Y204. We identified 61 known and 2 novel miRNAs whose expression was significantly altered in 8505c-R. In addition, we identified 14 and 25 miRNAs whose expression levels changed significantly in 8505c and 8505c-R, respectively, after treatment with PLX4720. Illumina miRNA profiling was validated by qRT-PCR for 7 selected miRNAs in 8505c-R and BCPAP-R. Functional annotation and pathway analyses of the putative and experimentally validated target genes of the miRNAs revealed that members of the MAPK and PI3K-AKT pathways were prominent targets of many deregulated miRNAs.

CONCLUSION: We have identified miRNAs that likely play a critical role in the development of resistance to BRAF(V600E) inhibition in thyroid cancer. These newly identified miRNAs could be used as biomarkers of resistance to BRAF(V600E) inhibitors in thyroid cancer. Furthermore, these miRNAs can be explored as potential therapeutic targets in combination with BRAF(V600E) inhibitors to overcome resistance.

NOTES

★ 04. COST DISPARITY BETWEEN HEALTHCARE SYSTEMS – IT'S NOT THE SURGEONS: A COST ANALYSIS OF THYROID CANCER CARE BETWEEN THE U.S. AND FRANCE

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BACKGROUND: As US healthcare costs continue to rise in comparison to other advanced healthcare systems, major efforts in cost reduction have emerged. However, the components of patient care driving this cost disparity, which should be the focus of cost reduction, remain unclear. Here, we analyze costs of papillary thyroid cancer (PTC) management between three endocrine surgery centers in the US and France to identify the components of clinical management reimbursements that contribute to healthcare system cost disparity.

METHODS: A tri-institutional retrospective review was performed on 200 PTC patients (100-US, 100-France) treated by total thyroidectomy (TT) +/- central neck dissection (CND). A cost model was generated incorporating peri-operative management variables (within one year) and their associated reimbursements. Management variables included office visits, laboratory/imaging studies, operative details, pathology, length-of-stay, medications, and radioactive-iodine therapy (RAI). Reimbursement rates were based on 2014 US Medicare and French government fee-schedules.

RESULTS: Patient demographics between the US and French cohorts did not differ. Tumors in the US cohort had higher rates of extrathyroidal extension (31% vs. 16%, p=0.01) and lymph node metastasis (51% vs. 32%, p=0.04), without differences in size. In the US center, more patients underwent TT-CND (92% vs. 35%, p<0.001) without differences in operative time or complications. Notably, median length-of-stay was longer in the French center (3 vs. 1 days, p<0.001). More patients received RAI in the French cohort (93% vs. 66%, p<0.001), with Thyrogen® stimulation being more prevalent in the US (100% vs. 43%, p<0.001). Overall, the median cost of PTC management per patient was higher in the US ($14,069 vs. $4,590, p<0.001). Hospital facility reimbursements accounted for 70% of the disparity, despite shorter length-of-stay. Nuclear medicine accounted for 19%, mostly secondary to Thyrogen® reimbursement despite lower RAI utilization in the US cohort. Surgeon fees accounted for only 6% of the disparity, while office visits, laboratory/imaging studies, anesthesia/pathology fees, and medications comprised the remainder.

CONCLUSION: Costs of PTC management are significantly lower in France compared to the US, primarily driven by hospital facility and nuclear medicine reimbursements. Efforts to reduce health care costs in the US should focus on these components of patient care.

NOTES

★ 05. SAME THYROID CANCER, DIFFERENT NATIONAL PRACTICE GUIDELINES: WHEN DISCORDANT ATA AND NCCN GUIDELINES MAY BE ASSOCIATED WITH COMPROMISED PATIENT OUTCOME

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BACKGROUND: The American Thyroid Association (ATA) and National Comprehensive Cancer Network (NCCN) guidelines have some discordant recommendations for the management of differentiated thyroid cancer (DTC). We hypothesized that adherence to either the 2009 ATA or NCCN surgical guidelines is associated with improved survival, and that practice is most standardized nationally when the two guidelines are concordant.

METHODS: Adult patients undergoing surgery for DTC were included from the National Cancer Database (NCDB). Descriptive statistics were used to characterize DTC patients who were treated according to the 2009 ATA or NCCN guidelines based on histology and risk stratification (2010-2011). Multivariable modeling was used to identify factors associated with non-adherence to guidelines and examine the association of non-adherence to guidelines with overall survival. Survival analysis was examined in patients diagnosed between 1998-2006.

RESULTS: 35622 DTC patients were included; 3730 had low-risk papillary carcinoma (1.1-4.0 cm), 31314 intermediate/high-risk papillary carcinoma, 400 minimally invasive follicular carcinoma, and 178 follicular microcarcinoma. Over the two years, 2174 patients (6%) were not treated in accordance with the ATA or NCCN guidelines; of these, 97.2% had intermediate/high-risk papillary carcinoma, 2.3% low-risk papillary carcinoma, 0.3% minimally invasive follicular carcinoma, and 0.2% follicular microcarcinoma. Factors independently associated with care that was not according to guidelines were discordance between the 2009 ATA and NCCN recommendations, black race, and treatment at non-academic centers (all $p<0.001$). Survival at 14 years was significantly compromised for patients who were not treated according to guidelines compared to those who were treated according to guidelines (68% vs. 77%, respectively, $p<0.0001$). After adjustment, compared to care in accordance with guidelines, care that was not in accordance was associated with compromised survival (HR 1.27, CI 1.03-1.32, $p=0.012$).

CONCLUSIONS: Only a small percentage of patients received surgical care for DTC that is not aligned with national guidelines. However, thyroid cancer care that was not aligned with either guideline was associated with compromised survival. Discordance in recommendations between the two guidelines is associated with reduction in compliant care. This suggests that standardizing national guidelines across professional societies could decrease confusion, improve overall adherence to guidelines, and thereby improve patient outcomes.

NOTES

★ 06. SHOULD SPECIFIC PATIENT CLINICAL CHARACTERISTICS DISCOURAGE ENDOCRINE SURGEONS FROM PERFORMING LAPAROSCOPIC TRANSABDOMINAL ADRENALECTOMY?

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BACKGROUND: Some authors have suggested that the transabdominal laparoscopic adrenalectomy (TLA) should be avoided in obese patients, patients who have had prior abdominal surgery, and in cases of bilateral adrenalectomy. We sought to determine whether TLA in these clinical situations is associated with worse outcomes.

METHODS: Consecutive patients who underwent TLA at a tertiary care center (1/2002-8/2014) were retrospectively reviewed. Length of stay (LOS), conversion to open repair, and postoperative complications were compared between: i) obese (BMI>30 kg/m2) vs. non-obese (BMI≤30 kg/m2) patients, ii) patients with vs. without history of prior abdominal procedures, and iii) patients who underwent a bilateral vs. unilateral adrenalectomy. Mann-Whitney U and Fisher's Exact test were used for statistical analysis.

RESULTS: 365 patients underwent attempted TLA at our institution. The mean age (± standard deviation) was 52.9±15.0 years and 63.3% were females. Mean tumor size was 4.0±2.5 cm. Most common pathological diagnoses were benign cortical adenomas (52.9%), pheochromocytomas (24.7%), and metastatic disease (5.5%). 43% had BMI>30 kg/m2, 45.2% had history of prior abdominal surgery and 5.2% had bilateral adrenalectomy. Postoperative complications were not higher in obese patients, patients with prior abdominal surgeries or patients who underwent bilateral adrenalectomy. Conversion rates were the same in obese vs. non-obese patients (2% vs. 0.6%; p=0.353), patients with or without prior abdominal surgery (0.6% vs. 2.6%; p=0.219), and for unilateral vs. bilateral adrenalectomy (1.7% vs. 0%; p>0.999). Although they only accounted for 22.2% of the cases, the non-endocrine surgeons had 5 of the 6 conversions. Median (interquartile range) LOS was the same in obese vs. non-obese patients [2 days (1-3) vs. 2 days (1-3); p=0.933] and in patients with or without prior abdominal surgery [2 days (1-3) vs. 2 days (1-3); p=0.707]. LOS was longer after bilateral vs. unilateral adrenalectomy [3 days (2-7) vs. 2 days (1-3); p=0.002].

CONCLUSIONS: Obesity, history of prior abdominal surgery, and bilateral adrenalectomy were not associated with higher conversion rates or postoperative complications after TLA. We conclude that these clinical features should not be used to discourage experienced endocrine surgeons from performing TLA.

NOTES

★ 07. FLUORESCENCE DETECTION OF THE PARATHYROID GLAND: REALIZING THE POTENTIAL FOR INTRAOPERATIVE GUIDANCE

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BACKGROUND: The inability to accurately identify parathyroid glands during parathyroidectomy and thyroidectomy is a primary hindrance to patients achieving post-operative normocalcemia. We developed a portable, intraoperative system that identifies parathyroid glands in real-time to avoid inadvertent gland trauma or resection. This tool bypasses the need for pre-administered contrast agents by detecting a near-infrared (NIR) fluorescence signal that is intrinsic to the parathyroid gland and optically distinguishes it from surrounding neck tissues. This study aims to assess the performance of the device across a wide patient demographic.

METHODS: Fluorescence measurements were obtained from 247 parathyroid glands in 132 patients undergoing parathyroidectomy and/or thyroidectomy. Fluorescence intensities of the parathyroid and surrounding neck tissues were measured during surgery. Device accuracy was assessed using histology and visual assessment. Patients were stratified based on disease state, preoperative blood calcium level, age, sex, ethnicity and body-mass index (BMI). Statistical analysis was performed to identify patient factors that significantly affect parathyroid detection.

RESULTS: Parathyroid glands were accurately identified using the fluorescence system in 240/247 (98%) of glands measured. This technique can identify parathyroid glands regardless of disease state, age, gender, ethnicity, BMI and blood calcium levels. Though the high parathyroid fluorescence signal was consistently detected, it varied from 15-300% greater than surrounding tissue fluorescence. Statistical analysis reveals that patient factors account for this variability. Patients presenting with hyperparathyroidism exhibit significantly lower parathyroid signal than patients with benign thyroid disease ($p>0.013$) or hyperthyroidism ($p>0.0085$). Overweight/obese patients show lower parathyroid signal than normal-weight patients ($p>0.0001$). Patients with normal calcium levels between 8.5-10.5 mg/dL exhibit significantly higher signals than patients with high calcium levels ($p>0.0001$). Age, gender, and ethnicity did not affect parathyroid signal variability.

CONCLUSIONS: This NIR fluorescence-based intraoperative technique can detect parathyroid glands in real-time with high accuracy. Its discrimination capacity is not limited by patient demographics or disease state, although certain factors affect signal intensity. The molecular basis for the parathyroid autofluorescence is unknown, but these results indicate the source of the fluorescence is down-regulated in patients with hyperparathyroidism and high blood calcium. The current results demonstrate the widespread application of optical guidance for parathyroid detection.

NOTES

★ 08. PARATHYROIDECTOMY IS UNDERUTILIZED IN PATIENTS WITH TERTIARY HYPERPARATHYROIDISM AFTER RENAL TRANSPLANTATION

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BACKGROUND: Tertiary hyperparathyroidism is reported to occur in 5-10% of patients after renal transplantation. Parathyroidectomy is the only curative treatment. With the introduction of calcimimetics (Cinacalcet), parathyroidectomy can often be delayed or sometimes avoided. The purpose of this study was to determine the utilization of parathyroidectomy in patients with tertiary hyperparathyroidism with the advent of cinacalcet.

METHOD: Between 1/1/2004-6/30/2012, 2,039 underwent renal transplantation at our institution with a minimum of 24 months follow-up and graft survival. Patients with an elevated parathyroid hormone (PTH) level twelve months after successful renal transplantation with normocalcemia or hypercalcemia were defined as having tertiary hyperparathyroidism (THPT). A multivariate logistic regression model was constructed to determine factors associated with having parathyroid surgery. Independent t-tests were used for continuous variables.

RESULTS: Of the 2,039 patients, 689 (34%) were identified to have THPT with normocalcemia or hypercalcemia. Of these 689 patients, the majority were managed by observation alone. 217 (32%) were treated with cinacalcet while only 43 (6%) underwent parathyroidectomy. Patients with higher calcium ($p<0.001$, OR 1.834) and PTH ($p=0.043$, OR 1.001) were more likely to be referred for parathyroidectomy. Importantly, patients who underwent parathyroid surgery had significantly more normal values for calcium (9.0 ± 0.1 vs 9.4 ± 0.02, $p=0.011$) and PTH (82.5 ± 14.9 vs 148.8 ± 5.0, $p<0.001$) on most recent follow up than those who did not. Subtotal parathyroidectomy was the most commonly performed operation, with hyperplasia as the etiology in 84% of cases. Parathyroidectomy had a 93% cure rate, defined as normocalcemia at six month follow-up. The long-term recurrence rate was 12%. Parathyroid surgery also did not correlate with episodes of transplant rejection ($p=0.334$). Subgroup analysis revealed 97 (14%) of the THPT cohort had hypercalcemia, defined as serum calcium ≥ 10mg/dL. Of these, 48 patients (49.5%) were prescribed cinacalcet, and only 3 patients (3%) underwent parathyroid surgery.

CONCLUSION: Tertiary hyperparathyroidism is much more common in patients after successful renal transplantation than previously reported. Parathyroid surgery is associated with a high cure rate and improved outcomes with regard to serum calcium and PTH levels. However, parathyroidectomy appears to be vastly underutilized in this patient population.

NOTES

★ 09. DOES IMPOTENCE IMPROVE AFTER PARATHYROIDECTOMY IN MEN WITH PRIMARY HYPERPARATHYROIDISM?

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BACKGROUND: Male impotence is common in the US. Higher prevalence is associated with advanced age, hypertension, cardiovascular disease, and diabetes. Although primary hyperparathyroidism (PHP) is associated with these comorbidities, it has not been studied as an independent risk factor for impotence even though patients often report improved vigor and well-being after surgery. This study evaluates the rate and resolution of reported impotence among men undergoing parathyroidectomy for sporadic primary hyperparathyroidism.

METHODS: Prospectively collected data were reviewed for all men undergoing initial parathyroid exploration for sporadic PHP between July 2010 and January 2014. A patient-reported review of systems questionnaire was utilized to evaluate pre- and postoperative impotence. Only those with complete data and confirmed operative cure (normocalcemia at ≥ 6 months) were included.

RESULTS: In all, 143 men with PHP and mean age of 59 years (range: 19-88y) were studied. Impotence was reported preoperatively in 13% (19/143) and those patients were older than patients without impotence (70y vs 57y, $p<0.01$). Preoperative symptoms (nephrolithiasis, fatigue, cognitive impairment, musculoskeletal symptoms, reflux) and a concomitant diagnosis of diabetes were not more common among men with resolution. The mean preoperative mean arterial blood pressure was lower in patients with resolution of impotence postoperatively (96 mmHg vs. 107 mmHg, $p=0.014$). Age ($p=0.24$), pre- ($p=0.34$) and post-operative calcium ($p=0.14$), pre- ($p=0.35$) and post-operative PTH ($p=0.81$), and gland weights ($p=0.34$) did not differ with and without resolution of impotence. The percentage decrease in IOPTH was similar in those with and without symptom resolution after surgery (69% vs 73%, $p=0.24$). In this initial pilot study, 13/19 (68%) of PHP patients reported resolution of impotence after parathyroidectomy.

CONCLUSION: Impotence was reported in 13% of males undergoing parathyroidectomy for PHP, which is within the range reported by the general population. Among PHP patients reporting impotence preoperatively, 68% appreciated resolution of impotence after curative parathyroidectomy and resolution was associated with lower preoperative mean arterial blood pressure. This additional potential benefit of successful parathyroid surgery may be discussed with patients before surgery and should be further studied prospectively.

NOTES

★ 10. COSYNTROPIN STIMULATION TESTING ON POSTOPERATIVE DAY 1 ALLOWS FOR SELECTIVE GLUCOCORTICOID REPLACEMENT THERAPY IN PATIENTS UNDERGOING ADRENALECTOMY FOR HYPERCORTISOLISM: RESULTS OF A NOVEL, MULTIDISCIPLINARY-DERIVED INSTITUTIONAL PROTOCOL

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BACKGROUND: Secondary adrenal insufficiency can occur in patients after unilateral adrenalectomy for adrenal-dependent hypercortisolism. Although postoperative glucocorticoid replacement (GR) is routinely given, it is not necessary in all patients. We sought to identify preoperative factors that, in combination with postoperative day (POD) 1 cosyntropin stimulation testing (CST), would predict the need for GR.

METHODS: This is a retrospective review of a prospectively-collected database of patients who underwent unilateral adrenalectomy for hypercortisolism or hyperaldosteronism (controls) from 11/11-9/14. Hypercortisolism was defined as an elevated 24-hour urine cortisol (UFC;≥45 µg/24hrs), late night salivary cortisol (LNSC;≥3 nmol/L), and/or 1 mg dexamethasone suppression test cortisol (DST;>1.8 µg/dl). We utilized a standard CST protocol: (1)POD1 morning basal cortisol and adrenocorticotrophic hormone (ACTH); (2)250 mcg intravenous cosyntropin; (3)60 minute cortisol level. Hydrocortisone was started for any clinical evidence of adrenal insufficiency, basal cortisol ≤5, or stimulated cortisol <18.

RESULTS: Thirty-one patients, including 9 controls, were studied. All controls had normal POD1 CST. Of 22 patients with hypercortisolism, 11(50%) required GR based on POD1 CST. When compared to the 11 patients with a normal POD1 CST, these patients were younger (median age, 51 vs. 62 years;p=0.017) and had higher median body mass index (kg/m2;31.4 vs. 29.2;p=0.017). There were no differences between the two groups by gender, presence of hypertension, diabetes, tumor size, or preoperative ACTH, UFC, LNSC, or post-DST cortisol levels. The 11 patients that required GR had lower POD1 median basal cortisol (2.2 vs. 19.8;p=.0014), ACTH (12.7 vs. 25.9;p=.0029), and stimulated cortisol levels (10.4 vs. 26.6;p<.001) than those that did not. There were no differences in POD1 CST levels between the patients that did not require GR and the controls. At a median follow-up of 5.0 months (range 0.5-30.8), 2(18%) patients discharged on GR no longer require GR.

CONCLUSIONS: No preoperative biochemical characteristics were predictive of secondary adrenal insufficiency following unilateral adrenalectomy for hypercortisolism, although patients requiring glucocorticoid replacement were younger and had a higher BMI. Use of this novel institutional protocol for postoperative dynamic adrenal function testing allowed immediate identification of patients requiring glucocorticoid replacement and spared 50% of patients from unnecessary glucocorticoid replacement.

NOTES

★ 11. DNA COPY AMPLIFICATION AND OVEREXPRESSION OF KCC4 IN ADRENOCORTICAL CARCINOMA.

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BACKGROUND: Adrenocortical carcinoma (ACC) is an aggressive endocrine malignancy with limited therapeutic options. The contribution of DNA copy number variations (CNVs) to ACC malignancy remains incompletely understood. Using next generation sequencing (NSG) techniques with copy number analysis, DNA amplification of chromosome 5p15, including the KCC4 (SLC12A7) gene, was identified as one of the most recurrently amplified loci in ACC. Increased expression of KCC4, a KCL co-transporter, is associated with tumor aggressiveness in various cancer types, but has not been studied in ACC.

METHODS: A total of 55 cases of clinically well characterized ACCs were recruited for this study. Coverage depth analysis of NGS reads between tumor and matched normal DNA was used to predict CNVs in an exploratory cohort of 19 samples. Confirmatory copy number analysis was performed on an expanded cohort of 27 samples using the TaqMan Copy Number Assays. Copy calls were analyzed using CopyCaller software v2.0. Gene expression analysis of KCC4 was performed on 32 samples of ACC and 11 samples of normal adrenal tissue using real-time quantitative PCR methods. Statistical analysis was performed using SPSS software v19.

RESULTS: NGS analysis demonstrated DNA copy amplification of the KCC4 gene in 13 of 19 (68%) ACC samples. Using the TaqMan Copy Number Assays on 27 ACC samples, 18 samples (67%) demonstrated copy gains, with two samples showing 8 or more copies. Gene expression analysis showed increased KCC4 expression in ACCs compared to normal adrenal tissue ($p<0.01$), which was associated with DNA copy gains ($p<0.01$). Fifteen of 32 ACC samples (47%) demonstrated greater than 2-fold increase in KCC4 expression. Among the various clinical parameters tested (patient age, gender, ENSAT stage, tumor size, metastasis, survival, and hormone status), non-functional ACCs showed a trend towards an association to tumors with KCC4 overexpression ($p=0.06$).

CONCLUSION: Amplification of chromosome 5p15, including the KCC4 gene, is highly recurrent in ACCs. Overexpression of KCC4, potentially facilitated by gene amplification, may play a role in the aggressive behavior of ACCs. These findings also suggest KCC4 as a potential therapeutic target in a subset ACCs, a disease with limited treatment options currently.

NOTES

★ 12. DIAGNOSTIC UTILITY OF ADRENAL VENOUS SAMPLING DATA FOR PRIMARY ALDOSTERONISM DESPITE FAILED RIGHT-SIDED ADRENAL VEIN CANNULATION

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BACKGROUND: Accurate lateralization by adrenal venous sampling (AVS) in primary aldosteronism traditionally depends on successful bilateral adrenal vein (AV) cannulation. Unfortunately, technical inability to cannulate the right adrenal vein is not uncommon even in experienced hands; furthermore, this scenario is often interpreted as a failed study with no additional value regardless of data obtained from the left AV. We challenged this notion by examining whether unilateral left-sided AVS data could accurately predict lateralization in a significant proportion of patients.

METHODS: All patients with primary aldosteronism undergoing AVS from 2009-2014 at two tertiary-care university hospitals were reviewed retrospectively. All studies employed ACTH stimulation. Patients were selected based on definitive confirmation of unilateral disease (resolution of postoperative plasma aldosterone level after adrenalectomy) or bilateral disease (conclusive nonlateralizing AVS results). For this study's purposes, data from the right AV were excluded. Due to site-specific differences in laboratory reference ranges, the calculated variable studied was the aldosterone:cortisol ratio of the left AV over that of the inferior vena cava (LAV/IVC). Using the first institution's data, scatterplot analysis identified high and low LAV/IVC cutoff values that could accurately predict unilateral disease (either on the "dominant" or "suppressed" side). These cutoffs were then validated with the second institution's dataset.

RESULTS: Thirty-six AVS studies were evaluated in the first institution, and grouped into three diagnostic categories: unilateral-left (n=14), unilateral-right (n=12), and bilateral (n=10). Scatterplot analysis of LAV/IVC values per group revealed that a high cutoff of ≥5.5 and a low cutoff of ≤0.5 accurately predicted left- and right-sided disease, respectively (100% PPV), in 20/36 (56%) patients. These cutoffs were prospectively tested in 26 AVS studies from the second institution, with confirmation of their predictive accuracy (100% PPV). Clinical features were similar for patients in both institutions. Overall, the "5.5-0.5 criteria" salvaged the ability of AVS to accurately predict lateralization in 50% of cases despite the absence of right AV data.

CONCLUSIONS: Even in the setting of failed right AV cannulation, one can still accurately predict unilateral disease in many patients undergoing AVS. A "failed" AVS study may potentially be of greater predictive utility than traditionally believed.

NOTES

★ 13. SELECTIVE STRATEGY FOR INTENSIVE MONITORING AFTER PHEOCHROMOCYTOMA RESECTION

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BACKGROUND: Guidelines recommend 24-48h of continuous monitoring after resection of pheochromocytoma to diagnose and treat postoperative hypertension, hypotension and hypoglycemia. However, many patients do not experience these complications and do not benefit from resource-intensive prolonged monitoring. The objective of this study is to identify preoperative factors associated with prolonged postoperative hemodynamic instability after resection of pheochromocytoma and estimate the cost impact of selective compared to routine intensive monitoring for lower-risk patients.

METHODS: Medical records of patients undergoing adrenalectomy for pheochromocytoma during a 10-year period were reviewed. Prolonged hemodynamic instability (HDI) was defined as systolic BP>200 or <90 requiring medical therapy following 6h of continuous monitoring. Preoperative and intraoperative variables were compared between patients with and without prolonged HDI. Cost saving for a selective strategy was calculated by estimating the cost of prolonging ICU monitoring of patients who were stable after 6h of monitoring. Data expressed as n(%) or mean(SD).

RESULTS: Twenty-eight patients undergoing adrenalectomy for pheochromocytoma were identified. Postoperative data was missing in four patients, leaving 24 patients for analysis (age 48(17)y, 16(67%) female; tumour size 4.6(2.6)cm; 2(8%) bilateral; 19(79%) laparoscopic; 4(17%) incidentaloma). 22(92%) patients were monitored in the ICU(n=13) or PACU(n=9) for >6hours (average 37.8(31.4)hours), with 10(42%) having prolonged HDI due to hypotension(n=6), tachycardia(n=3), bradycardia(n=1) and/or hypoglycaemia(n=2). There was no difference in age, sex or tumour size in patients developing postoperative HDI. Higher incidence of HDI was associated with elevated preoperative glucose (8.2(4.8) vs 5.4(1.9)mmol/L, p<.05) and the resection of another organ (3/3 (100%) vs 7/21 (33%), p<.05) with trends for higher HDI with alpha versus alpha+beta blockade (4/5 (80%) vs 6/18 (33%)) and for bilateral versus unilateral adrenalectomy (2/2 (100%) vs 8/22 (36%)). Avoidance of planned postoperative monitoring in the 14(58%) patients without prolonged HDI would have reduced estimated costs by 38862.08CAD.

CONCLUSION: Fewer than half of patients undergoing pheochromocytoma resection benefit from prolonged hemodynamic monitoring. Prolonged postoperative hemodynamic instability is less likely in patients with normal preoperative glucose in whom complex surgery is not required. After 6 hours of postoperative stability, selective rather than routine use of subsequent monitoring may be an efficient strategy in lower-risk patients.

NOTES

★ 14. PROSPECTIVE EVALUATION AND TREATMENT OF FAMILIAL CARCINOID SMALL INTESTINE NEUROENDOCRINE TUMORS (SI-NETS)

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BACKGROUND: Carcinoid neoplasm of the small intestine is the most common gastrointestinal neuroendocrine tumor. Unfortunately, these tumors are often diagnosed at advanced stages with regional lymph node involvement and liver metastasis. Prior retrospective studies indicate that this pathology may occur at an increased incidence in patients with a positive family history for carcinoid small intestine neuroendocrine tumors (SI-NETs). The aim of this study is to prospectively screen such families to elucidate the benefits of early detection and surgical intervention.

METHODS: A single-center prospective trial was conducted from 2008 to 2014 that evaluated patients with two or more blood relatives with carcinoid SI-NETs. Patients included did not have a known familial neuroendocrine tumor syndrome (e.g. MEN1, VHL, NF, etc.). All eligible patients were screened with urine and serum biochemistries, computed tomography (CT) scan, capsule endoscopy, and 18-fluorodopa PET/CT scanning. Surgical intervention was elected in patients found to have at least one positive diagnostic study. The operation performed consisted of a mini-laparotomy for small bowel resection of primary tumors with 5 cm grossly negative margins, mesenteric lymph node dissection and intra-operative ultrasound of the liver.

RESULTS: A total of twenty-nine patients from 14 families had occult asymptomatic carcinoid SI-NETs (15 female, 14 male), with a median age at operation of 57 years (range, 43-82 years). Twenty-four of the twenty nine patients (83%) had multifocal disease found in the distal jejunum or ileum. On average, 73.1 cm (range, 13-195 cm) of bowel was resected in one segment. Tumor size averaged 9.3±5.6 mm. On final pathology, most tumors (97%) were well differentiated. Two patients were found to have stage IV disease at operation. All stage I-IIIB patients who had R0 resections have remained disease free, with a mean follow-up of 40 months.

CONCLUSION: In some families, there appears to be up to a 50% risk of developing carcinoid SI-NETs based on a genetic predisposition. These tumors are often asymptomatic and can be diagnosed with aggressive screening. With early detection, there may be a window of opportunity for surgery to change the natural history of this disease and even prove to be curative.

NOTES

★ 15. RESULTS OF LIVER-DIRECTED SURGERY IN NEUROENDOCRINE METASTASES: SUPPORT FOR USE OF PARENCHYMAL-SPARING DEBULKING PROCEDURES

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INTRODUCTION: Pancreatic (PNET) and small bowel neuroendocrine tumors (SBNET) frequently metastasize to the liver. Surgical debulking offers symptomatic relief and improved survival, and hepatic resection is advocated in select cases. However, recurrence rates >90%, mortality, frequent bilobar disease, and loss of functional liver tissue raise questions about the optimal management of NET metastases. Parenchyma-sparing debulking (PSD) procedures (ablation, enucleation, wedge resections) may offer similar biochemical and survival improvements as resection, while minimizing morbidity and preserving functional liver tissue.

METHODS: Clinicopathologic variables from 217 patients with primary and/or metastatic SBNETs or PNETs who were managed surgically at one institution were collected. Liver-directed surgery (LDS) was carried out when significant debulking was feasible, aiming for >70% reduction of tumor burden. Survival statistics were assessed using the Kaplan-Meier method.

RESULTS: One hundred PNET and SBNET patients underwent LDS, 92 of whom had their primaries or recurrences resected at the same procedure. Sixty had ablation plus wedge resections/enucleation (WRE), 21 WRE only, 12 ablation only, 5 hepatectomy/segmentectomy (H/S) and ablation, and 2 H/S only. The mean number of lesions treated by PSD was 7.0 (range 1-36). There were no 30-day operative mortalities. Of 92 PNET patients, 28 had liver metastases and LDS, while 6 with hepatic metastases did not (usually due to diffuse disease). PNET patients having LDS had a median overall survival (OS) of 90 months (OS of M1 pts. in SEER 24 months). Of 125 patients with SBNET primaries, 92 had liver metastases, and 72 underwent LDS. Median OS was 109 months (OS of M1 patients in SEER 56 months). Using pancreastatin as a marker, 75% (47/62) had biochemical improvement after LDS.

CONCLUSION: The optimal approach to surgical debulking of metastatic NETs is in evolution. Hepatic resection improves survival, but disease recurrence is nearly universal. PSD procedures reduce the loss of functional liver tissue, can treat bilobar disease, have low morbidity, and the primary can be resected simultaneously in most cases. In this series, patients with SBNET and PNET hepatic metastases undergoing LDS (mostly PSDs) had prolonged OS compared to historical controls with M1 disease, with minimal morbidity and no mortality.

NOTES

★ 16. SURGICAL RESECTION OF PRIMARY TUMOR SITE IS ASSOCIATED WITH IMPROVED SURVIVAL IN METASTATIC NON-FUNCTIONING PANCREATIC NEUROENDOCRINE TUMORS

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BACKGROUND: Non-functioning pancreatic neuroendocrine tumors (NFpNET) present with distant metastases in up to 50% of patients. It is unknown whether removal of the primary tumor in patients with NFpNET and distant metastases is beneficial.

METHODS: We used the Surveillance, Epidemiology and End Results (SEER) database to identify patients with NFpNET and distant metastases. The primary outcome measure in this study was overall survival.

RESULTS: We identified 892 patients with metastatic NFpNET and survival data. 350 (39%) patients had Grade I, 199 (22%) Grade II and 343 (38%) Grade III tumors. 303 (34%) patients had surgical removal of their primary tumor, of which 243 (80%) were grade I or II. 83 (29%) patients had concurrent resection of distant metastases. Patients diagnosed after 2003 (n=629, 71%) were more likely to undergo an operation than those diagnosed earlier (p=0.001). Patients who had an operation were younger (p<0.0001), had lower grade tumors (p<0.0001), lymph node metastases (p<0.0001) and primary tumor sites in the body/tail (p<0.0001) compared to patients who did not have an operation. Median survival of patients undergoing surgery was 65 months versus 10 months for those without surgery (p<0.0001). On univariate analysis, lower Grade tumors (I/II, p<0.0001), Age ≤70 (p<0.0001), year of diagnosis >2003 (p<0.0001), primary site in the body/tail (p<0.0001), no lymph node metastases (p=0.013) and surgical resection of the primary site (p<0.0001) were associated with improved survival. Multivariable analysis showed that lower tumor Grade (p<0.0001), younger age (p<0.0001), diagnosis after 2003 (p=0.0003), tumor site in the body/tail (p=0.009) and surgical resection of the primary tumor site (p<0.0001) were significantly associated with improved survival of patients with NFpNET and distant metastases.

CONCLUSIONS: This study suggests that surgical removal of primary NFpNET is an independent predictor of survival in patients with distant metastases and should therefore be considered in this patient population.

NOTES

★ 17. CONTINUOUS INFUSION OF OCTREOTIDE DOES NOT PREVENT INTRAOPERATIVE CARCINOID CRISES

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BACKGROUND: Surgery and anesthesia in carcinoid patients can provoke carcinoid crises, which can have serious sequelae, including death. Prophylactic octreotide is recommended to prevent crises. Recommended prophylaxis regimens vary from octreotide LAR to pre-operative octreotide bolus to continuous octreotide infusion; however, efficacy data are lacking. We have previously shown that crises correlated with major complications and that octreotide LAR and preoperative octreotide bolus failed to prevent crises. This study examines the impact of continuous octreotide infusion.

METHODS: 127 patients (71% with liver metastases, 74% with carcinoid syndrome) who underwent 150 operations with continuous octreotide infusions were enrolled in this prospective case series. Our main outcome measures were the occurrence of intraoperative carcinoid crises and post-operative complications.

RESULTS: Crises occurred at a rate of 30% as compared to 24% in our previous series which examined the impact of preoperative octreotide bolus. Crises were significantly associated with the presence of hepatic metastases (p=0.02) or history of carcinoid syndrome (p=0.006), though neither was required for crises. Prompt vasopressor treatment shortened the mean duration of hypotension to 8.7 minutes, compared with 19 minutes in our prior series. Crises no longer correlated with major complications (p=0.481) unless hypotension persisted for greater than 10 minutes (p=0.011).

CONCLUSIONS: Octreotide infusions do not prevent intraoperative crises. Patients without liver metastases or carcinoid syndrome can have intraoperative crises. Post-operative complications can be decreased by reducing the duration of crises. Further study is needed to determine how best to shorten hemodynamic instability during crises.

NOTES

★ 18. RESECTION VERSUS EXPECTANT MANAGEMENT OF SMALL INCIDENTALLY DISCOVERED NON-FUNCTIONAL PANCREATIC NEUROENDOCRINE TUMORS (PNETS)

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BACKGROUND: Sporadic, non-functional PNETs are diagnosed with increasing frequency due to widespread use of cross-sectional imaging. Unclear is whether all lesions must be managed surgically. Surgical resection is accompanied by morbidity. Surveillance may offer selected patients an advantage. This study seeks to compare risk of progression or recurrence between patients treated surgically versus those treated expectantly.

METHOD: We performed a retrospective cohort study of PNET patients seen at our institution. Patients 18 years or older, with sporadic non-functional PNETs, with 12 or more months of follow-up were reviewed. Kaplan-Meier analysis of outcomes was performed.

RESULTS: Between 1999-2014, 35 patients with an incidentally discovered non-functional PNET were identified that fit our criteria (median age: 61 years, 49% men, 40% African-American, and 26% Latino). Twenty underwent surgery and 15 were followed with serial imaging. Decision for surgery versus observation was based on tumor size, patient preference, and co-morbidities. In the surgery group, 8 had PNETs < 2 cm while 12 had PNETs ≥ 2 cm. In the serial imaging group 10 had PNETs < 2 cm while 5 had PNETs ≥ 2 cm. Patients were followed for a median of 30.2 months. Overall, no difference in progression/recurrence (logrank p = 0.8442), distant metastasis (logrank p = 0.4048), or mortality (log rank p = 0.4292) was observed in patients surgically treated as compared with patients whose PNETs were managed non-operatively. When treatment groups were stratified by size, small PNETs (< 2cm) in both the surgical and non-surgical groups demonstrated no evidence of progression, recurrence or metastasis with a median follow-up of 27.8 months. Large PNETs (≥ 2 cm) managed non-operatively were associated with an increased rate of metastatic disease compared to large surgically managed PNETs (60% v. 16.7% logrank p=0.0386). All cause morbidity in the surgery group was 35% with pancreatic pseudocyst the most common.

CONCLUSION: Individuals with incidentally discovered non-functional PNETs < 2 cm in size can be safely observed with serial imaging. Lesions are unlikely to change in size, metastasize to distant locations, or increase mortality. Patients with PNETs ≥ 2 cm should be considered for surgical resection.

NOTES

★ 19. CHARACTERIZING THE ACOUSTIC HALLMARKS OF UNILATERAL VOCAL FOLD PARALYSIS ON A MOBILE DEVICE

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BACKGROUND: Unilateral vocal fold paralysis is a complication of thyroid surgery that can cause significant morbidity especially to professional voice users such as business people, teachers and health care professionals who depend on their ability to communicate effectively. Although it can be clear from listening to the voice after surgery that an injury to the recurrent laryngeal nerve has occurred, an injury cannot currently be definitively confirmed or excluded without performing laryngoscopy. Since many surgeons performing thyroid surgery do not have easy access to laryngoscopy, an alternative would be a useful clinical tool. Our objective was to understand what acoustic parameters change when a patient suffers unilateral vocal fold paralysis (UVFP). We hypothesise that it may be possible for acoustic voice analysis to become an alternative method of evaluating patients for UVFP following thyroid surgery.

METHODS: Data were collected from 22 patients with UVFP and 50 healthy volunteers. Each research subject underwent supervised recordings in a quiet room using an App validated for clinical voice analysis running on a fourth generation Apple iPod touch. Each subject recorded the vowel /a/ to measure the fundamental frequency (F0) (the rate at which the vocal folds vibrate), jitter (variation in the frequency of vocal fold vibration or pitch of the voice over time), shimmer (variation in the amplitude of the voice over time) and noise-to-harmonic ratio (NHR). A reading of the phonetically balanced 'Rainbow Passage' was used to measure each subject's pitch range.

RESULTS: Patients with ULVFP demonstrated significant increases in their jitter, shimmer, and noise to harmonic ratio ($p<0.01$) when compared to healthy volunteers. We did not, however, detect significant changes in pitch range or fundamental frequency associated with ULVFP.

DISCUSSION: Unilateral vocal fold paralysis causes statistically significant changes in specific acoustic parameters. The measurement of peri-operative changes in a patient's jitter, shimmer and noise to harmonic ratio could potentially be used to screen patients for ULVFP. Further research is required to assess the potential of acoustic voice analysis to replace laryngoscopy as a screening tool for ULVFP in some centers.

NOTES

★ 20. IMPACT OF MALIGNANCY RATES ON COST-EFFECTIVENESS OF GENE EXPRESSION CLASSIFIER TESTING FOR INDETERMINATE THYROID NODULES

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BACKGROUND: The value of gene expression classifier (GEC) testing for cytologically indeterminate thyroid nodules lies in its negative predictive value, which is a function of the prevalence of malignancy. We studied the impact of the underlying malignancy rate of indeterminate thyroid nodules on the cost-effectiveness of routine GEC testing.

METHODS: A Markov discrete time state transition model was constructed to compare conventional management versus routine GEC testing for indeterminate thyroid nodules (Bethesda categories 3 and 4). The medical records of patients presenting with indeterminate thyroid nodules at a single institution during 2012-2013 were reviewed to assess the underlying malignancy rate and performance characteristics of GEC testing. The base cost of GEC testing was $3,200. Additional model probabilities, utilities, and costs were determined via literature review and Healthcare Cost and Utilization Project data. Sensitivity analyses were performed to assess areas of uncertainty. A threshold of $100,000/QALY was considered cost-effective.

RESULTS: Review of 145 cytologically indeterminate thyroid nodules revealed a malignancy rate of 25.2%. The sensitivity of GEC testing was 96%, and the specificity was 60%. Incorporated into the Markov model, conventional management cost $9898 per patient and yielded 22.15 quality adjusted life years (QALYs). Routine GEC testing cost an additional $1154 per patient and yielded an additional 0.01 QALYs. The incremental cost-effectiveness of routine GEC testing was $115,400/QALY, making it not cost-effective. Routine GEC testing became cost-effective when the malignancy rate of indeterminate nodules fell below 14.1%. At malignancy rates of 15, 25, and 35%, routine GEC testing became cost-effective when the cost of GEC testing fell below $3,175, $2,899, or $2,623, respectively. Probabilistic sensitivity analysis revealed that routine GEC testing was not cost-effective in 64% of 10,000 iterations.

CONCLUSION: The cost-effectiveness of routine GEC testing varies inversely with the malignancy rate of indeterminate nodules. Given that malignancy rates may vary across practice settings, individual institutions should assess the value of routine GEC testing in the context of their institution-specific malignancy rates.

NOTES

★ 21. NOVEL HSP90 INHIBITORS EFFECTIVELY TARGET THYROID CANCER STEM CELL FUNCTION PREVENTING EPITHELIAL-MESENCHYMAL TRANSITION AND MIGRATION.

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BACKGROUND: Thyroid cancer stem cells (CSCs) have been identified by CD44 and aldehyde dehydrogenase(ALDH) expression and contribute to tumor growth and aggressiveness via their differentiation and epithelial-mesenchymal transition (EMT). Heat shock protein 90(HSP90) is a molecular chaperone regulating multiple tumorigenic pathways key to thyroid cancer growth and invasion(including MAPK and PI3K/Akt). Safer HSP90 inhibitors targeting its C-terminus(KU711) or disrupting Cdc37-HSP90 complexing(WGA-TA; 4,19,27-triacetyl withalongolide A) have been tested preclinically. We hypothesize that novel HSP90 inhibitors (KU711,WGA-TA) and 17-AAG can effectively target thyroid CSC function in vitro and prevent epithelial-mesenchymal(EMT) transition and migration.

METHOD: Validated papillary(TPC1),follicular(WRO and FTC238) and anaplastic(ACT1) human thyroid cancer cell lines in culture were treated with the three HSP90 inhibitors at varying concentrations. CSCs were quantified by flow cytometry(FC) for CD44 expression and ALDEFLOR assay. Cellular proteins were analyzed by FC and Western blot(WB) for thyroid CSC markers,PI3K/Akt,MAPK and EMT pathway proteins. Migration assays were performed using Boyden chambers.

RESULTS: Both WGA-TA and 17-AAG induced HSP70 compensation on WB in all cell lines(>1,000 fold increase,$p<0.001$ vs. controls and KU711). Only WGA-TA significantly reduced HSF1 levels in follicular and anaplastic cells ($p<0.01$) and degraded Cdc37/HSP90 complexing in all cell lines by 60-70% vs. controls($p<0.02$). HSP70 induction was not observed with KU711. Expression of HSP90 clients in the MAPK and PI3K/Akt pathways (βcatenin, Braf, Akt and phospho-Akt) were significantly inhibited by WGA-TA treatment(50-80%,50-90%,>80%,and >90%,respectively) compared to controls (all $p<0.02$) and to KU711 and 17-AAG treatment($p<0.05$ for each). All three inhibitors significantly reduced CD44 expression in all cell lines(25-60%,$p<0.05$ vs controls) and reduced ALDEFLOR activity by 40%($p<0.05$) in ACT1 and >90%($p<0.01$) in FTC238. E-cadherin(EMT marker) was increased in ACT1 by 250% with KU711 and 1000% with WGA-TA($p<0.01$ vs controls) while 17-AAG showed no effect. Finally cell migration was reduced by 30%,80%,and 20% for KU711,WGA-TA,and 17-AAG($p<0.05$,$p<0.01$,$p<0.05$ respectively vs controls).

CONCLUSION: KU711 and WGA-TA are novel HSP90 inhibitors that target CSC function and inhibit EMT and cell-migration in both differentiated and anaplastic thyroid cancers, warranting further translational evaluation. This effect may in part be due to HSP90-client protein modulation of MAPK and PI3K/Akt proteins regulating growth and migration in these cells.

NOTES

★ 22. PREDICTORS OF CENTRAL LYMPH NODE METASTASIS IN PAPILLARY THYROID CARCINOMA: A NATIONAL CANCER DATA BASE (NCDB) STUDY

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BACKGROUND: There is no consensus regarding prophylactic central lymph node dissection (CLND) in papillary thyroid carcinoma (PTC). A potential survival benefit and a decreased rate of recurrence after CLND is balanced against increased rate of surgical complications. There is an interest in identifying patients with level VI central lymph node metastasis (CLNM, pN1A) who will benefit the most from CLND. Identification of risk factors and predictors of CLNM in PTC will assist surgeons in performing selective CLND. We present a retrospective analysis from the largest thyroid cancer database in US to identify the predictors of CLNM.

METHOD: The NCDB was queried from 1998 to 2011 for all patients with PTC. All patients with preoperative clinically negative cervical lymph nodes (cN0) were included. Patients with distant metastasis were excluded. All patients underwent near, sub or total thyroidectomy with or without regional/central lymph node dissection. Univariate and multivariable logistic regressions were performed on clinically relevant variables including age, gender, race, and tumor size for their predictive capability for pathological CLNM (pN1A). Data was analyzed using SAS 9.4 (SAS Inc., Cary, NC).

RESULTS: There were 39,562 patients with PTC with cN0 and no distant metastases. 61% underwent regional/central lymph node surgery. Patients with missing or unknown CLND data were excluded. Older age (>45 years), African-Americans, smaller tumor (≤1 cm), patients without insurance, and treatment at community hospitals were less likely to have CLND (all $p<0.0001$). In patients undergoing CLND, 15.6% had CLNM involvement on final pathology. On multivariable logistic regression, age ≤45 years, Asian race, males and tumors size >2 cm were statistically significant as predictors of CLNM after adjusting for patient selection bias using propensity score. Overall survival (OS) at 10 years were 92.1% and 88.9% years for pN0 and pN1A patients respectively ($p=0.0021$).

CONCLUSION: Age ≤45 years, Asian race, males and >2 cm tumors can predict presence of CLNM in PTC. Consideration of these predictive factors should allow surgeons to adopt a more selective approach to CLND in PTC.

NOTES

23. INTRAOPERATIVE HIGH-DOSE CALCIUM STIMULATION TEST IN PATIENTS WITH SPORADIC MEDULLARY THYROID CARCINOMA IS HIGHLY ACCURATE IN PREDICTING LATERAL NECK METASTASES

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BACKGROUND. In recent years intraoperative calcitonin measurement (IO-CT) in patients with medullary thyroid carcinoma (MTC) has been investigated as an adjunct to predict the completeness of the surgical resection after total thyroidectomy plus central neck dissection (TT-CND) and the need for lateral neck dissection. In spite of initial enthusiasm, recent evidences suggested that IO-CT is not highly accurate in predicting cure, probably because of individual variation in the decrease of calcitonin levels. The aim of this study was to evaluate whether an intraoperative high-dose calcium stimulation test (IO-CST) after TT-CND is useful to predict lateral neck involvement.

METHOD. Ten consecutive consenting patients who underwent primary surgery for MTC between November 2013 and September 2014 were included. High-dose (25 mg/kg) calcium gluconate was administered after TT-CND was accomplished and calcitonin was measured 2, 3, 5, 10 and 15 minutes after calcium gluconate administration. The results of IO-CT after IO-CST were correlated with the pathological report and the oncologic outcome.

RESULTS. There were 2 males and 8 females with a mean age of 50.1±21.8 years. Seven patients showed no lymph node metastases and the remaining 3 patients showed central and lateral neck metastases. At a mean follow up of 7.2±2.7 months, one patient showed distant metastases (lung) and one slightly elevated calcitonin levels, but no evidence of disease. The remaining eight patients were biochemically cured. After calcium gluconate administration serum calcitonin levels significantly raised in all the 3 patients with lateral neck metastases, while remained unchanged or decreased in patients without. Percent variation of serum calcitonin levels after IO-CST was +97.0±78.2% in patients with lateral neck metastases and -2±6.6% in patients without ($P<0.01$).

CONCLUSION. Despite the limited number of patients included in the present series, IO-CT monitoring after IO-CST in patients with sporadic MTC demonstrated to be highly accurate in predicting lateral neck nodes involvement and could help to modulate the extension of the lymph node dissection. If confirmed by larger studies, the present results could represent an impulse toward the development of a quick calcitonin assay.

NOTES

24. BLOOD MEASUREMENT OF NEUROENDOCRINE TUMOR GENE TRANSCRIPTS DEFINES THE EFFECTIVENESS OF SURGICAL RESECTION AND ABLATION STRATEGIES

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BACKGROUND: Surgery is the only curative treatment for gastroenteropancreatic neuroendocrine tumors (GEP-NET). Assurance of a complete resection is difficult relying on surgical skill, pathological assessment of margins and imaging. Post-resection imagery, however, is difficult to interpret, and relatively insensitive particularly for low volume disease. Current biomarkers such a CgA are monoanalytes and insensitive and non-specific compared to multianalyte assessment. We hypothesized that a multianalyte neuroendocrine blood gene transcript algorithmic analysis assay (MAAA) in comparison to chromogranin A (CgA) could effectively define the extent of tumor cytoreduction and measure therapeutic efficacy by identifying residual disease.

METHODS: GEP-NET (n=20) [M:F 9:11; median age: 58 years, small intestine: n=9, pancreas n=6, stomach n=1, appendix n=2, rectum n=1, gallbladder n=1; G1=16, G2=3, G3=1] were evaluated. Surgery included R0 resection with no post-operative evidence of disease (n=15) on imaging. Ablation included bland (n=3) and radiofrequency (n=2) with no evidence of residual disease on imaging (n=4). We used a sensitive and specific (95 and 98% respectively) NET 51 gene MAAA to detect disease. Transcripts and CgA were evaluated preoperatively and 1 month post-treatment. Transcript measurement (Disease Activity Risk Score: 0-100%) was by qRT-PCR and CgA by ELISA. Non-parametric paired testing comparisons of MAAA and CgA were performed.

RESULTS: Resection significantly reduced NETest (Pre-surgery activity risk score: 80±5% vs post-surgery: 29%±5, $p<0.0001$). CgA decrease (14.3±1.6U/L to 12.2±1.7U/L) was not significant. Four (27%) surgical patients exhibited normal scores and were disease free at 6 months. Four of the remainder (73% with elevated NETest at 1 month) developed positive imaging results. Ablation significantly reduced NETest (82±3% to 41%±6, $p<0.0001$). CgA decrease (21.4±5.5U/L to 18.4±10.1U/L) was not significant. All five ablated patients (100%) exhibited detectable disease at 6 months post-treatment.

CONCLUSION: Peripheral blood gene transcript analysis accurately defined surgical cytoreduction and ablation. Despite R0-resection, in 73% gene transcript evidence of residual tumor was positive. Within 6 months, 36% were image-positive. In the ablated group, 100% were transcript- and image-positive. The use of blood-based NET transcript measurement will facilitate delineation of complete surgical resection/ablation and enable early identification of residual/recurrent disease.

NOTES

25. HDL NANOPARTICLES: A NOVEL THERAPEUTIC STRATEGY FOR ADRENOCORTICAL CARCINOMAS

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BACKGROUND: Chemotherapeutic strategies for adrenocortical carcinoma (ACC) involve mitotane(M) alone or with etoposide(E), doxorubicin(D),and cisplatin(P) (Italian protocol) and carry significant toxicities. High-density lipoprotein nanoparticles (sHDL) have been used safely in clinical trials in over 1000 cardiac patients with emerging evidence that they also target cancer cells via the scavenger receptor B1 (SR-B1) on the cell surface. ACC cells overexpress SR-B1 many-fold higher than any other cell. We hypothesize sHDL will synergize with E,D,P,and M to achieve enhanced anticancer effects at lower (less toxic) drug levels.

METHODS: Combinations of sHDL with either M, E, D,or P at 8 different concentrations of each were tested in two ACC cell lines(H295R and SW13). Antiproliferative efficacy was evaluated by Cell Titer-Glo assay and confirmed by clonigenic assay. Synergy or additive effect was analyzed by the Chou-Talalay equation to determine the combination index(CI) for each pairing. Cortisol levels were measured from the culture media. Effect on steroidogenesis was measured by RTPCR. Induction of apoptosis and mitochondrial membrane potential (MP) was evaluated by flow cytometry (FC) and confirmed by western blot (WB) analysis.

RESULTS: CI for sHDL and either E,D,P or M demonstrated true synergy (CI<1) for antiproliferation and induction of apoptosis (CI varied from 0.294 for M/HDL to 0.979 for cisplatin/HDL). HDL alone or in combination with E,D,P or M was able to reduce cortisol production by 70-90% compared to E,D, or P alone or controls($p<0.01$). Evaluation of the steroidogenesis pathway indicated significant inhibition of steroidogenic enzymes(CYP11A1, STAR and HMGCR) at IC50 for HDL($p<0.01$ vs. no HDL). Addition of HDL to a drug decreased MP by 30±3% compared to drug alone($p<0.02$). On FC, combination of drug with HDL increased the number of cells gated to apoptosis by 30-50% compared to drug or HDL alone($p<0.03$). This was confirmed by cleavage of PARP and caspase 3 on WB.

CONCLUSION: HDL nanoparticles synergize well with E,D,P,and mitotane leading to enhanced apoptosis and antiproliferative effects partly due to cholesterol starvation. Since sHDL has shown clinical safety and can lower the amount of M/E/D/P needed for excellent anticancer efficacy in ACC, this novel treatment strategy warrants further investigation translationally.

NOTES

26. A NOVEL LATERAL-APPROACH LARYNGEAL ULTRASOUND FOR VOCAL CORD EVALUATION

Jung-Woo Woo, MD, MS[1], **Hyunsuk Suh, MD**[2], Ra-Yeong Song, MD[1], Joon-Hyop Lee, MD[1], Hyeong Won Yu, MD, MS[1], Su-jin Kim, MD, MS[1], Young Jun Chai, MD, MS[3], June Young Choi, MD, MS[4], Kyu Eun Lee, MD, PhD[1], Yeo-Kyu Youn, MD, PhD[1]

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BACKGROUND: Laryngeal ultrasound (LU) is a novel and effective method for vocal cord (VC) evaluation as a routine pre- or postoperative laryngoscopy for surgeries associated with risk of vocal cord dysfunction. However, the previously described anterior-approach LU has innate limitations due to poor visualization of VC in patients with prominent, angular or ossified thyroid cartilage typically seen in male patients. Male gender is a known independent factor for unassessable VC in LU. Here we have evaluated a novel lateral-approach LU to better visualize the vocal cords in male patients. This new approach was designed to maximize the surface contact of ultrasound transducer along the thinner and smoother contour of the lamina of thyroid cartilage while decreasing the penetration depth of posterior larynx for an improved imaging quality.

METHOD: A prospective evaluation of 382 consecutive thyroidectomy and parathyroidectomy patients (82 male, 300 female) were performed with both LU and laryngoscopy by two separate designated operators at a single institution. The anterior-approach LU was used for female patients, and the lateral-approach LU was used for male patients. Rate of adequate visualization and diagnostic accuracy were independently cross-validated in comparison with the laryngoscopy findings.

RESULTS: Twenty three patients (5 male, 18 female) among the 382 patients had confirmed VC palsy (VCP) on laryngoscopy. The LU demonstrated a 100% visualization rate of at least one of the landmarks with an overall sensitivity of 100% (23/23) and specificity of 99.2% (356/359) for VCP evaluation. Among the 300 female patients, 18 patients had suffered VCP. The sensitivity and specificity of anterior-approach LU were 100% (18/18) and 99.3% (280/282), respectively. Among the 80 male patients, 5 patients had suffered VCP. The sensitivity and specificity of lateral-approach LU were 100% (5/5) and 98.7% (76/77), respectively.

CONCLUSION: This is the first study describing and demonstrating the novel lateral-approach LU and its efficacy. This new approach significantly improves the visualization of vocal cords especially in male patients and may serve as a highly accurate, noninvasive, and readily available diagnostic tool for vocal cord dysfunction.

NOTES

27. MINIMAL IMPACT OF CALCIMIMETICS ON THE MANAGEMENT OF HYPERPARATHYROIDISM IN CHRONIC DIALYSIS

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BACKGROUND: Management of secondary hyperparathyroidism (HPT2) plays a central role in dialysis practice as it is associated with cardiovascular disease and increased mortality. Cinacalcet, a newly developed calcimimetic drug, has changed prescription patterns, despite lack of randomized study comparing cinacalcet versus conventional treatment including parathyroidectomy. Consequently, clinical data about current management of HPT2 patients are limited. The aim of this study was to evaluate current management of patients on chronic dialysis with incidental PTH levels > 500 pg/mL.

METHOD: We performed a prospective, multicenter (12 dialysis units), 2-year follow-up pharmacoepidemiological study of chronic dialysis patients (≥3 months) with newly-diagnosed HPT2 as evidenced by PTH level > 500 pg/mL for the first time. As per the 2009 KDIGO guidelines, the target PTH was < 9 x upper limit of normal (ULN).

RESULTS: Among 2137 patients on chronic dialysis, 269 (12.6%) met inclusion criteria. At the study start date, mean PTH value was 655 + 216 pg/mL and 153 patients (57%) met KDIGO guidelines (PTH < 9ULN). At 2-years, 83 patients (31%) were excluded (45 died, 26 had renal transplants, 10 stopped dialysis, and 2 were lost to follow-up). Among the 186 remaining patients, 125 (67%) were managed using cinacalcet. In patients treated with cinacalcet, 55% still met KDIGO guidelines at two-years and 9% still did not, versus 82% and 5% in the non-cinacalcet group (p=0.001). Moreover, in the cinacalcet group 24% of patients decreased their PTH levels to within KDIGO guidelines while 12% increased their PTH level above KDIGO guidelines (12% overall improvement only), compared to 3% and 10% in the non-cinacalcet group, respectively (p=0.001). At 2-year follow-up, mean PTH values were 400 + 318 versus 388 + 251 pg/mL (p=ns) and percentage of patients following KDIGO guidelines were 79 versus 85% (p=ns) in the cinacalcet versus non-cinacalcet groups, respectively. Eight patients (4%) underwent a parathyroidectomy.

CONCLUSION: Cinacalcet was used in the majority (67%) of patients on chronic dialysis with HPT2. However, use of cinacalcet did not significantly impact mean PTH values or proportion of patients following KDIGO guidelines when compared to patients without use of calcimimetics.

NOTES

28. A PILOT STUDY INVESTIGATING THE EFFECT OF PARATHYROIDECTOMY ON VASCULAR COMPLIANCE AND CORONARY ARTERY CALCIFICATION IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM.

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Cleveland Clinic

AIM: Little is known about the effect of primary hyperparathyroidism (PHP) on the cardiovascular (CV) system. The aim of this study is to analyze vascular compliance and coronary artery calcification in patients with primary hyperparathyroidism (PHP) before and after parathyroidectomy.

METHODS: This was a prospective IRB-approved study of 20 patients with first-time PHP, who underwent parathyroidectomy by one surgeon (EB). Vessel stiffness was assessed by measuring central systolic pressure (CSP), central pulse pressure (CPP), augmentation pressure (AP) and augmentation Index (AIx). Coronary artery calcium (CAC) score (Agatston) was calculated on noncontrast CT. These studies were performed before and 6 months after parathyroidectomy. Each patient was assigned a percentile ranking based on total Agatston score, age, gender, and race compared to a large database (MESA) of subjects asymptomatic for cardiovascular disease. Data from an age-gender matched control group of 31 patients from donor nephrectomy database (control group) were used for comparison. T test was used for statistics.

RESULTS: Mean ± SD pre-operative CSP, CPP, AP and AIx parameters (112.5±2.7 mm Hg, 36.2±2.8, 10.7±1.3 and 28.2±2.1, respectively), were higher than those of control group (102.1±2.0 mm Hg, 29.4±1.1, 6.3±0.7, 22.1±4.4, respectively) (p=0.002, p=0.012, p=0.002 and p=0.007, respectively). Pre-operative CAC Agatston score was zero in 13(68.4 %) patients and ranged between 72nd and 99th percentile in 5(28%) patients. All patients underwent parathyroidectomy, with removal of 1 gland in 11 (52%) patients, 2 glands in 7 (35%) patients and 3.5 glands in 2 patients (10%). Follow up labs showed cure in all patients. There were no changes in CAC scores of patients at 6-month post-surgical testing when compared to preoperative values. At least 1 vascular stiffness parameter improved at 6-month post-surgical testing in 11 patients (61%).

CONCLUSION: This pilot study documents increased vascular stiffness in patients with PHP compared to healthy controls, which improved after parathyroidectomy in 61%. Another marker of CV risk, CAC, was found to be severe in 20% of the patients. These results suggest that PHP patients may be at increased CV risk and that larger future studies are necessary to see if the changes are reversible in long-term after parathyroidectomy.

NOTES

29. PARATHYROID ADENOMECTOMY RESULTS IN DECREASE IN THE CONCENTRATION OF FIBROBLAST GROWTH FACTOR-23, A POSSIBLE RISK FACTOR OF ATHEROSCLEROSIS

Inga-Lena Nilsson, MD, PhD, Sophie Norenstedt, MD, PhD, Jan Zedenius, Fredrik Granath, PhD, Ylva Pernow

Karolinska Institutet

BACKGROUND: The fibroblast growth factor-23 (FGF23), a bone-derived circulating factor, was recently hypothesized to act as a regulator of the secretion and synthesis of parathyroid hormone (PTH). A high circulating concentration of FGF23 has been recognized as a risk factor of atherosclerosis. The significance of the FGF23-parathyroid gland axis in primary hyperthyroidism (pHPT) is not fully clarified. Our aim was to measure FGF23 before and after parathyroid adenomectomy and analyze the relationship between FGF23 concentration and cardiovascular risk factors.

METHOD: 150 consecutive pHPT patients were examined six ± two weeks before and six ± two after parathyroid adenomectomy (PTX). Blood samples were collected after an overnight fast.

AMBULATORY blood pressure monitoring (24h ABP) was performed with a standardized ambulatory blood pressure device.

RESULTS: The intact FGF23 decreased after PTX from median 45.2(IQR 37.6-54.8) to 36.8(26.7-48.7) pg/ml; P<0.001. The baseline level of FGF23 was directly correlated to the PTH and calcium concentrations. The postoperative decrease in FGF23 correlated significantly to the decrease in ionized calcium (r=0.24;P<0.01). The removed parathyroid adenoma was larger in patients with FGF23 in the highest quartile (530 (322-944) vs. 385 (224-835) mg (P<0.05). After PTX, insulin and IGF1 decreased more among patients with FGF23 concentration in the highest quartile (D insulin -14(-22,-1) vs. -4(-18,7) and DIGF1 -17(-36,-4) pmol/l vs.-7(-24,10) µg/l; P<0.05). Higher baseline FGF23 also correlated to higher 24ABP, especially nighttime; but in a multivariable model, after adjustment for age, sex, smoking and diabetes, PTH but not FGF23 was identified as an independent regulatory factor of 24hABP, which increased by 0.40 units (95% CI 0.07-0.74;P=0.02) per 10 units increase in PTH.

CONCLUSION: The circulating concentration of FGF23 decreased after PTX. Relatively higher levels of FGF23 were associated with larger parathyroid adenoma, higher insulin, IGF1 and 24ABP. The FGF23 and PTH concentrations were closely related and both may be defined as possible cardiovascular risk markers but PTH was identified as an independent regulatory factor of 24hABP.

NOTES

30. POST-THYROIDECTOMY HYPOCALCEMIA IS RELATED TO PARATHYROID DYSFUNCTION EVEN IN PATIENTS WITH NORMAL PTH LEVELS EARLY AFTER SURGERY

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Università Cattolica del Sacro Cuore - Policlinico A. Gemelli

BACKGROUND. Parathyroid hormone (PTH) levels below the normal range early after surgery (1 to 4 hours) predict the risk of hypocalcemia following total thyroidectomy (TT). However, hypocalcemia may develop even in presence of normal postoperative PTH levels in up to 15% of the cases. Vitamin D deficiency and toxic goiter have been investigated as possible risk factors, but the results obtained are controversial. We aimed to identify risk factors for hypocalcemia in patients with normal PTH level early after TT.

METHOD. All the patients who underwent TT between January 2012 and December 2013 were considered eligible. Exclusion criteria were: chronic renal failure, hypoalbuminemia, primary hyperparathyroidism and other causes of hypercalcemia. Intact PTH was measured preoperatively (preop-PTH) and 4 hours after the end of the operation (4hrs-PTH). Serum 25-hydroxy VD (25OH-VD) level was measured preoperatively. Significant hypocalcemia was defined as serum calcium <8.0 mg/dl.

RESULTS. 1506 patients were recruited. Overall, 336 patients (22.3%) had subnormal 4hrs-PTH (<10 pg/ml) (hypoparathyroid patients). All these patients received supplementation treatment (oral calcium + calcitriol). All but 24 patients (1.6% of all the patients) had discontinued supplementation treatment within 6 months. Among the 1170 patients with normal 4hrs-PTH (≥10 pg/ml), 180 (15.4% of the euparathyroid patients) experienced hypocalcemia, requiring oral calcium administration. Supplementation treatment was discontinued within 3 months in all these patients. Among the euparathyroid patients, no significant difference was found between normocalcemic and hypocalcemic patients in terms of age, hormonal status, preop-PTH and 25OH-VD. At univariate analysis euparathyroid hypocalcemic patients had significantly lower preoperative serum calcium (9.3±0.4 Vs 9.5±0.4 mg/dl – p≤0.000) and magnesium levels (2.0±0.2 Vs 2.1±0.2 mg/dl – p≤0.001), significantly lower 4hrs-PTH levels (21.7±11.1 Vs 32.3±14.6 pg/ml – p≤0.000) and higher PTH levels decline (54.0% Vs 32.1% - p≤0.000). At multivariate analysis with "stepwise" backward elimination, preoperative serum calcium levels and PTH decline ≥ 50% were independent risk factors for hypocalcemia in patients with normal 4hrs-PTH .

CONCLUSION. Toxic goiter and 25OH-VD deficiency are not risk factors for post-thyroidectomy hypocalcemia. Relative parathyroid insufficiency seems to be the principal mechanism of post-thyroidectomy hypocalcemia, even in patients with normal postoperative PTH levels.

NOTES

31. IMPACT OF VOCAL CORD ULTRASONOGRAPHY ON ENDOCRINE SURGERY PRACTICES

Denise Carneiro-Pla, MD[1], Carmen C Solorzano, MD[2], Scott M Wilhelm, MD[3]

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BACKGROUND: Prior to neck exploration, it is common practice to perform flexible laryngoscopy (FL) to assure bilateral vocal cord (VC) mobility in patients who had prior neck operations or have clinical findings suspicious for VC dysfunction. Vocal cord ultrasonography(VCUS) is accurate in identifying true VC paralysis. We hypothesized that VCUS could replace preoperative FL in most of these patients. The goal of this study is to evaluate the impact of VCUS as the initial study to confirm VC mobility in patients requiring preoperative FL.

METHODS: Over 2 years, 160 consecutive patients with indications for preoperative FL underwent VCUS during surgical evaluation performed by 3 endocrine surgeons at their own institutions. Indications for preoperative VC visualization were: previous cervical procedures, hoarseness, large goiters/cancers. While VCUS was being introduced, 54 patients had FL regardless of VCUS findings (group1). VCUS was the initial method of VC mobility evaluation in 106 patients (group2) with FL performed only when VCUS was not satisfactory. Results of VCUS, FL, as well as patient's age, gender, BMI, presence of thyroid cartilage calcification(TCC), and reasons for preoperative FL were recorded.

RESULTS: 77% of patients in group 2 did not have preoperative FL because VCUS was sufficient to assure bilateral VC mobility. The remaining 23% had preoperative FL due to inadequate VC visualization on US(9), abnormal VC mobility on VCUS(3), or surgeon's need for additional confirmation despite normal VCUS(10), and previous FL for another reason(2). When both groups were evaluated, VCUS visualized true VC and/or arytenoids in 139/160(87%). VC visualization was more common in women(95%) and in patients without TCC(87%)($p<0.05$). Older age and high BMI were not limiting factors for VC visualization. VCUS predicted VC paralysis in 100% of the confirmed cases. Based on Medicare reimbursement fees, $29766 was saved by the avoided FLs in 1 year .

CONCLUSION: Surgeon-performed VCUS changed these surgical practices by decreasing the need for preoperative FL from 100% to 23%. This non-invasive and highly sensitive method of demonstrating vocal cord mobility precludes preoperative FL in most patients requiring preoperative VC visualization while screening patients at high risk for VC dysfunction who require further evaluation.

NOTES

32. INCREASED INCIDENCE OF BREAST CANCER AMONG THYROID CANCER SURVIVORS: AN ANALYSIS OF THE SEER 9-DATABASE

Jennifer H. Kuo, MD, John A. Chabot, MD, Mary Beth Terry, PhD, James A. Lee, MD

Columbia University

BACKGROUND: An increased incidence of breast cancer among thyroid cancer survivors has been recognized in single institution studies. We sought to elucidate the relationship between these two disease processes in a population based setting.

METHODS: A retrospective analysis using the SEER-9 database was conducted on patients with breast and thyroid cancer from 1990-2011. Statistical analyses were performed using SPSS software.

RESULTS: 499,402 patients with breast cancer and 53,853 patients with thyroid cancer were included in the study. Age stratification demonstrated the incidence of breast cancer among thyroid cancer patients is higher (40.9%) than the general population (34.8%) in patients 50-64 years old. Thyroid cancer survivors (T1B) develop breast cancer at a median of 6.0±0.2 years (SE) after their primary diagnosis. When compared to patients with thyroid cancer (TC) only, T1B patients are older (52.3±0.44 vs 48.3±0.07, $p<0.0001$) with smaller thyroid cancers (11.0±0.54mm vs. 14.0±0.10mm, $p<0.0001$), less lymph node involvement (1.3±0.16 vs. 2.3±0.03, $p<0.0001$), and a smaller percentage of patients receive radioactive iodine (41.8% vs 46.2%, $p=0.003$). A greater number of these thyroid cancers are follicular variant papillary thyroid cancers (31.0% vs. 27.8%).

T1B patients develop breast cancer at a younger age (58.9±0.41 vs 61.4±0.02, $p<0.0001$) than the general population (BC). These patients have smaller tumors (18.3±0.57mm vs 20.5±0.03mm, $p<0.0001$) with greater ER (84.0% vs 79.2%, $p=0.001$) and PR (73.0% vs 68.%, $p=0.008$) positivity. T1B patients also have a greater percentage of mixed invasive tumor histology (13.5% vs 10.0%), but there is no significant difference in the number of lymph nodes involved (0±0.12 vs. 0±0.01, $p=0.086$) or need for adjuvant radiation therapy (45.2% vs 44.0%, $p=0.399$).

CONCLUSION: Thyroid cancer survivors are at higher risk for developing breast cancer than the general population. These patients develop breast cancer at an earlier age, have a higher percentage of ER/PR+ tumors, and a higher incidence of mixed ductal and lobular invasive cancer–a disease pattern not consistent with the epidemiology of breast cancer. Recognition of this association between thyroid and breast cancer should prompt vigilant screening in these cancer patient populations. In addition, further investigation into the relationship of breast and thyroid cancer is warranted.

NOTES

33. INTEGRIN-LINKED KINASE ACTIVATES AKT SIGNALING IN THYROID CANCER CELLS AND IS A POTENTIAL THERAPEUTIC TARGET

Lawrence A. Shirley, MD[1], Ming-Chen Yang, PhD[2], Motoyasu Saji, PhD[3], John Phay, MD[1], Matthew Ringel, MD[3], Ching-Shih Chen, PhD[2]

[1]The Ohio State University Wexner Medical Center Division of Surgical Oncology, [2]The Ohio State University College of Pharmacy, [3]The Ohio State University Wexner Medical Center

BACKGROUND: Integrin-linked kinase (ILK) is a serine-threonine kinase that, under normal conditions, facilitates cell-extracellular matrix interactions. However, in several cancer types, including thyroid cancer, its expression is reported to be upregulated, leading to increased proliferation, motility, and invasion, through direct phosphorylation of AKT, MLC2, and other kinase targets. In the present study, we hypothesized that ILK is a functional signaling kinase regulating thyroid cancer cell viability.

METHOD: A total of 11 genetically confirmed thyroid cancer lines derived from differentiated and anaplastic cancers (BCPAP, KTC1, TPC1, FTC133, SW1736, C643, Hth7, Hth74, Hth83, Hth104, Hth112) were screened for ILK protein expression by Western blot. One anaplastic thyroid cancer cell line (Hth7) with high ILK expression was selected for siRNA knockdown of ILK. Immunoblotting was used to evaluate downstream signaling effects compared to control transfectants. These cells were then treated with a novel ILK inhibitor, T315, to see if effects could be recapitulated. Finally, MTT cell viability assays were performed following treatment to assess the effects of T315 on cell survival.

RESULTS: All tested thyroid cancer lines expressed ILK, with four showing high expression (KTC1, SW1736, Hth7, and Hth112). Hth7 cells were selected for subsequent experiments. In comparison to control scrambled siRNA transfected cells, ILK siRNA reduced ILK levels by > 50%. Reduced ILK activity was confirmed by reduced phosphorylation of AKT and MLC2 at ILK phosphorylation sites via immunoblotting. Treatment of Hth7 cells with increasing amounts of T315 showed a dose-related decrease in both AKT and MLC2 phosphorylation. Finally, MTT assays performed on HTh7 cells showed T315 to have an IC50 of 770nM at 24 hours, 560nM at 48 hours, and 410nM at 72 hours.

CONCLUSION: ILK is differentially expressed in thyroid cancer cell lines. In cells in which ILK is overexpressed, it regulates AKT and MLC2 phosphorylation. Treatment with a novel ILK inhibitor, T315, inhibits ILK function and is cytotoxic to Hth7 cells at low concentrations. These findings suggest that ILK may be a functionally important kinase in thyroid cancer that warrants further study.

NOTES

34. MINIMAL EXTRATHYROID EXTENSION IN PAPILLARY THYROID CARCINOMA DOES NOT RESULT IN INCREASED RATES OF EITHER CAUSE-SPECIFIC MORTALITY OR POST-OPERATIVE TUMOR RECURRENCE.

Ian D. Hay, MD, PhD, Tammi R. Johnson, Geoffrey B. Thompson, Thomas J. Sebo, Megan E. Reinalda

Mayo Clinic

BACKGROUND. Gross extrathyroid extension (GEE), reported intra-operatively in pT4 tumors, is a major prognostic factor in papillary thyroid carcinoma (PTC). However, the recognition by pathologists of minimal extrathyroid extension (MEE) without concomitant GEE is of uncertain significance. Recent studies suggest that MEE may not lead to increased tumor recurrence (TR); few studies have analyzed the influence of MEE on cause-specific mortality (CSM).The present study assessed the prognostic impact of GEE and MEE on CSM and TR in patients treated with curative intent for localized PTC during seven decades (1940-2009).

METHODS. From our PTC database, we studied outcome in a cohort of 3524 patients without initial distant spread, who had primary surgery at our institution. Endpoints studied included CSM and TR at local, regional and distant sites. For TR analyses, we studied only 3433 patients with complete surgical resection. The medical histories of all patients with GEE on surgical reports or MEE on pathology reports were carefully re-evaluated. Follow-up was updated to October 2014. Kaplan-Meier curves were constructed; differences between groups evaluated by log-rank testing.

RESULTS. 30-year CSM rate for GEE of 25.1% was eleven-fold higher ($p<0.001$) than the 2.3% seen with surgically intra-thyroid tumors (SIT). By contrast, none of 120 MEE patients died of PTC. No significant difference ($p=0.37$) existed in CSM rates between 120 MEE and 3109 microscopically intrathyroid tumors (MIT). Twenty-year TR (all sites) rate for GEE was 42.9%, as against 11.4% with SIT ($p<0.001$). By twenty years, 23/119(19%) MEE and 269/3102(9%) MIT tumors had recurred. Analyzing only 2067 pNO tumors, GEE patients had higher TR rates at regional, local and distant sites, when compared to either SIT or MEE ($p<0.001$).However, when 40 MEE were compared to 1949 MIT cases, the TR (all sites) rates were insignificantly different at 5.3 and 5.1% ($p=0.43$); twenty-year regional recurrence rates were 2.7% for MEE and 3.0% for MIT ($p=0.64$). These insignificant differences were also seen with 1253 patients older than 45 years ($p=0.42$ and $p=0.18$).

CONCLUSION. In our study, MEE did not increase rates of either CSM or TR in PTC. This may have implications for future TNM staging and treatment guidelines.

POSTER DISPLAYS

★ *Denotes Resident/Fellow Research Award Competition Poster*

NOTE: Author listed in **BOLD** *is the presenting author*

POSTER DISPLAYS

POSTER GROUP 1: THYROID

★ 01. AGE GREATER THAN 60 YEARS PORTENDS A WORSE PROGNOSIS IN PATIENTS WITH PAPILLARY THYROID CANCER: TIME TO ADD A NEW AGE CATEGORY TO THE CURRENT STAGING SYSTEM?

Rondi Kauffmann, MD, John Hamner, MD, Phil H. Ituarte, PhD, John H. Yim, MD
City of Hope

★ 02. THE ELDERLY, UNINSURED, AND PATIENTS AT LOW VOLUME CENTERS HAVE HIGHER RATES OF INCOMPLETE RESECTION AND WORSE OUTCOMES: AN ANALYSIS OF 31,129 PATIENTS WITH PAPILLARY THYROID CANCER

Linda M. Youngwirth, Mohamed Adam, MBBS, Randall Scheri, MD, Sanziana Roman, MD, Julie Sosa, MD
Duke University

★ 03. MINIMALLY INVASIVE FOLLICULAR CARCINOMA: PREDICTORS OF VASCULAR INVASION AND IMPACT ON PATTERNS OF CARE

Christa Jillard, MD, Paolo Goffredo, MD, Samantha Thomas, MB, Randall Scheri, MD, Sanziana Roman, MD, Julie Sosa, MD, MA
Duke University School of Medicine

★ 04. RADIOACTIVE IODINE TREATMENT IS ASSOCIATED WITH IMPROVED PATIENT SURVIVAL FOR HÜRTHLE CELL CANCER

Christa Jillard, MD, Linda Youngwirth, MD, Randall Scheri, MD, Sanziana Roman, MD, Julie Sosa, MD, MA
Duke University School of Medicine

05. BRAFV600E MUTATION IS NOT A RISK FACTOR FOR CENTRAL COMPARTMENT METASTASES IN PAPILLARY THYROID CARCINOMA

Celestino P. Lombardi, MD, Carmela De Crea, MD, Daria Maccora, MD, Guido Fadda, MD, Marco Raffaelli, MD, Rocco Bellantone, MD
Università Cattolica del Sacro Cuore - Policlinico A. Gemelli

06. UPDATE ON THE INCIDENCE AND SIGNIFICANCE OF DELPHIAN NODE METASTASIS IN PAPILLARY THYROID CANCER

Manish A. Shaha, BS, Laura Y. Wang, MBBS, Jocelyn C. Migliacci, MA, Jatin P. Shah, MD, Snehal G. Patel, MD, Ian Ganly, MD, PhD, R. Michael Tuttle, MD, **Ashok R. Shaha, MD**
Memorial Sloan Kettering Cancer Center

07. PRACTICE AND COST OF VOCAL CORD EVALUATION FOR THYROID SURGERY

Ashok R. Shaha, MD, Manish A. Shaha, BS
Memorial Sloan Kettering Cancer Center

08. ELONGATION IN CALCITONIN-DOUBLING TIME OVER LONG TIME IN PATIENTS WITH HEREDITARY MEDULLARY THYROID CARCINOMA

Akira Miyauchi, MD[1], Takumi Kudo, MD[2], Minoru Kihara, MD[1], Hitomi Oda, MD[1], Kana Yoshioka, MD[3], Hisanori Sasai, MD[3], Hiroo Masuoka, MD[1], Tomonori Yabuta, MD[1], Takuya Higashiyama, MD[1], Mitsuhiro Fukushima, MD[1], Yasuhiro Ito, MD[1], Kaoru Kobayashi, MD[1], Akihiro Miya, MD[1]

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★ 09. QUALITY OF LIFE IN THYROID CANCER - ASSESSMENT OF PHYSICIAN PERCEPTIONS

Benjamin C. James, MD[1], Briseis Aschebrook-Kilfoy, PhD[2], Sharone Kaplan, MS[1], Edwin L. Kaplan, MD[1], Peter Angelos, MD[1], Raymon H. Grogan, MD[1]

[1]Department of Surgery, University of Chicago Pritzker School of Medicine, [2]Department of Health Studies, University of Chicago

10. CAN TOTAL THYROIDECTOMY BE SAFELY PERFORMED BY RESIDENTS? A COMPARATIVE MULTICENTER STUDY.

Mario Testini, MD[1], Angela Gurrado, MD, PhD[1], Rocco Bellantone[2], Giuseppe Cavallaro, MD, PhD[3], Marilisa Citton, MD[4], Vas Constantinides, MD[5], Giovanni Conzo, MD[6], Giovanna Di Meo, MD[1], Giovanni Docimo, MD[6], Ilaria Fabiola Franco, MD[7], Maurizio Iacobone, MD[4], Germana Lissidini, MD, PhD[1], Celestino Pio Lombardi[2], Gabriele Materazzi, MD, PhD[8], Michele Minuto, MD9, Fausto Palazzo, MD[5], Alessandro Pasculli, MD[1], Giuseppe Piccinni, MD[1], Marco Raffaelli, MD, PhD[2], Frederic Sebag[7], Salvatore Tolone, MD[6], Paolo Miccoli, MD[8]

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★ 11. DOES A CORRELATION EXIST BETWEEN RESIDENT OPERATIVE CASE LOGS AND DECISION-MAKING COMPETENCY IN THYROIDECTOMY?

Brenessa M. Lindeman, MD, MEHP, Martha A. Zeiger, MD, Jason D. Prescott, MD, PhD, Pamela A. Lipsett, MD, MHPE

Johns Hopkins University School of Medicine

★ 12. AN EVALUATION OF POSTOPERATIVE COMPLICATIONS AND COST AFTER SHORT STAY THYROID OPERATIONS

Sumana Narayanan, MD, Dena Arumugam, MD, Steven Mennona, Marlene Wang, Tomer Davidov, MD, Stanley Z. Trooskin, MD
Rutgers Robert Wood Johnson Medical School

13. NECK HEMATOMA AFTER THYROIDECTOMY. DO ANTIPLATELET/ ANTICOAGULANT DRUGS USE OR COAGULOPATHIES AFFECT IT? A CASE CONTROL STUDY FROM A SINGLE CENTER ON 3150 PATIENTS.

Gianluca Donatini, MD, PhD, FEBS[1], Louis Lacoste, MD[2], Veronique Goudet, MD[2], Denis Frasca, MD[2], Matthieu Boisson, MD[2], Jean Louis Kraimps, MD[1]
[1]CHU Poitiers - Department of Endocrine Surgery, [2]CHU Poitiers - Department of Anaesthesiology

★ 14. EMERGENCY DEPARTMENT VISIT AND UNPLANNED HOSPITALIZATION FOLLOWING THYROIDECTOMY AND PARATHYROIDECTOMY: INCIDENCE AND RISK FACTORS

Ryan A. FitzGerald, BA[1], Ashwini Seghal, MD[2], Julie A. Nichols, RN[2], Christopher R. McHenry, MD[3]
[1]Case Western Reserve University School of Medicine, [2]Rammelkamp Center for Research, Metrohealth Medical Center, [3]Department of Surgery, Metrohealth Medical Center

★ 15. THYROIDECTOMY AS DEFINITIVE TREATMENT FOR GRAVES' DISEASE: JUST AS SAFE IN CHILDREN

Dawn M. Elfenbein, MD, MPH, Micah Katz, MD, David F. Schneider, Herbert Chen, Rebecca S. Sippel
University of Wisconsin

16. RISKS, PRESENTATION, AND OUTCOMES OF THYROID CANCER IN CHILDREN: A NATIONAL PERSPECTIVE

Zaid Al-Qurayshi, MBChB, MPH, Adam Hauch, MD, MBA, Paul Friendlander, MD, Rizwan Aslam, DO, Emad Kandil, MD
Tulane University School of Medicine, Department of Surgery

17. OPTIMIZING PAIN MANAGEMENT AFTER THYROID AND PARATHYROID SURGERY

Todd B. Chennel, RN[1], **Sarah Schaefer, RN**[2], Herb Chen, MD[2], Rebecca Sippel, MD[2], David Schneider, MD[2], Jacob Moalem, MD[1]
[1]University of Rochester, [2]University of Wisconsin

★ 18. DE NOVO THYROID CANCER FOLLOWING SOLID ORGAN TRANSPLANTATION – A 25-YEAR EXPERIENCE AT A SINGLE INSTITUTION

Jesse D. Pasternak, MD[1], Elliot J. Mitmaker, MD[2], Insoo Suh, MD[1], Natalie Seiser, MD, PhD[1], Jessica E. Gosnell, MD[1], Wen T. Shen, MD[1], Chris E. Freise, MD[1], Quan-Yang Duh, MD[1]
[1]University of California San Francisco, [2]McGill University

★ 19. BRAF V600E MUTATION AND MICRO-RNA EXPRESSION AND THEIR ASSOCIATION WITH AGGRESSIVE FEATURES IN PAPILLARY THYROID CANCER: A PROSPECTIVE STUDY FROM FOUR ENDOCRINE SURGERY CENTERS.

Patricia Aragon Han, MD[1], Kim Hyun-seok, MD, MPH[1], Roghayeh Fazeli, MD[1], Alireza Najafian, MD[1], Hunain Khawaja, BS[1], Benzon Dy, MD[2], Meredith Sorensen, MD[3], Anna Aronova, MD[4], Thomas J. Sebo, MD, PhD[2], Thomas J Giordano, MD, PhD[3], Thomas J. Fahey III, MD[4], Geoffrey B. Thompson, MD[2], Paul G. Gauger, MD[3], Gerard M. Doherty, MD[3], Justin A. Bishop, MD[1], James R. Eshleman, MD, PhD[1], Eric B. Schneider, PhD[1], Kenneth W. Witwer, PhD[1], Christopher B. Umbricht, MD, PhD[1], Martha A. Zeiger, MD[1]
[1]The Johns Hopkins University School of Medicine, Baltimore, Maryland, [2]Mayo Clinic, Rochester, Minnesota, [3]University of Michigan Health System, Ann Arbor, Michigan, [4]New York Presbyterian Hospital-Weill Cornell Medical Center, New York, New York

20. DIAGNOSTIC ACCURACY OF PERIPHERAL THYROTROPIN RECEPTOR MESSENGER RNA IN PATIENTS WITH BETHESDA INDETERMINATE THYROID FNAS.

Altay Aliyev, MD, Jinesh Patel, MD, Jennifer Brainard, MD, Manjula Gupta, MD, Christian Nasr, MD, Betul Hatipoglu, Allan Siperstein, **Eren Berber, MD**
Cleveland Clinic

21. SAME-DAY DIAGNOSIS FOR THYROID NODULES: FEASIBILITY, ACCURACY AND PATIENT ANXIETY ASSESSMENT.

Lutske Lodewijk, MD, Wessel M. C. M. Vorselaars, BSc, Nick T. M. van der Meij, Jakob W. Kist, MD, Maarten W. Barentsz, MD, Helena M. Verkooijen, MD, PhD, Gerlof D. Valk, MD, PhD, Inne H. M. Borel Rinkes, MD, PhD, Menno R. Vriens, MD, PhD
University Medical Center Utrecht

★ 22. THE IMPACT OF MOLECULAR MARKER TEST RESULTS ON THE DECISION-MAKING PROCESS FOR PATIENTS WITH NODULAR THYROID DISEASE PRESENTING FOR SURGICAL CONSULTATION

Salem I. Noureldine, MD, Alireza Najafian, MD, Patricia Aragon Han, MD, Matthew Olson, MD, Eric B. Schneider, PhD, Jason D. Prescott, MD, PhD, Nishant Agrawal, MD, Martha A. Zeiger, MD, Ralph P. Tufano, MD, MBA
Johns Hopkins University School of Medicine

23. DOES THYROID NODULE SIZE ON ULTRASOUND CORRELATE TO SIZE ON PATHOLOGIC EXAM OR MALIGNANT DIAGNOSIS?

Daniel N. Johnson, MD, Allison B. Cavallo, MD, Saaduddin Siddiqui, BA, Raymon H. Grogan, MD, Peter Angelos, MD, PhD, Edwin L. Kaplan, MD, Richard M. DeMay, MD, Tatjana Antic, MD, Nicole A. Cipriani, MD
The University of Chicago

★ 24. MIDWEST TERTIARY INSTITUTIONAL HOSPITAL VALIDATION AND COST IMPLICATIONS OF THYROSEQ® DNA MUTATION ANALYSIS FOR THYROID BIOPSIES

Brent Bauman, MD, Lynn Burmeister, MD, Khalid Amin, MD, Maria Evasovich, MD
University of Minnesota

★ 25. BIO-CONJUGATED NANOTECHNOLOGY TO TARGET PAPILLARY THYROID CANCER IN VITRO

Idit Dotan, MD[1], Miltiadis Paliouras, PhD[2], Phil J. Roche, EngD[2], Lenore K. Beitel, PhD[2], Michael Tamilia, MD[3], Mark A. Trifiro, MD[2], Elliot J. Mitmaker, MD[1]
[1]McGill University Health Center, [2]Lady Davis Institute - Jewish General Hospital, [3]Jewish General Hospital

★ 26. POTENTIATION OF HISTONE DEACETYLASE INHIBITORS (HDACIS) BY INHIBITION OF DRUG-INDUCED NF-KB ACTIVATION IN THYROID CANCER

Yash R. Somnay, BS[1], Xiao-Min Yu, MD, PhD[1], Shigeki Miyamoto, PhD[2], Herbert Chen, MD[1]
[1]University of Wisconsin School of Medicine, Department of Surgery, Section of Endocrine Surgery, [2]University of Wisconsin School of Medicine, Department of Oncology

27. EPITHELIAL-TO-MESENCHYMAL TRANSITION MARKERS SERPINE1 AND TWIST1 IS REGULATED BY NOTCH1 INTRACELLULAR DOMAIN IN THYROID CARCINOMA

Xiao-Min Yu, MD, PhD[1], Heather Hardin, BS[2], April D Harrison, BS[1], Renata Jaskula-Sztul, PhD[1], Jon Audhya, PhD[3], Ricardo V. Lloyd, MD, PhD[2], Herbert Chen, MD[1]
[1]Department of Surgery,University of Wisconsin, [2]Department of Pathology and Laboratory Medicine,University of Wisconsin, [3]Department of Biomolecular Chemistry, University of Wisconsin

28. LOW FREQUENCY OF TERT PROMOTER MUTATIONS IN KOREAN THYROID CANCER PATIENTS WITH HIGHLY PREVALENT BRAF MUTATIONS

Ja Sung Bae, MD, PhD, Soo Hee Lee, MD, PhD, Chan Kwon Jung, MD, PhD, Dong Jun Lim, MD, PhD, Min Hee Kim, MD
The Catholic University of Korea

★ 29. THE ROLE OF SOMATIC RET AND RAS MUTATIONS IN PREDICTING OUTCOME IN SPORADIC MEDULLARY THYROID CANCER

Ashley A. Stewart, MD, Michelle D. Williams, MD, Mimi I. Hu, MD, Lei Feng, MS, Jeffrey E. Lee, MD, Nancy D. Perrier, MD, Maria E. Cabanillas, MD, Gilbert H. Cote, PhD, Elizabeth G. Grubbs, MD
MD Anderson Cancer Center

★ 30. NUCLEAR LOCALIZATION OF BRAFV600E IS A DYNAMIC AND CRM-1 DEPENDENT PROCESS IN THYROID CANCER CELLS

Koji Tsumagari, MD, PhD[1], Zakaria Abd Elmageed, PhD[1], Paul Friedlander[1], Andrew Sholl, MD[1], Hamid Boulares, PhD[2], Emad Kandil[1]
[1]Tulane University School of Medicine, [2]Louisiana State University Health Sciences Center

★ 31. AN AMPK ACTIVATOR/MTOR INHIBITOR DEMONSTRATES AN ADDITIVE EFFECT WITH VEMURAFENIB ON THYROID CANCER

Kara Keplinger, MD, Robert L. Plews, MD, MS, Adlina Mohd Yusof, PhD, Saji Motoyasu, MD, PhD, Xiaoli Zhang, PhD, Ching-Shih Chen, PhD, Matthew D. Ringel, MD, John E. Phay, MD
The Ohio State University Wexner Medical Center

POSTER GROUP 2: PARATHYROID

★ 32. VALUE OF PROPHYLACTIC CERVICAL THYMECTOMY IN PARATHYROID HYPERPLASIA

Melissa Boltz, DO, MBA[1], Ning Zhang, MD[1], Carrie Zhao, BS[2], Allan E Siperstein, MD[1], Judy Jin, MD[1]
[1]Cleveland Clinic, [2]Cleveland Clinic Lerner College of Medicine of Case Western Reserve University

★ 33. PRIMARY HYPERPARATHYROIDISM WITH NORMAL BASELINE INTRAOPERATIVE PTH: A CHALLENGING POPULATION

Mahsa Javid, MD, DPhil, FRCS, Glenda Callender, MD, Courtney Quinn, MD, MS, Patricia Donovan, RN, MBA, Tobias Carling, MD, PhD, Robert Udelsman, MD, MBA, FACE
Yale University School of Medicine

★ 34. IONIZED CALCIUM AND THE UTILITY OF MAXPTH TO EVALUATE GASTRIC BYPASS PATIENTS AND OTHERS WITH NON-RENAL SECONDARY HYPERPARATHYROIDISM

Uma Rajhbeharrysingh, MD, Joseph El Youssef, MD, Enrique Leon, BS, Robert Klein, MD, Chaim Vanek, MD, Samer Mattar, MD, Maisie Shindo, MD, Mira Milas, MD
Oregon Health and Science University

★ 35. ASSOCIATION OF ELEVATED PARATHYROID HORMONE AND RENAL FUNCTION FOLLOWING KIDNEY TRANSPLANTATION

Aida Taye, MD[1], Sonia Voiculescu, MD[1], Victoria Lai, MD[2], Amanda Laird, MD[1], Steven K. Libutti, MD[1], Kayler Liise, MD[1]
[1]Montefiore Medical Center, [2]Virginia Hospital Center

★ 36. INTRAOPERATIVE DEMONSTRATION OF A GOOD VASCULARISATION OF AT LEAST ONE PARATHYROID GLAND USING INDOCYANIN GREEN FLUORESCENCE RELIABLY PREDICTS THE ABSENCE OF POSTOPERATIVE HYPOPARATHYROIDISM

Jordi Vidal Fortuny, MD, Wolfram Karenovics, MD, Valentina Belfontali, MD, Frédéric Triponez, Prof
Univeristy Hospitals of Geneva

★ 37. INCIDENCE, RISK FACTORS, AND CLINICAL OUTCOMES OF INCIDENTAL PARATHYROIDECTOMY DURING THYROID SURGERY: A MULTI-INSTITUTIONAL STUDY

Megan K. Applewhite, MD, MA[1], Michael G. White, MD[1], Maggie Xiong, BA[2], Jesse D. Pasternak, MD[2], Layth Abdulrasool, MD[1], Insoo Suh, MD[2], Jessica E. Gosnell, MD[2], Quan Y. Duh, MD[2], Peter Angelos, MD, PhD[1], Edwin L. Kaplan, MD[1], Wen T. Shen, MD[2], Raymon H. Grogan, MD[1]
[1]The University of Chicago, [2]University of California, San Francisco

POSTER GROUP 3: ADRENAL

★ 38. WHOLE BODY METABOLIC TUMOR VOLUME AND TOTAL LESION GLYCOLYSIS PREDICT SURVIVAL IN PATIENTS WITH ADRENOCORTICAL CARCINOMA: IMPLICATIONS FOR MANAGEMENT.

Kei Satoh, BA[1], Dhaval Patel, MD[2], Ryan Ellis, BS[3], William Dieckmann, MS[4], Naris Nilubol, MD[2], Electron Kebebew, MD[2]
[1]Icahn School of Medicine at Mount Sinai; Endocrine Oncology Branch, National Cancer Institute, NIH, [2]Endocrine Oncology Branch, National Cancer Institute, NIH, Bethesda, MD 20892, [3]Northwestern University, Department of Surgery, Chicago, IL 60611, [4]PET Department, Clinical Center, NIH, Bethesda, MD 20892

★ 39. EFFECTIVE SURGICAL TREATMENT OF ADRENAL CORTICAL CARCINOMA MAY NOT REQUIRE ROUTINE REGIONAL LYMPHADENECTOMY

Guy T. Clifton, MD[1], Mouhammed A. Habra, MD[1], Thomas A. Aloia, MD[1], Jean-Nicolas Vauthey, MD[1], Douglas B Evans, MD[2], Nancy D. Perrier, MD[1], Elizabeth G. Grubbs, MD[1], Jeffrey E. Lee, MD[1]
[1]University of Texas MD Anderson Cancer Center, [2]Medical College of Wisconsin

★ 40. RANDOMIZED TRIAL OF LOW VERSUS HIGH CO2 INSUFFLATION PRESSURES IN POSTERIOR RETROPERITONEOSCOPIC ADRENALECTOMY.

Sheila M. Fraser, MBChB, MD, FRCS, Olov Norlen, Kyle Bender, Nisar Zaidi, Sonya Bajenov, Fay David, Stan Sidhu, MBBS, Hons, PhD, FRACS, Mark Sywak, MBBS, MMed, Clin, Epi, FRACS
Royal North Shore Hospital

★ 41. BILATERAL LAPAROSCOPIC ADRENALECTOMY IN UNIQUE GROUP OF PATIENTS WITH CUSHING'S SYNDROME: LONG-TERM OUTCOMES MEASURED BY NEW DISEASE-SPECIFIC QUESTIONNAIRE.

Vladimir Neychev[1], Lily Yang[1], Amit Mehta[1], Naris Nilubo[1], Constantine Stratakis[2], Lynnette Nieman[2], Seth Steinberg[3], Electron Kebebew[1]
[1]Endocrine Oncology Branch, National Institutes of Health, [2]National Institute of Child Health and Human Development, National Institutes of Health, [3]Biostatistics and Data Management Section, National Institutes of Health

42. SURGEON VOLUME IMPACT ON THE OUTCOMES OF ADRENAL SURGERY AND RELATED HOSPITAL CHARGES: A NATIONAL FORECAST

Zaid Al-Qurayshi, MBChB, MPH[1], Russell Robins, PhD[2], Sudesh Srivastav, PhD[3], Paul Friendlander, MD[1], Rizwan Aslam, DO[1], Emad Kandil, MD[1]
[1]Tulane University School of Medicine, Department of Surgery, [2]Tulane University A.B Freeman School of Business, [3]Tulane University School of Public Health and Tropical Medicine

★ 43. POSTOPERATIVE FUNCTIONAL HYPOALDOSTERONISM: FROM CONN'S TO ADDISON'S AND THE PAGES IN BETWEEN

Lee F. Starker, MD, PhD, Jamii St. Julien, MD, MPH, Kelly Schwarz, BS, Paul Graham, MD, Elizabeth Grubbs, MD, Jeffrey Lee, MD, Nancy Perrier, MD
MD Anderson

★ 44. CHARACTERIZING COPY NUMBER VARIATION IN ADRENOCORTICAL CARCINOMA VIA NEXT-GENERATION SEQUENCING

Jill C. Rubinstein, MD, PhD[1], Taylor Brown, MD[1], Christopher C. Juhlin, MD, PhD[2], Adam Stenman[2], Reju Korah, PhD, MSc[1], Tobias Carling, MD, PhD[1]
[1]Yale School of Medicine, [2]Karolinska Institutet

★ 45. PROTEIN EXPRESSION OF PTTG1 AS A DIAGNOSTIC BIOMARKER IN ADRENOCORTICAL CARCINOMA

Minerva A. Romero Arenas, MD, MPH[1], Timothy G. Whitsett, PhD[2], Anna Aronova, MD[3], Samuel Henderson, MD[1], Janine LoBello, PhD[2], Mouhammed A. Habra, MD[1], Elizabeth G Grubbs, MD[1], Jeffrey E. Lee, MD[1], Sircar Kanishka, MD[1], Rasa Zarnegar, MD[3], Theresa Scognamiglio, MD[3], Thomas Fahey, MD[3], Nancy D. Perrier, MD[1], Michael J. Demeure, MD[2]
[1]The University of Texas MD Anderson Cancer Center, [2]Translational Genomics Research Institute, [3]Weill Cornell Medical College

★ 46. ONCOGENIC MUTATION PROFILING IN ADRENOCORTICAL TUMORS: NOVEL THERAPEUTIC TARGETS

Susan C. Pitt, MD, MPHS, Nancy L. Cho, MD, Matthew A. Nehs, Atul A. Gawande, MD, MPH, Daniel T. Ruan, MD, Francis D. Moore, MD
Brigham and Women's Hospital

POSTER GROUP 4: PANCREAS/CARCINOID/ NEUROENDOCRINE

★ 47. SELECTIVE ARTERIAL CALCIUM STIMULATION (SACST) WITH HEPATIC VENOUS SAMPLING DIFFERENTIATES INSULINOMA FROM NESIDIOBLASTOSIS IN PATIENTS WITH HYPERINSULINEMIC HYPOGLYCEMIA AND NEGATIVE OR INCONCLUSIVE NONINVASIVE IMAGING

Scott M. Thompson, BA, James C. Andrews, MD, Adrian Vella, MD, F. John Service, MD, PhD, Clive S. Grant, MD, Geoffrey B. Thompson, MD
Mayo Clinic

★ 48. IMPACT OF VARIANT PANCREATIC ARTERIAL ANATOMY AND OVERLAP IN REGIONAL PERFUSION ON THE INTERPRETATION OF SELECTIVE ARTERIAL CALCIUM STIMULATION (SACST) WITH HEPATIC VENOUS SAMPLING FOR PREOPERATIVE LOCALIZATION OF OCCULT INSULINOMA

Scott M. Thompson, BA, James C. Andrews, MD, Adrian Vella, MD, F. John Service, Clive S. Grant, MD, Geoffrey B. Thompson, MD
Mayo Clinic

★ 49. PANCREATIC ISLET CELL TUMORS WITH ECTOPIC SECRETION OF ACTH AND GASTRIN: OUTCOMES OF PATIENTS WITH ISOLATED VERSUS CONCURRENT CUSHING'S AND ZOLLINGER-ELLISON SYNDROMES

Edwin O. Onkendi, MBChB, **Jason Nielsen, MD**, William F. Young Jr., MD, Geoffrey B. Thompson, MD
Mayo Clinic

50. TARGETED DELIVERY OF A NOVEL HISTONE DEACETYLASE INHIBITOR, AB3, USING UNIMOLECULAR MICELLES TO IMPROVE ANTITUMOR EFFECT IN CARCINOID CANCER

Renata Jaskula-Sztul, PhD, April Harrison, Guojun Chen, Ajitha Dammalapati, Amrit Hundal, Renu Nair, Gabrielle Winston-McPherson, Casi Scheinebeck, Weiping Tang, Shaoqin Gong, Herbert Chen
UW Madison

BYLAWS

BYLAWS

BYLAWS OF THE AMERICAN ASSOCIATION OF ENDOCRINE SURGEONS

I. CORPORATION

1.1 **NAME.** The name of the corporation is The American Association of Endocrine Surgeons.

1.2 **PURPOSES.** The purposes for which the corporation is organized are as follows: The corporation is organized exclusively for the purposes set forth in Sections 501(c)(3) of the Internal Revenue Code of 1986 (or the corresponding provision of any future United States Internal Revenue law) (the "Code"), including, for such purposes, making of distributions to organizations that qualify as exempt organizations under Section 501(c) (3) of the Code. The objects of the corporation shall include: (1) advancement of the science and art of endocrine surgery and (2) maintenance of high standards in the practice and art of endocrine surgery; and doing anything reasonably in furtherance of, or incidental to, the foregoing purposes as the Council may determine to be appropriate and as are not forbidden by Section 501(c) (3) of the Code, with all the power conferred on nonprofit corporations under the laws of the State of Illinois.

1.3 **NONPROFIT OPERATION.** The corporation shall be operated exclusively for scientific, literary and educational purposes within the meaning of Section 501(c) (3) of the Code as a nonprofit corporation. No Councilor or member of the corporation shall have any title to or interest in the corporate property or earnings in his or her individual or private capacity and no part of the net earnings of the corporation shall inure to the benefit of any Councilor, member, officer or any individual. No substantial part of the activities of the corporation shall consist of carrying on propaganda or otherwise attempting to influence legislation, nor shall the corporation participate in or intervene in any political campaign on behalf of (or in opposition to) any candidate for public office.

II. MEMBERSHIP

2.1 **MEMBERSHIP.**

A. Membership in this Association shall be limited to physicians or scientists of good professional standing, who have a major interest and devote significant portions of their practice or research to endocrine surgery, and who are certified by the appropriate specialty boards as noted in Section B below.

B. Types of Members. There shall be seven types of members: Active, Senior, Allied Specialist, Honorary, Corresponding, Candidate, and Resident/Fellow and Affiliate Providers.

1. **Active members** shall consist of original charter members and all members subsequently elected until they become eligible for senior membership. The number of active members shall not be limited.

1a. The candidates for Active membership would have attended at least two annual meetings (hereinafter "assembly") of the American Association of Endocrine Surgeons prior to their application;

1b. The candidates for Active membership should be able to provide evidence of special interest in endocrine surgery;

1c. The candidates for Active membership must be certified by the American Board of Surgery or its equivalent in Canada (FRCSC), Central America, Mexico, and South America. In addition, membership shall be limited to Fellows of the American College of Surgeons or its international equivalent. The candidates who are applying for Active membership, who have completed their Endocrine Surgical Fellowship, should be in practice at least for two years with special emphasis in endocrine operative surgery.

2. **Senior members** shall consist of Active members who have reached the age of 65 years or who have retired from active practice. Senior members shall have all the responsibilities and privileges of active members, excepting those regarding attendance at assemblies. Senior members are not required to pay dues.

3. **Honorary members** shall consist of individuals who have made outstanding contributions to the discipline of endocrine surgery. They shall have no voting privileges, are not eligible for election as officers, and are not subject to assessment for dues.

4. **Corresponding members** shall consist of individuals who meet all the same qualifications in their respective countries as active members. They shall have no voting privileges, are not eligible for election as officers, shall attend one annual meeting and may be subject to dues at a reduced amount.

5. **Allied Specialist members** shall consist of specialists with American Board certification in their respective field or its equivalent in Canada, Central America, Mexico and South America. In addition, Allied Specialist membership shall be limited to Fellows of the American College of Surgeons, FACE, FACR, FACP, ACP etc. or their international equivalent. Allied Specialist members shall have demonstrated a significant commitment to and documented excellence in clinical practice, education, and/or research in their area(s) of practice within endocrine surgery. Allied Specialist members shall have been in practice within their specialty for a minimum of five years beyond training. Non-physician scientists (PhD) with a demonstrated interest in, and who have made significant contributions to, the field of endocrine surgery, are also eligible for

membership under the Allied Specialist category. Allied Specialist members must have attended at least two assemblies of the AAES prior to their application for membership. Allied Specialist members shall pay dues as levied by the Council and approved by the membership, shall have voting privileges, are subject to attendance requirements, shall attend the annual meeting, can serve on committees, and are not eligible for election to office or Council.

6. **Candidate members** shall consist of individuals who have completed their surgical training and who are awaiting qualification as Active members. Candidate members are required to pay dues at a reduced rate, do not have voting rights, and may register for the annual meeting at a reduced rate. Candidate membership will be limited to a period of time no more than three years following completion of all continuous training to include residency and fellowship[s]. A letter of sponsorship from an Active, Corresponding, Allied, or Senior AAES member will be sufficient to be considered as a Candidate member. Candidate members are strongly urged to attend the annual meeting but need not have attended a prior meeting. Candidate members shall not have the right to attend the annual business meeting, cannot serve on committees, and are not eligible for election to office or Council and cannot act as sponsors for membership or submissions to the annual meeting.

7. **Resident/Fellow members** shall consist of individuals who are currently training, either as surgical residents or fellows. Resident/Fellow members are required to pay dues at a reduced rate, do not have voting rights, and may register for the annual meeting at a reduced rate. Resident/Fellow membership is limited to the time that an individual is in a residency, research, or clinical fellowship training program. A letter of sponsorship from an Active, Corresponding, Allied, or Senior AAES member will be sufficient to be considered as a Resident/Fellow member. Attendance at a prior meeting of the AAES is not required. Resident/Fellow members will become Candidate members upon completion of their training and upon request. Resident/Fellow members shall not have the right to attend the annual business meeting, cannot serve on committees, and are not eligible for election to office or Council and cannot act as sponsors for membership or submissions to the annual meeting.

8. **Affiliate Provider members** shall consist of nurse practitioners, physician's assistants, nursing specialists other non-physician health care providers with certification in their respective fields in Canada, Central America, Mexico or South America. Affiliate Providers shall have demonstrated significant commitment to and documented excellence in clinical practice, education and/or research in endocrine surgery, shall have been in practice within their specialty for a minimum of three years beyond training, and must have attended at least one assembly of the AAES prior to their application for membership.

Affiliated Providers shall pay Dues as levied by the Council and approved by the membership, are subject to attendance requirements, can serve on committees, do not have voting privileges, and are not eligible for election to office or Council. Affiliate Provider members will become members upon review of the membership committee and do not need to be voted on by the full membership.

C. Election of New Members

1. Physicians fulfilling the requirements for Active or Allied Specialist membership stated in paragraphs 2.1A and 2.1B of these Bylaws who reside in the United States, Canada, Central America, Mexico or South America may be eligible for Active membership , Allied Specialist membership or Affiliate Provider membership.

2. Application forms for Active, Corresponding, Allied Specialist membership shall be provided by the Secretary-Treasurer on line. Completed application forms signed by the proposed member, one sponsor, and two endorsees shall be delivered to the Secretary-Treasurer at least four months before the annual assembly. Completed applications shall be reviewed by Council, which has the right to accept or reject any application for membership in the Association. Names of prospective members recommended for election by the Council shall be submitted to the membership at the annual assembly.

Election shall be made by secret ballot, by a three-fourths affirmative vote of the members present at the annual business meeting at a set time deemed appropriate (within 90 days) following the annual meeting. Affiliate members shall be cleared by the membership committee chair and Secretary Treasurer and will not require formal vote by the membership at the annual assembly. A prospective member who fails to be elected at one assembly may be considered at the next two annual assemblies of the Association. If election fails a third time, the prospective member's application may be resubmitted after a two year interval.

3. Prospective members for Honorary membership shall be proposed in writing to the Council through the Secretary-Treasurer. Prospective members approved by the Council will be elected by three-fourths affirmative vote of the Council and officers present.

4. Active members in good standing who subsequently take up practice in geographic areas outside of the United States, Canada, Central America, Mexico, or South America shall be changed to corresponding members of the Association upon request.

5. Sponsors and endorsers shall be Active, Allied, Corresponding, or Senior members.

D. Dues

Dues and assessments shall be levied by the Council and approved by the membership at the annual assembly.

E. Resignations / Expulsions

1. Resignations of members otherwise in good standing shall be accepted by majority vote of the Council.

2. Charges of unprofessional or unethical conduct against any member of the Association must be submitted in writing to Council. The Council's concurrence or disallowance of the charges shall be presented to the membership at the annual assembly executive session. A three-fourths affirmative vote of the members present shall be required for expulsion.

3. Any Active or Allied Specialist member who is absent from three consecutive annual assemblies without adequate explanation of this absence made in writing to the Secretary-Treasurer shall be dropped from membership in the Association by vote of the Council. Membership may be reinstated by vote of the Council.

4. Any member whose dues remain unpaid for a period of one (1) year shall be dropped from membership, provided that notification of such a lapse beginning at least three (3) months prior to its effective date. The member may be reinstated following payment of the dues in arrears on approval of the Council.

2.2 **PLACE OF ASSEMBLIES.** Annual and special assemblies of the members shall be held at such time and place as shall be determined by the Council.

2.3 **ANNUAL ASSEMBLY.** The annual assembly of the members of the corporation for election of Officers and Councilors and for such other business as may come before the assembly shall be held on such date and hour as shall have been determined by the members (or if the members have not acted, by the Council or the Chairperson), and stated in the notice of the assembly. If for any reason the annual assembly is not held on the determined date of any year, any business which could have been conducted at an annual assembly may be conducted at any subsequent special or annual assembly or by consent resolution.

A. During the annual assembly, there shall be an AAES Business Meeting of the membership. The business of the association shall be conducted at this time. The report of the nominating committee shall be presented to the membership during the AAES Business Meeting. Nominations may be made from the floor. Officers of the Association and Council members shall be elected by majority vote of the Active, Allied Specialist, and Senior members during the AAES Business Meeting.

B. Any member of the Association may invite one or more guests to attend the annual assembly.

C. Abstracts for consideration for presentation must be authored or sponsored by a member of the following categories: Active, Corresponding, Senior, Honorary, or Allied Specialist.

2.4 SPECIAL ASSEMBLIES. Special assemblies of the members of the corporation may be called by the Council or the President and shall be called by the President or the Secretary-Treasurer at the written request of any 30 members of the corporation. No business may be transacted at a special assembly except the business specified in the notice of the assembly.

2.5 NOTICE OF ASSEMBLIES OF MEMBERS. Except as otherwise provided by statute, written notice of the place, day, and hour of the assembly and in the case of a special assembly, the purpose or purposes for which the assembly of the members of the corporation is called, shall be given not less than five (5) nor more than sixty (60) days before the date of the assembly to each member, either personally or by mailing such notice to each member at the address designated by the member for such purpose or, if none is designated, at the member's last known address.

2.6 WAIVER OF NOTICE. Whenever any notice whatever is required to be given under the provisions of the Illinois Not for Profit Corporation Act of 1986 ("the Act") or under the provisions of the articles of incorporation or bylaws of this corporation, a waiver thereof in writing signed by the person or persons entitled to such notice, whether before or after the time stated therein, shall be deemed equivalent to the giving of such notice. Attendance at any meeting shall constitute waiver of notice thereof unless the person at the meeting objects to the holding of the meeting because proper notice was not given.

2.7 QUORUM OF MEMBERS ENTITLED TO VOTE. A minimum of thirty (30) members eligible to vote shall constitute a quorum at the annual assembly to effect changes in the bylaws of the Association, to make assessments, to authorize appropriations or expenditures of money other than those required in the routine business of the Association, to elect officers, Council members and members, and to expel members. For the transaction of other business, the members entitled to vote present at any annual assembly shall constitute a quorum.

III. COUNCIL

3.1 **COUNCIL.** The business and affairs of the corporation shall be managed by or under the direction of a Council which is the governing body of the corporation. The Council shall meet as often as necessary to conduct the business of the corporation.

3.2 **NUMBER AND SELECTION OF COUNCIL.** The Council shall consist of the officers of the Association, the three immediate past Presidents, and six other Council members, as the membership shall from time to time determine. The Council shall be elected by majority vote of the Active, Allied, and Senior membership during the AAES Business Meeting at its annual assembly and vacancies shall be filled in the manner specified in Section 3.4 below. Councilors (other than those elected to fill vacancies) shall serve for three (3) year terms, with two (2) Councilors being elected annually so as to provide overlapping terms.

3.3 **REMOVAL.** Any Councilor may be removed from office with cause at any annual or special assembly of the members. No Councilor may be removed except as follows: (1) A Councilor may be removed by the affirmative vote of two-thirds of the votes present and voted, either in person or by proxy (2) No Councilor shall be removed at a meeting of members entitled to vote unless the written notice of such meeting is delivered to all members entitled to vote on removal of Councilors. Such notice shall state that a purpose or the meeting is to vote upon the removal of one or more Councilors named in the notice. Only the named Councilor or Councilors may be removed at such meeting. If the vote of Councilors is to take place at a special assembly of Councilors, written notice of the proposed removal shall be delivered to all Councilors no less than twenty (20) days prior to such assembly. Written notice for removal must include the purpose of the assembly (i.e., removal) and the particular Councilor to be removed.

3.4 **VACANCIES.** Vacancies occurring in the Council by reason of death, resignation, removal or other inability to serve shall be filled by the affirmative vote of a majority of the remaining Councilors although less than a quorum of the Council. A Councilor elected by the Council to fill a vacancy shall serve until the next annual assembly of the membership. At such annual assembly, the members shall elect a person to the Council who shall serve for the remaining portion of the term.

3.5 **ANNUAL ASSEMBLY.** The annual assembly of the Council shall be held at such place, date and hour as the Council may determine from time to time. At the annual assembly, the Council shall consider such business as may properly

be brought before the assembly. If less than a quorum of the Councilors appear for such an annual assembly of the Council, the holding of such annual assembly shall not be required and matters which might have been taken up at the annual assembly may be taken up at any later regular, special or annual assembly or by consent resolution.

3.6 REGULAR AND SPECIAL ASSEMBLIES. Regular assemblies of the Council may be held at such times and places as the Councilors may from time to time determine at a prior assembly or as shall be directed or approved by the vote or written consent of all the Councilors. Special assemblies of the Council may be called by the President or the Secretary-Treasurer, and shall be called by the President or the Secretary-Treasurer upon the written request of any two (2) Councilors.

3.7 NOTICE OF ASSEMBLIES OF THE COUNCIL. Written notice of the time and place of all assemblies of the Council shall be given to each Councilor at least 10 days before the day of the assembly, either personally or by mailing such notice to each Councilor at the address designated by the Councilor for such purposes, or if none is designated, at the Councilor's last known address. Notices of special assemblies shall state the purpose or purposes of the assembly, and no business may be conducted at a special assembly except the business specified in the notice of the assembly. Notice of any assembly of the Council may be waived in writing before or after the assembly.

3.8 ACTION WITHOUT AN ASSEMBLY. Any action required or permitted at any assembly of the Council or a committee thereof may be taken without an assembly, without prior notice and without a vote, if a consent in writing, setting forth the action so taken, shall be signed by all of the Councilors and all of any non-Councilor committee members entitled to vote with respect to the subject matter thereof, or by all the members of such committee, as the case may be. The consent shall be evidenced by one or more written approvals, each of which sets forth the action taken and bears the signature of one or more Councilors or committee members. All the approvals evidencing the consent shall be delivered to the Secretary-Treasurer to be filed in the corporate records. The action taken shall be effective when all the Councilors or the committee members, as the case may be, have approved the consent unless the consent specifies a different effective date. Any such consent signed by all Councilors or all the committee members, as the case may be, shall have the same effect as a unanimous vote and may be stated as such in any document filed with the Secretary of State under the Illinois General Not for Profit Corporation Act.

3.9 QUORUM AND VOTING REQUIREMENTS. A majority of the Councilors then in office and a majority of any committee appointed by the Council constitutes a quorum for the transaction of business. The vote of a majority of the Councilors or committee members present at any assembly at which there is a quorum shall be the acts of the Council or the committee, except as a larger vote may be required by the laws of the State of Illinois, these bylaws or the Articles of Incorporation. A member of the Council or of a committee may participate in an assembly by conference telephone or similar communications equipment by means of which all persons participating in the assembly can hear one another and communicate with each other. Participation in an assembly in this manner constitutes presence in person at the assembly. No Councilor may act by proxy on any matter.

3.10 POWERS OF THE COUNCILORS. The Councilors shall have charge, control and management of the business, property, personnel, affairs and funds of the corporation and shall have the power and authority to do and perform all acts and functions permitted for an organization described in Section 501(c) (3) of the Code not inconsistent with these bylaws, the Articles of Incorporation or the laws of the State of Illinois. In addition to and not in limitation of all powers, express or implied, now or hereafter conferred upon Boards of Directors of nonprofit corporations, and in addition to the powers mentioned in and implied from Section 1.3, the Councilors shall have the power to borrow or raise money for corporate purposes, to issue bonds, notes or debentures, to secure such obligations by mortgage or other lien upon any and all of the property of the corporation, whether at the time owned or thereafter acquired, and to guarantee the debt of any affiliated or subsidiary corporation or other entity, whenever the same shall be in the best interests of the corporation and in furtherance of its purposes.

3.11 COMPENSATION. Councilors shall receive no compensation for their services on the Council. The preceding shall not, however, prevent the corporation from purchasing insurance as provided in Section 5.1 nor shall it prevent the Council from providing reasonable compensation to a Councilor for services which are beyond the scope of his or her duties as Councilor or from reimbursing any Councilor for expenses actually and necessarily incurred in the performance of his or her duties as a Councilor.

IV. OFFICERS

4.1 **OFFICERS.** The officers shall be a President, a President-Elect, a Vice President, a Secretary-Treasurer, and a Recorder.

4.2 **ELECTION AND TERM OF OFFICE.** The President, President-Elect, and Vice President of the Association shall be elected for terms of one year each. The Secretary-Treasurer and Recorder shall be elected for three year terms. Officers of the Association shall be elected by majority vote of the Active, Allied Specialist, and Senior members during the AAES Business Meeting.

4.3 **REMOVAL.** Any officer or agent may be removed with or without cause by the Council or other persons authorized to elect or appoint such officer or agent but such removal shall be without prejudice to the contract rights, if any, of the person so removed. Election or appointment of an officer or agent shall not of itself create any contract rights.

4.4 **PRESIDENT.** The President shall preside at Council assemblies and the annual members' assembly. The President shall appoint members to all standing and ad hoc committees and shall serve as an ex-officio member of each. Successors to vacated offices of the Association shall be appointed by the President until the position is filled at the next annual assembly. The President shall prepare an address to the annual assembly of the Association.

4.5 **PRESIDENT-ELECT.** The President-Elect, in the absence or incapacity of the President, shall perform the duties of the President's office.

4.6 **VICE PRESIDENT.** In the absence or incapacity of both the President and the President-Elect, the Chair shall be assumed by the Vice President

4.7 **SECRETARY-TREASURER.** The Secretary-Treasurer shall keep minutes of the Association and the Council, receive and care for all records belonging to the Association, and conduct the correspondence of the Association. This office will issue to all members a written report of the preceding year's transactions to be read to the Council and membership at the annual assembly. The Secretary-Treasurer will prepare an annual report for audit. The Secretary-Treasurer shall have the authority to certify the bylaws, resolutions of the members and Council and committees thereof, and other documents of the corporation as true and correct copies thereof.

4.8 **RECORDER.** The Recorder shall receive the manuscripts and edition of the discussions. The Recorder shall be custodian for the transactions of the Association.

V. INDEMNIFICATION

5.1 **INDEMNIFICATION.** Each person who is or was a Councilor, member, officer or member of a committee of the corporation and each person who serves or has served at the request of the corporation, as a Councilor, officer, partner, employee or agent of any other corporation, partnership, joint venture, trust or other enterprise may be indemnified by the corporation to the fullest extent permitted by the corporation laws of the State of Illinois as they may be in effect from time to time. The corporation may purchase and maintain insurance on behalf of any such person against any liability asserted against and incurred by such person in any such capacity or arising out of his status as such, whether or not the corporation would have power to indemnify such person against such liability under the preceding sentence. The corporation may, to the extent authorized from time to time by the Council, grant rights to indemnification to any employee or agent of the corporation to the fullest extent provided under the laws of the State of Illinois as they may be in effect from time to time.

VI. COMMITTEES

6.1 **COMMITTEES.** A majority of the Council may establish such committees from time to time as it shall deem appropriate and shall define the powers and responsibilities of such committees. The Council may establish one or more executive committees and determine the powers and duties of such executive committee or committees within the limits prescribed by law.

A. Standing committees of the Association shall consist of the Membership Committee (composed of Council members), Program Committee, Education and Research Committee, Information and Technology Committee, Accreditation Committee, Fellowship Committee, Foundation Committee and CESQIP (Collaborative Endocrine Surgery Quality Improvement Program).

B. The Nominating Committee shall consist of the President and three immediate past Presidents. The most senior past President is chairman of the committee.

C. All committees shall be chaired by members appointed by the President with the advice of the Council.

6.2 **COMMITTEES OF COUNCILORS.** Unless the appointment by the Council requires a greater number, a majority of any committee shall constitute a quorum, and a majority of committee members present and voting at a meeting at which a quorum is present is necessary for committee action. A committee may act by unanimous consent in writing without a meeting and, subject to the provisions of the bylaws for action by the Council, the committee by majority vote of its members shall determine the time and place of meetings and the notice required thereof. To the extent specified by the Council or in the articles of incorporation or bylaws, each committee may exercise the authority of the Council under Section 108.05 of the Act; provided, however, a committee may not:

A. Adopt a plan for the distribution of the assets of the corporation, or for dissolution;

B. Approve or recommend to members any act the Act requires to be approved by members, except that committees appointed by the Council or otherwise authorized by the bylaws relating to the election, nomination, qualification, or credentials of Councilors or other committees involved in the process of electing Councilors may make recommendations to the members relating to electing Councilors;

C. Fill vacancies on the Council or on any of its committees;

D. Elect, appoint, or remove any officer or Councilor or member of any committee, or fix the compensation of any member of a committee;

E. Adopt, amend, or repeal the bylaws or the articles of incorporation;

F. Adopt a plan of merger or adopt a plan of consolidation with another corporation, or authorize the sale, lease, exchange or mortgage of all or substantially all of the property or assets of the corporation; or

G. Amend, alter, repeal, or take action inconsistent with any resolution or action of the Council when the resolution or action of the Council provides by its terms that it shall not be amended, altered, or repealed by action of a committee.

6.3 **Ad Hoc Committees.** As it is the purview of the president to create ad-hoc committees as needed for special projects of the society, and appoint members to said created committees, it is understood that these members will serve on a limited term of 1-3 years or based on the discretion of any newly elected President. The purpose of these Ad Hoc committees will be in service to time limited projects not falling directly within the purview of standing committees.

VII. AMENDMENTS

7.1 **AMENDMENTS.** These bylaws may be amended at the annual assembly of the membership provided a notice setting forth the amendment or a summary of the changes to be effected thereby is given to each member entitled to vote thereon in the manner and within the time provided in these bylaws for notice of the assembly. These bylaws may be amended at the annual assembly by a two-thirds affirmative vote of the members present. No amendment inconsistent with the Articles of Incorporation shall be effective prior to amendment of the Articles of Incorporation.

VIII. BOOKS AND RECORDS

8.1 **BOOKS AND RECORDS.** The corporation shall keep correct and complete books and records of account and shall also keep minutes of the pro¬ceedings of its members, Council and committees having any of the authority of the Council, and shall keep at the registered or principal office a record giving the names and addresses of the Council and members entitled to vote. All books and records of the corporation may be inspected by any Councilor or member entitled to vote, or his or her agent or attorney for any proper purpose at any reasonable time.

IX. PARLIAMENTARY AUTHORITY

9.1 **PARLIAMENTARY AUTHORITY**. The rules of parliamentary procedure in "Robert's Rules of Order, Revised", shall govern the proceedings of the assemblies of this corporation, subject to all other rules contained in the Articles of Incorporation and Bylaws and except that proxy voting shall be allowed in accordance with the Nonprofit Corporation Act of the State of California.

X. SEVERABILITY

10.1 **SEVERABILITY.** Each of the sections, subsections and provisions hereof shall be deemed and considered separate and severable so that if any section, subsection or provision is deemed or declared to be invalid or unenforceable, this shall have no effect on the validity or enforceability of any of the other sections, subsections or provisions.

GEOGRAPHICAL MEMBERSHIP DIRECTORY

2014 - 2015

GEOGRAPHICAL MEMBERSHIP DIRECTORY

Brazil

Curitiba
Vasconcelos, Evandro Cezar

Porto Alegre
Molinari, Alberto S.

Sao Paulo
Aun, Frederico

Canada

ALBERTA

Calgary
Harvey, Adrian M.
Mack, Lloyd
Pasieka, Janice Lynn

Edmonton
McMullen, Todd Patrick William

QUEBEC

Montreal
Mitmaker, Elliot Jonathan
Tabah, Roger John

BRITISH COLUMBIA

Prince George
Caron, Nadine Rena

ONTARIO

Toronto
Devon, Karen M.
Rosen, Irving Bernard
Rotstein, Lorne E.
Urbach, David Robert

Vancouver
Bugis, Samuel P.
Melck, Adrienne Lara
Schmidt, Nis
Wiseman, Sam Michael

Chile

Santiago
Costa, Eduardo A.

Colombia

Medellin
Duenas, Juan Pablo

Guatemala

Guatemala City
Cordon, Carlos Rene
Penalonzo, Marco Antonio

Mexico

D.F.
Arrangoiz, Rodrigo

Leon Guanajuanto
Espana-Gomez, Maria Nayvi

Merida
Fajardo-Cevallos, Rafael Enrique

Mexico City
Herrera, Miguel F.
Pantoja, Juan Pablo
Sierra-Salazar, Mauricio
Velázquez-Fernández, David

United States

ALABAMA

Birmingham
Diethelm, Arnold G.
Porterfield, John Roland
Smith, Gardner Scott
Sperling, David

Mobile
Dyess, Donna Lynn

ARIZONA

Paradise Valley
Staren, Edgar D.

Phoenix
Demeure, Michael J.
Flynn, Stuart D.
Harding, Richard James
Schlinkert, Richard T.

Scottsdale
Van Lier Ribbink, Jeffrey Anthony

Tucson
Guerrero, Marlon A.
Morris, Lilah F.

ARKANSAS

Little Rock
Mancino, Anne T.

CALIFORNIA

Beverly Hills
Katz, Alfred D.

Davis
Wolfman, Earl

Duarte
Yim, John Hosei

Encino
Zuckerbraun, Lionel

Fresno
Maser, Christina Lynn

Hillsborough
Lim, Robert C.

La Jolla
Sanford, Arthur

Los Altos
Allo, Maria D.

Los Angeles
Giuliano, Armando E.
Haigh, Philip I.
Harari, Avital
Hines, Oscar J.
Isorena, Jennifer
Yeh, Michael W.

Mountain View
Cisco, Robin Malone

Northstar-Truckee
Danto, Lawrence A.

Orange
Harness, Jay Kenneth

Richmond
Park, Judith J.

Sacramento
Campbell, Michael James

San Diego
Block, Melvin A.
Boganey, Anthony Corey
Bouvet, Michael
Clark, Gary C.

GEOGRAPHICAL MEMBERSHIP DIRECTORY CONTINUED

San Francisco
Clark, Orlo Herrick
Debas, Haile T.
Duh, Quan-Yang
Gosnell, Jessica Erin
Hunt, Thomas K.
Shen, Wen Tsong
Suh, Insoo
Yutan, Elaine U.

Santa Barbara
Latimer, Ronald G.

Santa Cruz
Lee, Louis C.

Santa Monica
Brunicardi, F. Charles
Goldfarb, Melanie
Said, Meena

Stanford
Greco, Ralph S.
Norton, Jeffrey Allen

Ventura
Nguyen, Chau Tuan

COLORADO

Aurora
McIntyre, Jr., Robert C.
Raeburn, Christopher D.

Boulder
Brown, Dennistoun K.

Colorado Springs
Grant, Clive S.

Denver
Vanderveen, Kimberly

Golden
Bocker, Jennifer Marie

CONNECTICUT

Bloomfield
Raphael, Rachel

Farmington
Stevenson, Christina E.

New Haven
Callender, Glenda G.
Carling, Tobias
Donovan, Patricia Irvin
Foster, Jr., Roger S.
Quinn, Courtney Elizabeth
Udelsman, Robert

DISTRICT OF COLUMBIA

Washington
Barbul, Adrian
Felger, Erin Angela
Geelhoed, Glenn W.
Rosen, Jennifer Erica

FLORIDA

Bay Pines
Goodgame, J. Thomas

Bonita Springs
Freier, Duane T.

Coral Gables
Irvin, George L.

Fort Myers
Patwardhan, Nilima

Gainesville
Shaw, Christiana M.

Jacksonville
Asbun, Horacio J.
Smith, Stephen L.

GEOGRAPHICAL MEMBERSHIP DIRECTORY CONTINUED

Miami
Lew, John I.
Rodgers, Steven E.

Miami Beach
Dembrow, Victor D.

Safety Harbor
Schmidt, Rick J.

Stuart
Vopal, James J.

Tampa
Norman, James G.
Politz, Douglas E.

GEORGIA

Atlanta
Sharma, Jyotirmay
Weber, Collin J.

Augusta
Mansberger, Arlie R.
Terris, David J.
Yeh, Karen A.

Lawrenceville
McGill, Julie F.

Marietta
Underwood, Robert A.

Savannah
Yeager, E. Stephen

HAWAII

Honolulu
Wong, Livingston
Woodruff, Stacey Lynne

ILLINOIS

Aurora
Bloom, Allen D.

Burr Ridge
Patel, Subhash

Chicago
Abadin, Shabirhusain Shakir
Angelos, Peter
Elaraj, Dina
Fredland, Allan J.
Grogan, Raymon H
Kaplan, Edwin L.
Pickleman, Jack
Sturgeon, Cord

Evanston
Moo-Young, Tricia Angeline
Prinz, Richard Allen
Winchester, David James

Hinsdale
Paloyan, Edward

Lisle
Lee, Theresa Minsum

Maywood
De Jong, Steven A.
Kabaker, Adam Scott

North Chicago
Zdon, Michael J.

Oaklawn
Hopkins, William M.

Park Ridge
Hann, Sang E.

GEOGRAPHICAL MEMBERSHIP DIRECTORY CONTINUED

INDIANA

Indianapolis
Broadie, Thomas Allen
Miskulin, Judiann

IOWA

Iowa City
Gurll, Nelson J.
Howe, James R.
Lal, Geeta
Sugg, Sonia L.
Weigel, Ronald J.

KANSAS

Lake Quivera
Hermreck, Arlo S.

KENTUCKY

Lexington
Lee, Cortney Youens
Sloan, David Alexander

Louisville
Quillo, Amy R.

Kenner
Wang, Yi Zarn
Woltering, Eugene A.

LOUISIANA

New Orleans
Jaffe, Bernard M.
Kandil, Emad

MAINE

Bangor
Starks, Michael Ray

Lewiston
Goldstein, Richard E.

Portland
Goldfarb, Walter B.
MacGillivray, Dougald Charles
Radke, Frederick Roy
Wu, Leslie S.

Vinalhaven
Kinder, Barbara K.

MARYLAND

Aberdeen
Borman, Karen Renee

Baltimore
Alexander, H. Richard
Gann, Donald S.
Marohn, Michael R.
Olson, Jr., John A.
Prescott, Jason D.
Tufano, Ralph P.
Turner, Joel
Turner, Douglas John
Zeiger, Martha Allen

Bethesda
Hughes, Marybeth
Kebebew, Electron
Nilubol, Naris
Wells, Jr., Samuel A.

MASSACHUSETTS

Auburndale
Silen, William

Beverly
Narra, Vinod

GEOGRAPHICAL MEMBERSHIP DIRECTORY CONTINUED

Boston
Beazley, Robert
Brooks, David C.
Cho, Nancy Lackhyun
Doherty, Gerard Michael
Gawande, Atul
Gaz, Randall D.
Hasselgren, Per-Olof J.
Hodin, Richard A.
Lubitz, Carrie C.
McAneny, David
Moore, Jr., Francis Daniels
Mowschenson, Peter M.
Pai, Sara Isabel
Parangi, Sareh
Phitayakorn, Roy
Randolph, Gregory William
Ruan, Daniel T.
Stephen, Antonia E.

Brookline
Cady, Blake

Burlington
Brams, David M.
Wei, John P.

Cambridge
LoGerfo, Frank

Pittsfield
Curletti, Eugene L.

Springfield
Coe, Nicholas Paul
Jabiev, Azad A.

Weston
Aliapoulios, Menelaos A.

MICHIGAN

Ann Arbor
Burney, Richard E.
Cohen, Mark Steven
Gauger, Paul G.
Hughes, David Thomas
Miller, Barbra S.
Thompson, Norman W.
Bloomfield Hills
Saxe, Andrew W.

Detroit
Singer, Michael Carmi
Talpos, Gary B.

Frankfort
Griffen, Ward O.

Franklin
Hamburger, Stuart W.

Lansing
McLeod, Michael K.

Midland
Sequeira, Melwyn John

Royal Oak
Czako, Peter F.
Nagar, Sapna

MINNESOTA

Maple Grove
Kemp, Kourtney Lynn

Minneapolis
Delaney, John P.
Evasovich, Maria Rae
Najarian, John S.

Robbinsdale
Cerny, Joseph C.

GEOGRAPHICAL MEMBERSHIP DIRECTORY CONTINUED

Rochester
Carney, J. Aidan
Farley, David R.
Hay, Ian D.
McKenzie, Travis J
Richards, Melanie L.
Service, F. John
Thompson, Geoffrey Bruce
Young, William F.

St. Paul
Sneider, Mark S

MISSISSIPPI

Jackson
Parent, Andrew D.

Tupelo
Bowlin, John W.

MISSOURI

Columbia
Koivunen, Debra G.

Saint Louis
Gillanders, William E.
Hall, Bruce L.
Moley, Jeffrey F.
Shieber, William
Brunt, L. Michael

MONTANA

Kalispell
Sheldon, David G.

NEBRASKA

Papillion
Stanislav, Gregory

NEW HAMPSHIRE

Lebanon
Sorensen, Meredith J.

NEW JERSEY

Morristown
Whitman, Eric D.

Neptune
Shifrin, Alexander L.

New Brunswick
Trooskin, Stanley Zachary

Plainsboro
Kahn, Steven P.
Roy, Rashmi

Vineland
Kushnir, Leon

NEW MEXICO

Albuquerque
Vazquez, Bianca J.

Rio Rancho
Miscall, Brian G.

NEW YORK

Albany
Beyer, Todd D.
Carsello, Carrie Beth

Bronx
Laird, Amanda Michelle
Libutti, Steven K.
Smith, Jonathan Cope

Buffalo
Cance, William G.

GEOGRAPHICAL MEMBERSHIP DIRECTORY CONTINUED

Cooperstown
Ryan, M. Bernadette

Elmhurst
Arora, Shalini

Ithaca
Foster, Cory Lee

Lake Success
Dubner, Sanford
Sznyter, Laura A.

Mineola
Allendorf, John D.

New York
Ahmed, Leaque
Brennan, Murray F.
Chabot, John A.
Fahey, Thomas J.
Ganly, Ian
Heller, Keith Stuart
Inabnet III, William B.
Kraus, Dennis H.
Kundel, Anna
Lee, James
Owen, Randall Paul
Patel, Snehal
Patel, Kepal N.
Shah, Jatin P.
Shaha, Ashok R.
Singh, Bhuvanesh
Strong, Vivian E.
Tuttle, Robert M.
Untch, Brian Roy
Untch, Brian R.
Zarnegar, Rasa

Rochester
Moalem, Jacob

Syracuse
Kort-Glowaki, Kara C.
Numann, Patricia J.

Valhalla
Spanknebel, Kathryn

White Plains
Weber, Kaare John

NORTH CAROLINA

Apex
Leight, George S.

Asheville
Humble, Ted H.

Chapel Hill
Croom, Robert D.
Kim, Lawrence T.

Charlotte
Kercher, Kent W.
Pederson, Lee
Wagner, Kristin Elizabeth

Durham
Roman, Sanziana Alina
Scheri, Randall P.
Sosa, Julie Ann

Greenville
Pofahl, Walter E.
Pories, Walter J.

Pittsboro
Starling, James R.

Raleigh
Faust, Kirk B.

Wilmington
Versnick, Mark Anthony

GEOGRAPHICAL MEMBERSHIP DIRECTORY CONTINUED

Winston Salem
Albertson, David A.
Cannon, Jennifer
Gallagher, Scott F.
Randle, Reese Woodson

OHIO

Akron
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F: **310-437-0585**
E: **membership@endocrinesurgery.org**

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NOTES

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37th ANNUAL MEETING

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