AMERICAN ASSOCIATION OF ENDOCRINE SURGEONS

Thirtieth Annual Meeting

May 3-5, 2009

Monona Terrace Community & Convention Center
Madison, Wisconsin

PLEASE BRING THIS BOOK
TO THE MEETING

AMERICAN ASSOCIATION OF ENDOCRINE SURGEONS

Thirtieth Annual Meeting

American Association of Endocrine Surgeons
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Overland Park, KS 66283-0407
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Web: www.endocrinesurgery.org

Secretary-Treasurer
Sally E. Carty MD FACS
Kaufmann Building, Suite 101
University of Pittsburgh
3471 Fifth Avenue
Pittsburgh PA 15213
Telephone: 412-647-0467
Fax: 412-648-9551
E-mail: cartyse@upmc.edu

AAES FUTURE MEETINGS

April 18-20, 2010
Pittsburgh, Pennsylvania
Sally E. Carty, MD

April 10-12, 2011
Houston, Texas
Nancy D. Perrier, MD

April 29-May 1, 2012
Iowa City, Iowa
Ronald J. Weigel, MD

2013
Chicago, Illinois
Peter Angelos, MD

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OFFICERS, COUNCIL AND COMMITTEES

Officers
Michael J. Demeure, President
Janice L. Pasieka, President-Elect
Jeffrey F. Moley, Vice President
Sally E. Carty, Secretary-Treasurer
Steven K. Libutti, Recorder

Council
Alan P.B. Dackiw
Thomas J. Fahey, III
Richard A. Hodin
William B. Inabnet, III
Christopher R. McHenry
Bradford K. Mitchell
Julie Ann Sosa
Geoffrey B. Thompson
Robert Udelsman

Local Arrangements Chair
Herbert Chen

Publication and Program Committee
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Carmen C. Solarzano

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Thomas J. Fahey, III, Chair
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Julie Ann Sosa

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Richard A. Hodin
Electron Kebebew
Sareh Parangi
Nancy D. Perrier
Melanie L. Richards
Renu Sinha

Fellowship Committee
Allan B. Siperstein, Chair
Sally E. Carty
Gerard M. Doherty
William B. Inabnet
Richard A. Prinz
Sanziana A. Roman

ESC Representative
Sonia L. Sugg

AACE Representative
Martha A. Zeiger

SOAC Representative to ABS
Richard A. Prinz

NSQIP Representative
Julie Ann Sosa

Paul LoGerfo Committee
Jack M. Monchik, Chair
John A. Chabot

Ad Hoc Ethics Committee
Peter Angelos, Chair
Paul G. Gauger
John S. Kukora
Robert Udelsman

Ad Hoc Website Committee
Peter Angelos
Herbert Chen
Bradford K. Mitchell
Michael W. Yeh

Nominating Committee
Christopher R. McHenry, Chair
Michael J. Demeure
Geoffrey B. Thompson

PAST OFFICERS

1980-1981

Norman W. Thompson	President
Orlo H. Clark	Vice President
John M. Monchik S	ecretary-Treasurer

1981-1982

Norman W. Thompson	President
Orlo H. Clark	Vice President
John M. Monchik	Secretary-Treasurer

1982-1983

Edwin L. Kaplan	President
Blake Cady	Vice President
John M. Monchik	Secretary-Treasurer

1983-1984

Stanley R. Friesen	President
John A. Palmer	Vice President
John M. Monchik	Secretary-Treasurer

1984-1985

Leonard Rosoff	President
John M. Monchik	Vice President
Stuart D. Wilson	Secretary-Treasurer

1985-1986

Chiu-An Wang	President
Edward Paloyan	Vice President
Stuart D. Wilson	Secretary-Treasurer

1986-1987

Oliver Beahrs	President
Robert C. Hickey	Vice President
Stuart D. Wilson	Secretary-Treasurer

1987-1988

Edward Paloyan	President
Caldwell B. Esselstyn	Vice President
Stuart D. Wilson	Secretary-Treasurer
Jon A. van Heerden	Recorder

1988-1989

John R. Brooks	President
Melvin A. Block	Vice President
Richard A. Prinz	Secretary-Treasurer
Jon A. van Heerden	Recorder

1989-1990

Colin G. Thomas, Jr.	President
Carl R. Feind	Vice President
Richard A. Prinz	Secretary-Treasurer
Jon A. van Heerden	Recorder

1990-1991

Caldwell B. Esselstyn	President
Brown M. Dobyns	Vice President
Richard A. Prinz	Secretary-Treasurer
Robert D. Croom, III	Recorder

1991-1992

Stuart D. Wilson	President
Joseph N. Attie	Vice President
Blake Cady	Secretary-Treasurer
Robert D. Croom, III	Recorder

1992-1993

Robert C. Hickey	President
Patricia J. Numann	Vice President
Blake Cady	Secretary-Treasurer
Robert D. Croom, III	Recorder

1993-1994

Orlo H. Clark	President
Glen W. Geelhoed	Vice President
Blake Cady	Secretary-Treasurer
George L. Irvin, III	Recorder

1994-1995

John M. Monchik	President
Jon A. van Heerden	Vice President
Jay K. Harness	Secretary-Treasurer
George L. Irvin, III	Recorder

1995-1996

Richard A. Prinz	President
Jeffrey A. Norton	Vice President
Jay K. Harness	Secretary-Treasurer
George L. Irvin, III	Recorder

1996-1997

Jon A. van Heerden	President
George L. Irvin, III	Vice President
Jay K. Harness	Secretary-Treasurer
Quan-Yang Duh	Recorder

1997-1998

Blake Cady	President
E. Christopher Ellison	Vice President
Paul LoGerfo	Secretary-Treasurer
Quan-Yang Duh	Recorder

1998-1999

George L. Irvin, III	President
Barbara K. Kinder	Vice President
Paul LoGerfo	Secretary-Treasurer
Quan-Yang Duh	Recorder

1999-2000

Jay K. Harness	President
John S. Kukora	Vice-President
Paul LoGerfo	Secretary-Treasurer
Michael J. Demeure	Recorder

2000-2001

Barbara K. Kinder	President
Martha A. Zeiger	Vice-President
Christopher R. McHenry	Secretary-Treasurer
Michael J. Demeure	Recorder

2001-2002

Clive S. Grant	President
Miguel F. Herrera	Vice-President
Christopher R. McHenry	Secretary-Treasurer
Michael J. Demeure	Recorder

2002-2003

Quan-Yang Duh	President
Gary B. Talpos	Vice-President
Christopher R. McHenry	Secretary-Treasurer
Geoffrey B. Thompson	Recorder

2003-2004

Paul LoGerfo	President
Ashok R. Shaha	Vice-President
Janice L. Pasieka	Secretary-Treasurer
Geoffrey B. Thompson	Recorder

2004-2005

John A. Kukora	President
Andrew W. Saxe	Vice-President
Janice L. Pasieka	Secretary-Treasurer
Geoffrey B. Thompson	Recorder

2005-2006

Robert Udelsman	President
Collin J. Weber	Vice-President
Janice L. Pasieka	Secretary-Treasurer
Douglas B. Evans	Recorder

2006-2007

Christopher R. McHenry	President
John B. Hanks	Vice-President
Sally E. Carty	Secretary-Treasurer
Douglas B. Evans	Recorder

2007-2008

Geoffrey B. Thompson	President
Terry C. Lairmore	Vice-President
Sally E. Carty	Secretary-Treasurer
Douglas B. Evans	Recorder

2008-2009

Michael J. Demeure	President
Jeffrey F. Moley	Vice-President
Sally E. Carty	Secretary-Treasurer
Steven K. Libutti	Recorder

THE OLIVER COPE MERITORIOUS ACHIEVEMENT AWARD

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 15th, 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 Toronto 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 1981.

Jon A. van Heerden, MD
Professor of Surgery Mayo Clinic, Rochester, MN
Awarded in Charlottesville NC in April 2004.
Dr. van Heerden served as our Recorder from 1987-89, 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, New York in May 2006.
Dr. Clark served as our Inaugural Vice President in 1980 and 1981, and as President in 1993.

HONORARY MEMBERS

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

John L. Doppman	Radiologist
J. Aidan Carney	Pathologist
Stuart D. Flynn	Pathologist
Ian D. Hay	Endocrinologist
Virginia A. LiVolsi	Pathologist
A.G.E. "Ace" Pearse	Endocrinologist
Thomas S. Reeve	Endocrine Surgeon
F. John Service	Endocrinologist
Britt Skogseid	Endocrinologist
William F. Young	Endocrinologist

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"

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

Herb Chen Baltimore, Maryland
"IMPLANTED PROGRAMMABLE INSULIN PUMPS: 153 PATIENT YEARS OF SURGICAL EXPERIENCE"

K. Michael Barry Rochester, Minnesota
"IS FAMILIAL HYPERPARATHYROIDISM A UNIQUE DISEASE"

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"

2003
Petra Musholt Hanover, Germany
"RET REARRANGEMENTS IN ARCHIVAL OXYPHILIC THYROID TUMORS: NEW INSIGHTS IN TUMORIGENESIS AND CLASSIFICATION OF HÜRTHLE CELL CARCINOMA"

Tina 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, MD ANDERSON CANCER CENTER IN HOUSTON"

2004
Rebecca 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 PARATHYROID-ECTOMY FOR ASYMPTOMATIC PRIMARY HYPERPARATHYROIDISM"

Ashley Kappes Madison, Wisconsin
"LITHIUM IONS: A NOVEL AGENT FOR THE TREATMENT OF PHEOCHROMOCYTOMAS AND PARAGANGLIOMAS"

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"

Pierre Leyre Poiters, France
"DOES THE RISK OF COMPRESSIVE HEMATOMA AFTER THYROIDECTOMY AUTHORISE ONE-DAY SURGERY?"

2008 NEW MEMBERS

Active/Standard Members

Eren Berber
Cleveland, OH

Mark S. Cohen
Kansas City, KS

Cora L. Foster
Ithaca, NY

Scott F. Gallagher
Tampa, FL

Amelia C. Grover
Richmond, VA

Per-Olof J. Hasselgren
Boston, MA

John I. Lew
Miami, FL

Barbra S. Miller
Ann Arbor, MI

Judiann Miskulin
Indianapolis, IN

Vinod Narra
Detroit, MI

Jennifer B. Ogilvie
Pittsburgh, PA

Kepal N. Patel
New York, NY

Jennifer E. Rosen
Boston, MA

Melwyn J. Sequeira
Midland, MI

Alexander L. Shifrin
Neptune, NJ

Mauricio Sierra
Mexico City, Mexico

Vivian E. Mack Strong
New York, NY

Jeffrey A. Van Lier Ribbink
Scottsdale, AZ

Kristin E. Wagner
Charlotte, NC

David J. Winchester
Evanston, IL

Michael W. Yeh
Los Angeles, CA

Corresponding New Members

Michael Brauckhoff
Bergen, Norway

Laurent Brunaud
Vandoeuvre Les Nancy, France

Celestino P. Lombardi
Rome, Italy

Marco Raffaelli
Rome, Italy

Antoly F. Romanchishen
Saint Petersburg,
Russian Federation

Jonathan Serpell
Franston, Australia

2008-09 CONTRIBUTORS TO THE PAUL LOGERFO EDUCATIONAL RESEARCH FUND

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. AAES is grateful to the members and groups who, as of press time, contributed in 2008-09:

John Allendorf
Peter Angelos
Thomas A. Broadie
Samuel P. Bugis
Blake Cady
Sally E. Carty
John A. Chabot
Herbert Chen
Carol Clark
Gary C. Clark
Mark S. Cohen
Steven A. De Jong
Michael J. Demeure
Mete Duren
Christopher Ellison
Douglas P. Evans
Rafael Fajardo-Cevallos
David R. Farley
William B. Farrar
Cora Lee Foster
Clive Grant
John Bright Hanks
Richard J. Harding
Jay K. Harness
Richard A. Hodin
William M. Hopkins
Ted H. Humble
William B. Inabnet
Barbara K. Kinder
Jeffrey E. Lee
John I. Lew
Dimitrios A. Linos
Chung-Yau Lo
Paul LoGerfo Family
Jonathan S. Lokey
Anne T. Mancino
David McAneny
Bradford K. Mitchell
Alberto S. Molinari
Jack M. Monchik
Shiro Noguchi
Patricia J. Numann
Takao Obara
Sareh Parangi
Janice L. Pasieka
Richard A. Prinz
Doris A. Quintana
S. Michael Roe
Irving B. Rosen
M. Bernadette Ryan
Nis Schmidt
Ashok R. Shaha
Dietmar Simon
Renu Sinha
Samuel K. Snyder
Carmen C. Solorzano
Cord Sturgeon
Beth H. Sutton
Geoffrey B. Thompson
Norman W. Thompson
Douglas R. Trostle
James J. Vopal
Kristin E. Wagner
Ronald D. Wenger
David J. Winchester
Michael W. Yeh
Kelvin Chiu Yu
Martha A. Zeiger

PAST MEETINGS

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

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

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

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

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

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

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

1987 **Chicago, Illinois**
Local Arrangements Chair: Ed 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

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

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: John 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 Chair: 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

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**
Johns Hopkins University, Baltimore, 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 Centre, Chicago, Illinois
THE DIFFUSE NEUROENDOCRINE SYSTEM: EVOLUTION OF THE CONCEPT AND IMPACT ON SURGERY

1997 **Bertil Hamberger**
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

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**
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, MD**
University of Toronto, Toronto
HARVEY CUSHING AND ENDO-CRIMINOLOGY

2007 **Virginia A. Livolsi, MD**
University of Pennsylvania, Philadelphia, PA
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

CONFERENCE INFORMATION

Objectives
This program is designed for all surgeons seeking the latest developments in endocrine surgical technique and its related research. Through participation in discussions, attendees will be able to explain current developments in the science and clinical practice of endocrine surgery. Members and guests will be able to explain practical new approaches and solutions to relevant concepts and problems in endocrine surgical care.

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 sponsorship of the American College of Surgeons and the American Association of Endocrine Surgeons. The American College 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 educational activity for a maximum of 18.25* *AMA PRA Category 1 Credits™*. Physicians should only claim credit commensurate with the extent of their participation in the activity.

*12.25 FOR GENERAL MEETING SESSIONS; 2.5 FOR SUNDAY WORKSHOP AND 3.5 FOR THE TUESDAY SYMPOSIUM

DIVISION OF EDUCATION
AMERICAN COLLEGE OF SURGEONS

Registration

The Thirtieth Annual Meeting of the AAES will take place at the Monona Terrace Community & Convention Center in Madison, Wisconsin. Registration fees are (postmarked before March 31, 2009): $450 for AAES members, $500 for non-members, $300 for residents and fellows, and $250 for spouses/guests. To register, visit the AAES Website at www.endocrinesurgery.org. You may either register online, or download and fax the completed registration form to AAES at fax number: 913-273-9940. The registration fee covers all scientific and social functions, except Saturday's Golf Tournament, Sunday's Tennis Tournament and the Young Endocrine Surgeons Workshop. The Spouse/Guest fee covers all social functions, except for the Member Luncheon. For on-site registration, and registrations received after March 31, an additional $50 per person will be assessed.

For the convenience of AAES members and guests we have reserved rooms at the Hilton Madison and the Madison Concourse Hotel. It is very important to make your hotel reservation early in order to assure yourself of availability. Lodging reservations may be made by calling the Hilton Madison at 608-255-5100 or the Madison Concourse at 608-257-6000.

Hotel Information

Hilton Madison Monona Terrace
9 East Wilson Street
Madison, WI 53703
Telephone: 608-255-5100

Madison Concourse Hotel
1 W. Dayton Street
Madison, WI 53703
Telephone: 800-356-8293

Meeting Format

The 2009 meeting will use the "standard" AAES meeting format. Please note that the meeting will begin a bit earlier on Sunday, with the opening general session scheduled to begin at 2:15pm. Sunday's activities also include the Young Endocrine Surgeons Workshop, beginning at 11:30 am. The Welcome Reception will follow the Scientific Sessions on Sunday evening beginning at 7:00 pm. Monday includes Scientific Sessions and lectures and the annual Business meeting, followed by the Gala Reception and Dinner Banquet on Monday evening. This year the Poster Competition will take place Tuesday morning in the main lecture room. The Scientific Session concludes at 12Noon. For additional information, times and meeting room locations, please refer to the detailed meeting schedule outlined in this program. After the official conclusion of the Annual Meeting, a special Neuroendocrine Cancer Symposium will take place Tuesday afternoon from 1:30pm - 5:30pm and all registrants are invited to attend, at no additional fee.

Optional Sports Activities

The AAES Tennis Tournament will be held Sunday morning at the John Powless Tennis Center. The cost for the tournament is $30 per person and includes transportation, court rental and a light continental breakfast. A Golf Tournament will also be held at the University Ridge Golf Course on Saturday, May 2, beginning at 1:00pm. The cost for golf is $100 per person and includes transportation, greens fees and a box lunch. You may register for the Tennis and Golf Tournaments with your conference registration, or please check with the AAES Registration Desk at the meeting for availability onsite.

Registration Desk

The AAES Registration Desk is located at the Monona Terrace Convention Center and will open during the following hours:

Sunday 8:00am – 5:00pm
Monday 7:00am – 5:00pm
Tuesday 7:00am – 12Noon

Madison is a very walkable city, and the weather in early May will hopefully be favorable so that members may enjoy the area. Please check the AAES Registration Desk for walking and jogging maps to use during your visit. We will also have copies of additional area brochures, maps and a list of recommended restaurants for your use.

Transportation

Although it is walkable from the Hilton and Concourse Hotels, we will also offer transportation to the Museum of Contemporary Art for the Welcome Reception on Sunday evening. Buses will depart from the Monona Terrace Convention Center – Level 4 Skywalk Entrance. Busing for the Golf and Tennis Tournaments will depart from the Monona Terrace Convention Center – Level 4 Skywalk Entrance.

Air Travel and Ground Transportation

The Dane Country Regional Airport (MSN) is located approximately 15 minutes from downtown Madison, hotels and the convention center. There are over 100 daily arrivals and departures into Madison on numerous carriers, including many flights from both Chicago O'Hare and Milwaukee. You may also fly to Chicago O'Hare (ORD) or Milwaukee's General Mitchell International Airport (MKE) and rent a car or take a bus to Madison. To coordinate bus transportation, contact Van Galder online at www.coachusa.com/vangalder. Tickets are $54 per person/roundtrip from Chicago and $41 per person/roundtrip from Milwaukee. All shuttles drop off at the Memorial Union in Madison, and the hotels provide shuttle service upon arrival. All major car rental companies are represented at Chicago O'Hare and Milwaukee's General Mitchell International Airport. Complimentary shuttle services is also provided from the Madison Airport by both the Hilton and the Madison Concourse Hotels.

Local Arrangements Chairman
Dr. Herbert Chen
Telephone: 608-263-1387
Fax: 608-263-7652
Email: chen@surgery.wisc.edu

Registration Questions?
American Association of Endocrine Surgeons
Headquarters Office
PO Box 24407
Overland Park, KS 66283-0407
Telephone: 913-402-7012
Fax: 913-273-1116
Email: meetings@endocrinesurgery.org

American Association of Endocrine Surgeons
Thirtieth Annual Meeting

PROGRAM OVERVIEW

NOTE: All meeting rooms are located at the Monona Terrace Convention Center unless otherwise noted.

SATURDAY, MAY 2, 2009

1300 **AAES Golf Outing**
University Ridge Golf Course
Registration required

1500-1900 **AAES Council Meeting**
(Council and Guests)
Meeting Room OP

2000-2200 **Council Dinner**
Johnny Delmonico's
By invitation

SUNDAY, MAY 3, 2009

0730-1000 **Tennis Tournament**
John Powless Tennis Center
Registration required

0800-1700 **Registration Open**
Monona Terrace Counter 2

Speaker Ready Room
Room J

1030-1130 **Endocrine Surgery Fellowship**
Program Director's Meeting
(Current & Future Directors, Council, Education Committee)
Meeting Room KL

1130-1400 **Workshop: Developing Your Academic Profile**
Registration required
Ballroom AB

1415-1430 **Annual Meeting Convenes**
Ballroom AB

Welcome
K. Craig Kent MD
Chairman, Department of Surgery
University of Wisconsin-Madison

Opening Remarks
Michael J. Demeure, President

1430-1600 **Scientific Session I**
Papers #1-6

1600-1630 **Coffee Served**
Grand Terrace

1630-1800 **Scientific Session II**
Papers #7-12

1900-2200 **AAES Welcome Reception**
Madison Museum of Contemporary Art

MONDAY MAY 4, 2009

0700-1700 **Registration Open**
Monona Terrace Counter 2

Speaker Ready Room
Room J

0700-0800 **Poster Display Setup**
Hall of Ideas

0700-0800 **Continental Breakfast**
Hall of Ideas

0745-0945 **Scientific Session III**
Papers #13-20
(Resident/Fellow Competition)

0945-1015 **Coffee Break**
Hall of Ideas

1000-1700 **Poster Viewing &**
Industry Exhibits Open
Hall of Ideas

1015-1030 **Introduction of New Members**
Michael J. Demeure, President

1030-1200 **Scientific Session IV**
Papers #21-26
(Resident/Fellow Competition)

1200-1300 ***AAES Luncheon***
Monona Terrace, Grand Terrace

1300-1400 **Presidential Address**
Michael J. Demeure, President
Introduction by Jeffrey F. Moley

1400-1500 **Scientific Session V**
Papers #27-30

1500-1530 **Coffee Break & Poster Viewing**

1530-1630 **Invited Lecturer**
Jeffrey M. Trent, PhD
Introduction by Michael J. Demeure

1630-1800 **Business Meeting**
AAES Members only

1830-1930 **New Members Reception**
By Invitation
Hall of Ideas

1900-2130 **Gala Reception and Dinner Banquet**
Resident/Fellow Research Awards
Monona Terrace, Grand Terrace

2130 **New President's Reception**
Hilton, 14th Floor

TUESDAY MAY 5, 2009

0700-1200 **Registration Open**
Monona Terrace, Counter 2

Poster Viewing
Hall of Ideas

0700-1700 **Speaker Ready Room**
Room J

0700-0800 **Continental Breakfast**
Hall of Ideas

0800-1700 **Industry Exhibits Open**
Hall of Ideas

0800-0900 **Scientific Session VI**
Papers #31-34

0900-1000 **AAES Poster Competition And Judging Panel**
Ballroom AB

1000-1030 **Coffee Break & Poster Viewing**
Hall of Ideas

1030-1200 **Interesting Case Presentations**
Jeffrey R. Moley, Vice President
Ballroom AB

1200 **Best Poster Award, Raffle & Adjournment**

1330-1730 **Neuroendocrine Cancer Symposium**
Registration required
Ballroom AB

1515-1545 **Coffee Break**
Hall of Ideas

1730-1830 **Neuroendocrine Symposium Reception**
Registration required
Grand Terrace

SUNDAY, MAY 3, 2009

1130-1400 **Workshop: DEVELOPING YOUR ACADEMIC PROFILE**
Fiemu Nwariaku, MD
Carmen C. Solorzano, MD
Robert Udelsman, MD
Mira Milas, MD
Julie Ann Sosa, MD
Electron Kebebew, MD
John A. Olson, MD

Scientific Session I
Moderator: Michael J. Demeure

1430 **Paper 1**
KIAA0101 IS A MARKER OF ADRENOCORTICAL CARCINOMA, AND INHIBITS CELL GROWTH AND INDUCES CELL CYCLE ARREST
Nhung Huynh, Julie Weng, Elham Khanafshar, Quan-Yang Duh, Orlo Clark, James Guevara, Electron Kebebew
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

1445 **Paper 2**
CHARACTERISTICS AND OUTCOME OF LOCOREGIONAL RECURRENCE AFTER SURGICAL EXCISION OF SPORADIC AND HEREDITARY ABDOMINAL PARAGANGLIOMAS
Sam Van Slyck, Laurent Arnalsteen, Pascal Pigny, Emmanuelle Leteurtre, Catherine Cardot-Bauters, Marie-Christine Vantyghem, Jean-Louis Wemeau, Michel D'Herbomez, Bruno Carnaille, Francois Pattou
LILLE UNIVERSITY HOSPITAL, LILLE, FRANCE

1500 **Paper 3**
LYMPHATIC MAPPING HELPS DEFINE RESECTION MARGINS FOR MIDGUT CARCINOIDS
YiZarn Wang, Saju Joseph, Erika Lindholm, John Lyons, J. Philip Boudreaux, Eugene A. Woltering
LSU HEALTH SCIENCE CENTER, NEW ORLEANS

1515 Paper 4
107 MEMBERS OF THE FAMILY WITH RET V804M PROTO-ONCOGENE MUTATION WITH SIMUL-TANEOUS MEDULLARY AND PAPILLARY THYROID CARCINOMAS, RARE PRIMARY HYPERPARA-THYROIDISM AND NO PHEOCHROMOCYTOMAS. IS THIS A NEW SYNDROME - MEN 2C?
Alexander L. Shifrin, Cristina Xenachis, Theodore J. Matulewicz, Angela Musial Fay, Jerome J. Vernick
JERSEY SHORE UNIVERSITY, NEPTUNE

1530 Paper 5
THE TEN-YEAR FOLLOW-UP OF A PROSPECTIVE SURGICAL OUTCOME STUDY ASSESSING THE IMPACT OF PARATHYROIDECTOMY ON THE VAGUE NON-SPECIFIC SYMPTOMS IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM UTILIZING A DISEASE-SPECIFIC OUTCOME TOOL.
Janice L. Pasieka, L. Parson, J. Jones
UNIVERSITY OF CALGARY, CALGARY, CANADA

1545 Paper 6
EFFECTIVENESS OF "OFFICE" BASED ULTRASOUND GUIDED DIFFERENTIAL JUGULAR VENOUS SAMPLING FOR PTH (DJVS) IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM
Denise Carneiro-Pla
MEDICAL UNIVERSITY OF SOUTH CAROLINA, CHARLESTON

Scientific Session II
Moderator: Sonia L. Sugg

1630 Paper 7
IPM GUIDED PARATHYROIDECTOMY WITH LIMITED NECK EXPLORATION DOES NOT MISS MULTIGLANDULAR DISEASE IN PATIENTS WITH SPORADIC PRIMARY HYPERPARATHYROIDISM: A TEN YEAR OUTCOME
John I. Lew, Azad A. Jabiev, Carmen C. Solorzano, George L. Irvin III
UNIVERSITY OF MIAMI, MIAMI

1645 Paper 8
DETERMINANTS OF SURVIVAL IN PATIENTS WITH CALCIPHYLAXIS: A MULTIVARIATE ANALYSIS
Geeta Lal, Andrew G. Nowell, Junlin Liao, PhD, Sonia L. Sugg, Ronald J. Weigel, PhD, James R. Howe
UNIVERSITY OF IOWA, IOWA CITY

1700 Paper 9
SERUM ALDOSTERONE IS POSITIVELY CORRELATED TO PTH LEVELS IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM
L. Brunaud, R. Zarnegar, M. Rancier, A. Ayav, E. Mirallie G. Weryha , L. Bresler
CHU NANCY BRABOIS, VANDOEUVRE LES NANCY, FRANCE

1715 Paper 10
PARATHYROIDECTOMY DECREASES SYSTOLIC AND DIASTOLIC BLOOD PRESSURE IN HYPERTENSIVE PATIENTS WITH PRIMARY HYPERPARATHYROIDISM
Aliya Heyliger, Sharma Jyotirmay, Vin Tangpricha, Collin J. Weber
EMORY UNIVERSITY, ATLANTA

1730 Paper 11
ROBOT-ASSISTED ENDOSCOPIC SURGERY FOR THYROID CANCER; GASLESS, TRANSAXILLARY APPROACH
Sang-Wook Kang, Jong Ju Jeong, Tae Yon Sung, Seung Chul Lee, Yong Sang Lee, Kee-Hyun Nam, Hang Seok Chang, Woong Youn Chung,Cheong Soo Park
YONSEI UNIVERSITY, SEOUL, SOUTH KOREA

1745 Paper 12
IMPROVEMENT IN PHONATION FOLLOWING RECONSTRUCTION OF THE RECURRENT LARYNGEAL NERVE IN PATIENTS WITH THYROID CANCER INVADING THE NERVE
Akira Miyauchi, Hiroyuki Inoue, Chisato Tokoda, Minoru Kihara, Takuya Higashiyama, Takashi Uruno, Yuuki Takamura, Yasuhiro Ito, Kaoru Kobayashi, Akihiro Miya
KUMA HOSPITAL, KOBE, JAPAN

MONDAY, MAY 4, 2009

Scientific Session III
Moderator: David R. Farley
*Denotes Resident/Fellow Competition

0745 Paper 13
ROUTINE PREOPERATIVE ULTRASOUND FOR PAPILLARY THYROID CANCER: LONG-TERM RESULTS IN 236 PATIENTS
Elizabeth G. Grubbs, Christy L. Marshall, Douglas B. Evans, Jeffrey E. Lee, Nancy D. Perrier, Beth S. Edeiken
UNIVERSITY OF TEXAS MDANDERSON CANCER CENTER, HOUSTON

0800 Paper 14*
CANDIDATE GERMLINE ALTERATIONS PREDISPOSING TO FAMILIAL NONMEDULLARY THYROID CANCER MAP TO DISTINCT LOCI ON CHROMOSOMES 1 AND 6
Insoo Suh, Analabha Basu, Eric Jorgenson,Menno R. Vriens, Marlon Guerrero, Mariwil Wong, Wen T. Shen, Electron Kebebew, Quan-Yang Duh, Sebastiano Filetti, Orlo H. Clark
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

0815 Paper 15*
PROGNOSTIC RELEVANCE OF CIRCULATING THYROID CANCER CELLS IN PATIENTS WITH THYROID MICROCARCINOMAS
Hadley E. Ritter, Tomislav Novosel, Manjula Gupta, Adrian Harvey, Jamie Mitchell, Eren Berber, Allan Siperstein, Mira Milas
CLEVELAND CLINIC, CLEVELAND

0830 Paper 16*
IMPROVEMENT IN THE ACCURACY OF REPORTING KEY PROGNOSTIC AND ANATOMICAL FINDINGS DURING THYROIDECTOMY BY UTILIZING A NOVEL WEB-BASED SYNOPTIC OPERATIVE REPORTING SYSTEM
Anthony J. Chambers, Janice L. Pasieka
UNIVERSITY OF CALGARY, CALGARY, CANADA

0845 Paper 17*
INCIDENTAL PAPILLARY CARCINOMA IN PATIENTS TREATED SURGICALLY FOR BENIGN THYROID DISEASES
Dawn P.Bradly, Vijaya Reddy, Richard Prinz, Paolo Gattuso
RUSH UNIVERSITY, CHICAGO

0900 Paper 18*
PROGNOSIS OF PRIMARY THYROID LYMPHOMA: DEMOGRAPHIC, CLINICAL AND PATHOLOGIC PREDICTORS OF SURVIVAL IN 1408 CASES
Amanda Graff-Baker, Sanziana A. Roman, Daniel C. Thomas, Julie Ann Sosa
YALE UNIVERSITY, NEW HAVEN

0915 Paper 19
A PROSPECTIVE, RANDOMIZED CONTROLLED TRIAL OF PARATHYROIDECTOMY IN PATIENTS WITH ASYMPTOMATIC PRIMARY HYPERPARATHYROIDISM
Nancy D. Perrier, Glenda G. Callender, Dave Balachandran, Ed Jackson, Jeffrey S. Wefel, B. Nebiyou Bekele, Jeffrey E. Lee, Douglas B. Evans
UNIVERSITY OF TEXAS MDANDERSON CANCER CENTER, HOUSTON

0930 Paper 20*
WORLD WIDE WHAT? THE QUALITY OF INFORMATION ON PARATHYROID DISEASE AVAILABLE ON THE INTERNET
Julie F. McGill, Tracey-Ann Moo, Meredith Kato, Raza Hoda, John D. Allendorf, William B. Inabnet, Thomas J. Fahey III, Laurent Brunaud, Rasa Zarnegar, James A. Lee
COLUMBIA UNIVERSITY, NEW YORK

Scientific Session IV
Moderator: Tina Yen
*Denotes Resident/Fellow Competition

1030 Paper 21*
TERTIARY HYPERPARATHYROIDISM: IS LESS THAN A SUBTOTAL RESECTION EVER APPROPRIATE? A STUDY OF LONG-TERM OUTCOMES
Susan C. Pitt, Rajarajan Paneerslavan, Herbert Chen, Rebecca S. Sippel
UNIVERSITY OF WISCONSIN, MADISON

1045 Paper 22*
NEUROCOGNITIVE DYSFUNCTION IN PRIMARY HYPERPARATHYROIDISM: A RISK FACTOR FOR PARATHYROID HYPERPLASIA
Daniel Repplinger, Sarah Schaefer, Herbert Chen, Rebecca S. Sippel
UNIVERSITY OF WISCONSIN, MADISON

1100 Paper 23*
REOPERATION FOR PARATHYROID ADENOMA: A CONTEMPORARY EXPERIENCE
Anathea C. Powell, H. Richard Alexander, Richard Chang, Stephen J. Marx, Monica Skarulis, James F. Pingpank, David L. Bartlett, Marybeth Hughes, Lee S. Weinstein, William F. Simonds, Michael F. Collins, Thomas Shawker, Clara C. Chen, James Reynolds, Craig Cochran and Steven K. Libutti
NATIONAL CANCER INSTITUTE, BETHESDA

1115 Paper 24*
IS ADRENAL VEIN SAMPLING (AVS) NECESSARY FOR ALL PATIENTS UNDERGOING SURGERY FOR ALDOSTERONOMA?
Kenechi Ebede, Robert Lewis, Hasly Harsono, Scott Trerotola, Debbie Cohen, Douglas Fraker
UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA

1130 Paper 25*
BIOPSY OF PHEOCHROMOCYTOMA AND PARAGANGLIOMAS: POTENTIAL FOR DISASTER
Kimberly Vanderveen, Scott M. Thompson, Geoffrey B. Thompson, Clive S. Grant, David R. Farley, Melanie Richards, William F. Young, Jr
MAYO CLINIC, ROCHESTER

1145 Paper 26
NERVE MONITORING OF THE EXTERNAL BRANCH OF THE SUPERIOR LARYNGEAL NERVE DURING THYROIDECTOMY UNDER LOCAL ANESTHESIA: A PROSPECTIVE RANDOMIZED TRIAL
Jean-Christophe Lifante, Julie McGill, Thomas Murry, Jonhatan Aviv, William B. Inabnet
COLUMBIA UNIVERSITY, NEW YORK

1200-1300 AAES Luncheon

1300-1400 Presidential Address
Michael J. Demeure, MBA, MD
Virginia G. Piper Cancer Center
"PERSONALIZED MEDICINE: THE FUTURE IS NOT WHAT IT USED TO BE"
Introduction by Jeffrey F. Moley MD

Scientific Session V
Moderator: Janice L. Pasieka

1400 Paper 27
LONG-TERM OUTCOME OF FUNCTIONAL POST-THYROIDECTOMY SWALLOWING AND VOICE SYMPTOMS
Celestino P. Lombard, Marco Raffaelli, Carmela De Crea, Lucia D'Alatri, Daria Maccora, Maria R. Marchese, Gaetano Paludetti, Rocoo Bellantone
UNIVERSITÀ CATTOLICA DEL SACRO CUORE, ROME, ITALY

1415 Paper 28
DOES FAILURE TO PERFORM PROPHYLACTIC LEVEL VI NODE DISSECTION LEAVE ULTRASOUND-DETECTABLE NODAL DISEASE
Jack M. Monchik, Diana L. Caragacianu, Alan A. Thomay, Vicki H. Tsai, Peter Mazzaglia
BROWN UNIVERSITY, PROVIDENCE

1430 Paper 29
SHOULD SECONDARY PROPHYLACTIC CERVICAL LYMPH NODE DISSECTION BE PERFORMED IN THE MANAGEMENT OF DIFFERENTIATED THYROID CANCER ?
Stéphanie L. Mucci-Hennekine, Cécile A. Caillard, Eric G. Mirallié, Olivier F. Morel, Delphine I. Drui, Patrice Y. Rodien, Vincent J. Rohmer, Antoine P. Hamy
UNIVERSITY HOSPITAL OF ANGERS, ANGERS, FRANCE

1445 Paper 30
THE LONG TERM OUTCOME OF PAPILLARY THYROID CARCINOMA PATIENTS WITHOUT PRIMARY CENTRAL LYMPH NODE DISSECTION: EXPECTED IMPROVEMENT OF ROUTINE DISSECTION
Yasemin(Senyurek) Giles, Fatih Tunca, Harika Boztepe, Faruk Alagöl,T. Terzoglu,Serdar Tezelman
ISTANBUL UNIVERSITY, ISTANBUL, TURKEY

1500-1530 Coffee Break

1530-1630 Invited Lecturer
Jeffrey M. Trent, PhD
President & Scientific Director, TGen
INTEGRATING GENETICS, GENOMICS, AND BIOLOGY TOWARDS A MORE PERSONALIZED MEDICINE

1630-1800 AAES Business Meeting

TUESDAY MAY 5, 2009

Scientific Session VI
Moderator: Geeta Lal

0800 **Paper 31**
A NOVEL HSP-90 INHIBITOR WITH HIGHLY SELECTIVE ACTIVITY AGAINST PAPILLARY AND ANAPLASTIC THYROID CANCERS
Abbas Samadi, Peter Loo, Gemma O'Donnell, Xiaqin Tong, Barbara N. Timmermann, Mark S. Cohen
UNIVERSITY OF KANSAS MEDICAL CENTER, KANSAS CITY

0815 **Paper 32**
AUTOPHAGY: A NEW TARGET FOR ADVANCED PAPILLARY THYROID CANCER THERAPY
Chi-Iou Lin, Edward E. Whang, Michael Abramson, Xiaofeng Jiang, Brendan D. Price, Francis D. Moore, Jr. , Daniel T. Ruan
BRIGHAM AND WOMEN'S HOSPITAL, BOSTON

0830 **Paper 33**
OPTIMIZING SURGICAL TREATMENT OF PAPILLARY THYROID CARCINOMA ASSOCIATED WITH BRAF MUTATION
Linwah Yip, Marina N. Nikiforova, Sally E. Carty, John H. Yim, Michael T. Stang, Mitchell J. Tublin, Shane O. LeBeau, Steven J. Hodak, Jennifer B. Ogilvie, Yuri E. Nikiforov
UNIVERSITY OF PITTSBURGH, PITTSBURGH

0845 **Paper 34**
GLOBAL VARIATION IN DISTRIBUTION OF THYROID CANCER SUBTYPES
Stacey L. Woodruff , Adeolu O Arowolo, Olusola O. Akute, Adefemi O. Afolabi, Fiemu Nwariaku
UNIVERSITY OF TEXAS SOUTHWESTERN MEDICAL CENTER, DALLAS

0900-1000 **Poster Competition & Judging Panel**

1000-1030 **Coffee Break**

1030-1200 **Interesting Case Presentations**
Jeffrey F. Moley, Vice President

1330-1730 **Neuroendocrine Cancer Symposium**
Herbert Chen, MD
Richard R.P. Warner, MD
Janice L. Pasieka, MD
Michael J. Demeure, MD
Jeffrey F. Moley, MD
Kyle Holen, MD
Maryan Wahmann
Kari Brendtro

ABSTRACTS

*** Denotes Resident/Fellow Competition Paper**

SESSION I

Paper 1 (1430)

KIAA0101 IS A MARKER OF ADRENCORTICAL CARCINOMA, AND INHIBITS CELL GROWTH AND INDUCES CELL CYCLE ARREST

Nhung Huynh, Julie Weng, Elham Khanafshar, Quan-Yang Duh, Orlo Clark, James Guevara and Electron Kebebew
UNIVERSITY OF CALIFORNIA - SAN FRANCISCO, SAN FRANCISCO, CA

Background: Adrenocortical carcinoma (ACC) is a relatively rare but aggressive malignancy, and the molecular mechanism of adrenocortical carcinogenesis is poorly understood. KIAA0101 is a proliferating cell nuclear antigen-associated factor and is overexpressed in a variety of human malignancy. We tested the hypothesis that KIAA0101 expression is dysregulated and plays a role in ACC tumor cell biology.

Methods: KIAA0101 mRNA and protein expression levels were determined in 112 adrenocortical tissue samples (21 normal adrenal cortex, 80 benign adrenocortical tumors, and 11 ACC) by quantitative RT-PCR and Western blot analyses. To explore the function of KIAA0101 in ACC, cell proliferation, invasion and migration, cell cycle and apoptosis, and cortisol secretion assays were performed in NCI-H295R cells with KIAA0101 gene silencing using small-interfering RNA (siRNA).

Results: KIAA0101 mRNA and protein expression was significantly higher in ACC (9.7-fold) as compared to normal and benign adrenocortical tissue ($p < 0.0001$). KIAA0101 mRNA expression level had 80% accuracy for distinguishing benign from malignant adrenocortical tumors. KIAA0101 mRNA expression was significantly upregulated by growth stimulation in the NCI-H295R cell line ($p < 0.01$). Silencing of KIAA0101 gene expression using siRNA significantly increased cell growth by up to 24% within 48 hours ($p < 0.005$). Furthermore, KIAA0101 siRNA knockdown was associated with cell cycle arrest in G1-G0 phase. There was no significant effect on cellular invasion and migration, apoptosis, and cortisol secretion with KIAA0101 silencing.

Conclusions: KIAA0101 is overexpressed and is a marker of ACC. It has growth suppressive function in ACC. The KIAA0101 gene may be a useful diagnostic and therapeutic target gene for ACC.

Notes:

Paper 2 (1445)

CHARACTERISTICS AND OUTCOME OF LOCOREGIONAL RECURRENCE AFTER SURGICAL EXCISION OF SPORADIC AND HEREDITARY ABDOMINAL PARAGANGLIOMAS

Sam Van Slyck, Laurent Arnalsteen, Pascal Pigny, Emmanuelle Leteurtre, Catherine Cardot-Bauters, Marie-Christine Vantyghem, Jean-Louis Wemeau, Michel D'Herbomez, Bruno Carnaille and Francois Pattou
LILLE UNIVERSITY HOSPITAL, LILLE

Background: Abdominal paraganglioma are the most frequent of extra adrenal secreting chromaffin tumors. Even when seemingly complete, surgical excision does not preclude the late development of locoregional recurrences. In this study we described the characteristics and management of these classical but rarely described lesions.

Methods: In this retrospective analysis we seeked for the characteristics of patients who presented a locoregional recurrence among 50 consecutive patients (23 Females / 27 males) operated at our institution for a sporadic (n=26) or hereditary (n=24, including 22 with an identified mutation of VHL, SDHB, SDHC, or SDHD) abdominal paraganglioma.

Results: After a mean follow-up of 44±48 months (183 patient-years), 8 patients (4M/4F) operated for a sporadic (n=4) or syndromic (n=4, VHL, SDHB, 2 SDHD) abdominal paraganglioma presented a locoregional recurrence 97±60 months (range : 27-188 months) following the initial operation. Actuarial rate (Kaplan-Meier) of recurrence reached 9 % after 5 years (95% confidence intervals; 0-19 %) et 25 % after 10 years (7-44%). All recurrent lesions were secreting (identical secretion profile but at lower level) and provoked symptoms in 71% of patients (hypertension, abdominal pain). All lesions were confirmed by imaging studies (CT, MRI, MIBG scan, and/or Octreoscan). Seven patients were reoperated (laparotomy in 6 cases and laparoscopy in one) for a lesion lying within the initial tumor site (n=5) or in another extraadrenal site (n=2). In 3 patients (sporadic, SDHB, SDHD) the recurrent lesion was associated with lymph node invasion (43% vs 4% for initial PGA, p=0.01). Two patients died, one following surgery, and one from general dissemination 58 months after resection. Apparent remission was maintained in 5 patients after a follow-up of 30±32 months.

Conclusion: Locoregional recurrence after surgical excision of abdominal paragangliomas, either sporadic or syndromic, are frequent (25%), most often late (>10 years), and regularly associated with lymph node invasion (43%). When deemed feasible, reoperation for surgical excision of recurring abdominal paraganglioma is warranted.

Notes:

Paper 3 (1500)

LYMPHATIC MAPPING HELPS DEFINE RESECTION MARGINS FOR MIDGUT CARCINOIDS.

YiZarn Wang, Saju Joseph, Erika Lindholm, John Lyons, J. Philip Boudreaux and Eugene A. Woltering
LSU HEALTH SCIENCE CENTER, NEW ORLEANS, LA

Introduction: Retroperitoneal desmoplasia often causes aberrant lymphatic drainage and otruction. We hypothesized that these changes in lymphatic drainage may lead to inadequate resection of midgut carcinoids if one uses standard resection margins.

Methods: 170 patients underwent surgery for neuroendocrine tumors from 11/06 to 8/08. 49 patients underwent lymphatic mapping during surgery. 27 patients had midgut primaries. We reviewed operative findings and pathology to evaluate the safety and efficacy of lymphatic mapping for midgut carcinoids. Lymphazurin was injected at the tumor site and dye-defined margins were compared to traditional surgical margins.

Results: There were no adverse events associated with lymphazurin blue mapping. 25/27 patients had ileal and 2 had jejunal primaries. Lymphatic mapping changed resection margins in 24/27 patients and preserved the ileo-cecal valve in 6/15 patients with terminal ileal primaries.

Conclusions: We have shown that lymphatic mapping is safe and effective for midgut carcinoids. We identified adequate resection margins in 24 out of 27 patients. Furthermore, we saved the ileo-cecal valve in 6/15 patients with terminal ileal primaries. We advocate using lymphatic mapping for patients with midgut carcinoids to identify adequate resection margins and assist in preservation of the ileo-cecal valve in patients with terminal ileal primaries.

Notes:

Paper 4 (1515)

107 MEMBERS OF THE FAMILY WITH RET V804M PROTO-ONCOGENE MUTATION WITH SIMULTANEOUS MEDULLARY AND PAPILLARY THYROID CARCINOMAS, RARE PRIMARY HYPERPARATHYROIDISM AND NO PHEOCHROMOCYTOMAS. IS THIS A NEW SYNDROME - MEN 2C?

Alexander L. Shifrin, Cristina Xenachis, Theodore J. Matulewicz, Angela Musial Fay and Jerome J. Vernick
JERSEY SHORE UNIVERSITY MEDICAL CENTER, NEPTUNE, NJ

Background: Rare RET V804M proto-oncogene mutation is associated with medullary thyroid carcinoma (MTC) and reported with familial MTC (FMTC) or MEN 2A. There is uncertainty as to which syndrome it represents. Several case reports in V804M carriers described association of MTC and papillary thyroid carcinoma (PTC) and only a single case of pheochromocytoma described. Here we presented the largest family to date with a RET V804M mutation, with the highest prevalence of MTC and simultaneous PTC, only 2 patients with primary hyperparathyroidism (PHPT) and no findings of pheochromocytomas. Classic MEN 2A include pheochromocytomas in 40%-70% of members, 50%- multiglandular hyperparathyroidism (HPT), and no PTC association. Therefore this family does not present neither like FMTC nor like MEN 2A.

Methods: Italian family of 107 members with RET V804M proto-oncogene mutation was studied for RET mutation, calcitonin, CEA levels, pheochromocytoma, HPT, had thyroid ultrasound and genetic counseling. Thyroid surgeries were performed or scheduled (USA, Canada and Western Europe). Test results, surgery and pathology reports from our and outside facilities were obtained and reviewed.

Results: Over 2 years 33 members were found to carry the RET V804M proto-oncogene mutation: 8 out of 9 in the 1st generation, 15 out of 23 in the 2nd, 10 in 3rd (more – pending). Offspring of negative parents was not tested (1 in 1st generation with 3 children, 9 grandchildren, and 5 in 2nd with 15 children). 11 thyroidectomies were performed. 7 had MTC, 2 had C- cell hyperplasia (CCH). Total 5 PTC were diagnosed in 11 operated patients: 2 had PTC and MTC (one had lymph node metastasis with PTC), 2 with CCH had PTC (one had PHPT – one adenoma), 1 patient had PTC and no MTC, but one adenoma PHPT. 1st generation had more advanced MTC, diagnosed in 70s. The youngest member with MTC was 44 yo. CCH was diagnosed in the 2nd generation only. No members of this family were diagnosed with a pheochromocytoma.

Conclusions: This is the largest reported family to date with a RET V804M proto-oncogene mutation. It has a high penetrance for MTC (90%) with simultaneous PTC (45–50 %), rare one gland PHPT and no pheochromocytomas. Considering the unique phenotype of this largest family it could represent a new syndrome - MEN 2C. Additional studies that directed to explain simultaneous development of MTC and PTC and possible translocations of the RET proto-oncogene in those patients are in progress

Notes:

Paper 5 (1530)

THE TEN-YEAR FOLLOW-UP OF A PROSPECTIVE SURGICAL OUTCOME STUDY ASSESSING THE IMPACT OF PARATHYROIDECTOMY ON THE VAGUE NON-SPECIFIC SYMPTOMS IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM UTILIZING A DISEASE-SPECIFIC OUTCOME TOOL

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Background: The NIH guidelines for parathyroidectomy (PTX) in hyperparathyroidism (HPT) were developed addressing the classical symptoms and the physiological markers of HPT. However, patients with HPT also suffer from vague non-specific symptoms that are not included as indications for PTx. In the past, utilizing a disease-specific outcome tool, PTx has been shown to reduce many of these vague symptoms resulting in an improved quality of life (QOL) at 1 year. The purpose of this study was to assess whether this improvement persists at long-term follow-up.

Methods: All patients enrolled in the previously published 10 HPT outcome study were asked to participate in this long-term follow-up. Symptom severity measurements using the validated disease-specific outcome tool called the Parathyroidectomy Assessment of Symptoms (PAS) Scores were mailed to the original 1° HPT patients and the thyroid control patients. PAS scores were collected preoperatively, at 7 days, 3 months, 1 and 10 years following surgery. QOL and self-rated health measures were obtained at 1 year and 10 year. Comparison of the PAS scores between pre-operative vs. 1 year and 10 year were calculated utilizing Wilcoxon Signed Ranks Test.

Results: Of the original 122 patients with 1° HPT 78 have agreed to participate, 10 expired, 8 refused, 24 lost to follow-up (LTF), and 2 demonstrated recurrence. In the control arm of thyroidectomy patients, 15 were LTF, 3 expired leaving 39 for which data was collected. The pre-operative median PAS score on the HPT group was 325, this decreased significantly to 180 at 1 yr and was 182 at 10 years. There was no difference in the PAS scores at 1 year compared to 10 year ($p=0.9$) In contrast the thyroid comparison group had a median PAS score pre-operatively of 152, 199 at 1 year and 170 at 10 yr ($p=0.1$). This group demonstrated no significant change in their PAS scores throughout the study periods. ($p=0.77$) The HPT patients were significantly more symptomatic pre-operatively compared to the thyroid group (PAS 325 vs.152 ($p<0.05$), yet at 1 and 10 years there is no difference in their PAS scores. QOL and self-rated health was significantly better at 10 yrs compared to pre-op in the HPT group. ($p<0.05$)

Conclusions: This is the first prospective study to demonstrate the long-term benefit of PTx in 1o HPT patients. Reduction of their preoperative symptoms appears to have resulted in a significant improvement in their QOL at 10 years.

Notes:

Paper 6 (1545)

EFFECTIVENESS OF "OFFICE" BASED ULTRASOUND GUIDED DIFFERENTIAL JUGULAR VENOUS SAMPLING FOR PTH (DJVS) IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM

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Background: For minimally invasive parathyroidectomy, preoperative localization is imperative for a targeted dissection. Surgeon performed ultrasound (SUS) has shown to be as accurate as Sestamibi (MIBI) scans in localizing abnormal parathyroid glands and may be used as the primary localization method. However, when SUS is equivocal, MIBI scanning is still used to localize abnormal parathyroid glands. DJVS has been performed intra-operatively with positive lateralization in 70-75% of patients. The purpose of this study is to extend this technique to the outpatient setting as a primary localization procedure when SUS is equivocal potentially replacing the need for MIBI scans.

Methods: Sixteen patients with equivocal SUS findings underwent US guided DJVS performed at the initial office visit. A sample was collected from the most inferior portion of each of the internal jugular veins and sent for standard PTH measurement. The highest DJVS PTH level was used to direct the initial exploration. Intraoperative PTH monitoring (IPM) was used to guide the extent of parathyroidectomy in all patients. DJVS localization was compared to operative findings regarding the side of the abnormal gland and the ability to perform unilateral neck explorations (UNE). The charges for office based DJVS and MIBI scans were also compared.

Results: In 12/16(75%) patients, office based DJVS identified the correct side harboring the abnormal gland resulting in successful UNE. In 2 patients, the DJVS were incorrect (one lab mistake) and, in 2 they were negative. BNE were performed in 4 patients due to either multiglandular disease indicated by IPM (1), concomitant thyroidectomy (1), or surgeon's judgment (1). The charges for DJVS was $1387 and MIBI $1030. There were no complications from the DJVS and all patients became eucalcemic.

Conclusion: The surgeons performed office based DJVS localization can be done safely and often eliminates the need for MIBI scans in patients with equivocal SUS. This simple office based technique can decrease the preoperative localization work up time to one visit in patients with primary hyperparathyroidism.

Notes:

SESSION II

Paper 7 (1630)

IPM GUIDED PARATHYROIDECTOMY WITH LIMITED NECK EXPLORATION DOES NOT MISS MULTIGLANDULAR DISEASE IN PATIENTS WITH SPORADIC PRIMARY HYPERPARATHYROIDISM: A TEN YEAR OUTCOME

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Background: The reliability of intraoperative parathormone monitoring (IPM) guiding a focused and limited approach to parathyroidectomy (PX) has been questioned. With a definition of "abnormal" glands based on size and histopathology, bilateral neck exploration (BNE) is still recommended by some surgeons with the concern that IPM guided PX will miss multiglandular disease (MGD) in 16% of patients leading to higher rates of recurrence. Conversely, IPM guided PX is based on excision of only the hypersecreting parathyroid gland(s) while preserving all normally functioning glands of various size in situ. This study reports the ten year outcome of patients with sporadic primary hyperparathyroidism (SPHPT) treated by IPM guided PX.

Methods: From 1993 to 1998, 174 consecutive patients with SPHPT biochemically confirmed by elevated PTH and serum calcium levels underwent initial IPM guided PX. When > 50% decrease of intraoperative parathormone (PTH) level from highest either pre- incision or pre- excision level was achieved 10 minutes after hypersecreting gland excision, the operation was completed without further exploration. If this criterion was not met, further exploration was indicated. Three patients who were operative failures and 9 eucalcemic patients followed < 6 months were excluded. Patients were biochemically followed yearly, and reported as having recurrence if their serum calcium and PTH levels were above normal range. Of the 44 patients followed > 10 years with serum calcium levels, 38 had PTH levels at last follow-up.

Results: 162 patients had a mean follow-up of 80 months (6.7 years). In this group, 158 (98%) patients had single gland disease (SGD), whereas 4 (2%) had MGD. Recurrence occurred in 4 patients (2%), developing at 2, 4, 9 and 10 years. In the 44 consistently eucalcemic patients followed > 10 years, PTH levels remained normal in 20/38 (53%) patients, were constantly above normal range in 2 (5%) patients, varied from normal to above normal range in 8 (21%), or normal to high and then normal in 8 (21%) patients at last follow-up.

Conclusions: The minimal risk of recurrence in patients 10 years after treatment for SPHPT shows that IPM guided PX: 1)does not fail to identify MGD as a cause of recurrent hyperparathyroidism; 2)allows for limited PX when a single hypersecreting gland is identified and excised; and 3) strongly suggests that normally secreting, various sized parathyroids left in situ are not contributing to hyperparathyroidism.

Notes:

Paper 8 (1645)

DETERMINANTS OF SURVIVAL IN PATIENTS WITH CALCIPHYLAXIS: A MULTIVARIATE ANALYSIS

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Background: Calciphylaxis is a rare, often fatal condition which develops mostly in patients with chronic renal failure. Management includes medical therapy and surgical debridement. Parathyroidectomy has also been shown to prolong survival and improve wound healing. Our study aims to assess the 1) Settings in which calciphylaxis occurs at our institution and 2) Factors (including parathyroidectomy) affecting survival in these patients.

Methods: 26 patients with biopsy-proven calciphylaxis treated between 1995 and 2007 were identified. Clinical and followup data were obtained by a review of medical records and/or contacting treating physicians. Cox-proportional hazards models were used to assess the factors affecting survival.

Results: The study group consisted of 23 women and 3 men with a mean age at diagnosis of 56.4(+/-12.9) years. 21 (81%) patients had chronic renal failure. Mean patient weight was 90.4 kg and BMI was 34.1. All patients had multiple comorbidities/risk factors including coronary artery disease (58%), diabetes mellitus (58%), peripheral vascular disease (23%), treatment with warfarin (42%) or steroids (35%). The mean duration of ulcers prior to biopsy was 13.7 weeks. The lesions were located distally in 10, proximally in 15, and both in 1 patient. Mean laboratory values at diagnosis were: Calcium 9.0 (range 6.8-11.6) mg/dL, Albumin 2.8 mg/dL, Phosphate 4.5 (range 2.5-7.5) mg/dL, Ca Phosphate 35.9 and PTH 320.9 (range 4.6-2419). Median follow up was 6.5 months and (22/24) 92% died. Parathyroidectomy was performed in 9/26 (35%) patients. 19% of patients underwent revascularization procedures and 58% underwent debridement. In multivariate analyses, factors predictive of poor survival were female sex (p=0.01), increased weight (p=0.01) and need for vascular procedures (p=0.06). Improved survival was associated with surgical debridement (p=0.01). Parathyroidectomy alone did not emerge as a determinant of patient survival, although there was a trend to improved survival when debridement and parathyroidectomy were combined (p=0.09).

Conclusions: Calciphylaxis occurs in patients with multiple comorbidities and is associated with high mortality rates. Our data suggests that rather than a single intervention such as parathyroidectomy, a multidisciplinary approach involving early diagnosis, aggressive medical management, surgical debridement and parathyroidectomy may improve survival.

Notes:

Paper 9 (1700)

SERUM ALDOSTERONE IS POSITIVELY CORRELATED TO PTH LEVELS IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM

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Background: Primary hyperparathyroidism is associated with an increased cardiovascular morbidity and mortality. However, mechanisms underlying this association are currently unclear. Since there is clear evidence of the role of aldosterone on the cardiovascular system, the aim of this study was to evaluate aldosterone levels in patients with primary hyperparathyroidism before and after parathyroidectomy.

Methods: A prospective study of 134 consecutive patients with primary hyperparathyroidism before and 3 months after parathyroidectomy. The effect of antihypertensive medications was evaluated since they might impair aldosterone metabolism. Upper limits for calcium, PTH, and aldosterone were < 105 mg/L, < 65 ng/L, and < 450 pmol/L, respectively.

Results: Mean preoperative calcium, PTH , and aldosterone levels were 112 mg/L, 182 ng/L, and 396 pmol/L respectively. Preoperative serum aldosterone level was higher in patients with PTH>127 ng/L compared to patients with PTH < 127 ng/L (431 versus 361 pmol/L ; p=0.02). Serum aldosterone and PTH levels were positively correlated (0.238 ; 0.720-0.392 ; p=0.005). In the 62 patients (46%) that were not on antihypertensive medications, the serum aldosterone difference between patients with PTH>127 ng/L and those with PTH < 127 ng/L was higher (479 versus 307 pmol/L; p=0.008) and correlation between aldosterone and PTH levels was stronger (0.441 ; 0.215-0.622 ; p=0.0003). In this suet of patients that were not on antihypertensive medications, mean aldosterone level was higher in patients with systolic blood pressure > 160mmHg (668 versus 341 pmol/L ; p=0.006). In the 72 patients (54%) treated with at least one antihypertensive medication, there was no correlation in serum aldosterone with serum PTH levels. By multiple regression analysis, PTH level (0.4 + 0.1; p=0.005) was an independent predictor of aldosterone in all patients. In patients without antihypertensive medication, PTH level (0.6 + 0.1; p<0.0001) remained independent predictor of aldosterone level. The aldosterone level (0.02 + 0.01; p=0.03) was an independent predictor of systolic blood pressure. At 3 months after parathyroidectomy, mean calcium, PTH, and aldosterone levels were 93 mg/L, 66 ng/L, and 473 pmol/L, respectively.

Conclusions: Aldosterone is positively correlated to parathomone levels in patients with primary hyperparathyroidism. Aldosterone might be a key mediator of cardiovascular symptoms in patients with primary hyperparathyroidism.

Notes:

Paper 10 (1715)

PARATHYROIDECTOMY DECREASES SYSTOLIC AND DIASTOLIC BLOOD PRESSURE IN HYPERTENSIVE PATIENTS WITH PRIMARY HYPERPARATHYROIDISM

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Background: Primary hyperparathyroidism (PHPT) is associated with an increased risk of cardiovascular disease, including hypertension. Patients with PHPT have a higher incidence of hypertension than the general population.

Objective: To determine the effect of parathyroidectomy (PTX) on systolic (SBP) and diastolic (DBP) blood pressures in hypertensive subjects with PHPT.

Methods: A retrospective review of medical records was performed in 368 patients undergoing PTX, at a single institution by a single surgeon. We evaluated changes in serum calcium, parathyroid hormone (PTH) and blood pressure prior to and 6 months after surgery.

Results: In patients undergoing PTX with hypertension (n=147), a significant decrease in both SBP and DBP was oerved; SBP decreased from 152.5 ± 10.5 mm Hg to 140.3 ± 16.2 mm Hg ($p<0.001$) and DBP decreased from 94.5 ± 6.8 mm Hg to 81.7 ± 10.3 mm Hg, ($p<0.001$). In these patients, PTH decreased from 136 ± 186 pg/mL to 58.7 ± 44.3 pg/ml ($p<0.001$); and serum calcium decreased from 11.1 ± 0.6 mg/dL to 9.5 ± 0.7 mg/dL ($p<0.001$). In patients undergoing PTX without hypertension (n= 221) no statistical change in SBP or DBP was oerved; SBP (118.3 ± 8.3 mm Hg to 121.8 ± 15.2 mm Hg, $p=0.32$) and DBP (71.8 ± 12.1 mm Hg to 70.1 ± 11.7 mm Hg, $p=0.85$). In these patients reductions in PTH and serum calcium after PTX were similar to those of hypertensive patients (p=NS).

Conclusions: This is the largest study evaluating the effect of PTX on blood pressure. PTX in hypertensive patients appears to reduce both SBP and DBP. The mechanisms responsible for this effect are unknown and deserve further study.

Notes:

Paper 11 (1730)

ROBOT-ASSISTED ENDOSCOPIC SURGERY FOR THYROID CANCER; GASLESS, TRANSAXILLARY APPROACH

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Purpose: Various robotic surgical procedures have been performed in recent years and most reports proved that application of robotic technology for surgery is technically feasible and safe. The aim of this study is to introduce our technique of robotic-assisted endoscopic thyroid surgery and demonstrate its utility in the surgical management of thyroid cancer.

Patients and Methods: From Oct. 2007 to Nov. 2008, 338 patients with papillary thyroid cancer underwent robotic-assisted endoscopic thyroid surgery using a gasless trans-axillary approach. All the procedures were completed successfully using the da Vinci S surgical system (Intuitive Surgical, Sunnyvale, California). We analyzed the patient's clinico-pathologic characteristics, operation type, operation time, post operative hospital stay and complications.

Results: The mean age of the patients was 40.0 years(range 16~69) and male to female ratio was 1:16.8. Two hundred and thirty-two patients underwent less-than total and 106 underwent total thyroidectomies. We conducted ipsilateral central compartment node dissection in all cases and lateral neck node dissection in 8 patients additionally. Mean operation time was 144.0 min. (69~347 min.) and mean post operative hospital stay was 3.3 days (2~7). There was no serious post operative complication except 3 cases of RLN injury and 1 Horner syndrome. In 332 malignant tumor patients, the mean tumor size was 0.80±0.53 cm and PTMC was in 255 cases (75.4%). Central neck L/N metastasis occurred in 116(34.9%) and lateral neck L/N metastasis was in 8 cases(2.4%). In the TNM stage, 279(84.0%) patients were stage I, 50(15.0%) patients were stage III and 3(0.9%) patients were stage IVA.

Conclusions: Our technique of robotic-assisted endoscopic thyroid surgery using a gasless trans-axillary approach is feasible, safe, and promising for the selected patients with thyroid cancer. We suggest application of robotic technology for endoscopic thyroid surgeries could overcome the limitations of conventional endoscopic surgeries in the surgical management of thyroid cancer.

Notes:

Paper 12 (1745)

IMPROVEMENT IN PHONATION FOLLOWING RECONSTRUCTION OF THE RECURRENT LARYNGEAL NERVE IN PATIENTS WITH THYROID CANCER INVADING THE NERVE

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Background: Thyroid cancer often invades the recurrent laryngeal nerve (RLN), causing vocal cord paralysis (VP) or requiring resection of the nerve even in patients with functioning cords preoperatively. We have reported improvement in voice following RLN reconstruction (RLN-Rec), although vocal cords did not regain normal movements. This method, however, does not come to be widely recognized in US. Thus, we analyzed phonatory function in patients following RLN-Rec.

Methods: Maximum phonation time (MPT) and vital capacity (VC) were measured before and 1 year after RLN-Rec in 88 patients with thyroid cancer. Fifty-one of them had VP preoperatively. The RLN-Rec was performed at the time of thyroid surgery. The methods of reconstruction were direct anastomosis, free nerve grafting, ansa cervicalis-RLN anastomosis (AR) and vagus-RLN anastomosis in 7, 14, 65, and 2 patients, respectively. The anastomosis was made behind the thyroid cartilage in 34 patients and the contralateral ansa was used for AR in 8 patients. Thirty-four normal subjects and 27 patients with VP served as controls.

Results: Patients with VP had significantly shorter MPT than normal subjects. Patients who underwent RLN-Rec achieved MPT similar to that of normal subjects 1 year after surgery. Men had significantly longer MPT than women in every group, but MPT/ VC ratio (Phonation Efficiency Index, PEI) did not differ in gender. PEI in patients with VP was significantly smaller than that in normal subjects, being 3.28 +/- 1.45 and 6.75 +/- 2.12, respectively (mean +/- SD). Patients with RLN-Rec achieved PEI of 7.22 +/- 2.90, a value similar to that in normal subjects. When analyzing in individual cases, PEI 1 year after surgery was significantly larger than PEI before surgery in patients with preoperative VP and both PEIs were similar in patients who had preoperative functioning cords but underwent RLN reconstruction. All of these show good recovery of phonatory function following RLN-Rec. PEI in patients with RLN-Rec was not affected by presence or aence of VP preoperatively, age, method of reconstruction, thickness of suture thread, or use of magnifier

Conclusion: In patients with thyroid cancer who have VP preoperatively or who need resection of the RLN because of cancer invasion, good recovery in phonatory function can be achieved following RLN-Rec. Since the time of thyroid surgery is the best timing to perform, we think all thyroid surgeons should be familiar with these techniques.

Notes:

SESSION III

Paper 13* (0745)

ROUTINE PREOPERATIVE ULTRASOUND FOR PAPILLARY THYROID CANCER: LONG-TERM RESULTS IN 236 PATIENTS

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Introduction: There has been a dramatic shift in the management of patients with papillary thyroid cancer (PTC) since the potential value of preoperative ultrasound (US) in determining the extent of operation was first reported. Preoperative US is now part of published treatment guidelines, despite the lack of long-term data on its potential value in preventing neck recurrence. We report the follow-up of patients who underwent surgery for PTC in whom preoperative US was used to accurately stage the extent of neck disease.

Methods: Patients with PTC without distant metastasis who underwent thyroid/neck surgery from 1991 to January 2007 were identified from a prospective database of 877 patients. All patients had undergone preoperative US and surgery at our institution, and had at least one year of postoperative follow-up. The patients were divided into 3 groups based upon the indication for surgery at our institution: group 1, primary thyroid/neck surgery; group 2, reoperation for persistent disease; and group 3, reoperation for recurrent PTC. Clinical and radiographic recurrences following surgery were recorded. Standardized follow-up evaluation included physical examination, chest radiograph, neck US, thyroglobulin levels, and the selective use of total body scanning and FNA biopsy; the results of these evaluations formed the basis for a diagnosis of recurrence.

Results: A total of 236 patients underwent preoperative US and compartment-oriented neck surgery; median followup was 50 months. Neck recurrence occurred in 12/168 (7%) Group 1 patients, 1/17 (6%) Group 2 patients, and 11/51 (21%) Group 3 patients (Group 1: 7% vs. Group 3: 21%; $p<0.01$). Recurrence rates were influenced by initial T and N status, as expected: N0, 2%; N1a, 3%; N1b, 26%. Only 39% of all patients were node negative (51% of Group1, 24% of Group 2, and 8% of Group 3).

Conclusions: Preoperative US followed by compartment-oriented surgery has decreased recurrence rates for patients undergoing primary thyroid/neck surgery (Group 1) compared to historical controls which report recurrence rates of 20% or greater. Once a patient experiences neck recurrence (Group 3), they are at an increased risk for subsequent neck recurrence. This finding underscores the importance of staging the disease accurately prior to the first operation and then performing a complete gross resection of all image-positive disease.

Notes:

Paper 14* (0800)

CANDIDATE GERMLINE ALTERATIONS PREDISPOSING TO FAMILIAL NONMEDULLARY THYROID CANCER MAP TO DISTINCT LOCI ON CHROMOSOMES 1 AND 6

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Background: Familial nonmedullary thyroid cancer (FNMTC) is associated with earlier onset and more aggressive behavior than its sporadic counterpart. Although candidate loci have been proposed for isolated families with variants of FNMTC, the etiology in the vast majority of cases is unknown. We set out to determine whether single nucleotide polymorphism (SNP) array-based linkage analysis of a broad range of FNMTC families could identify a candidate chromosomal locus corresponding to a FNMTC-specific germline mutation.

Methods: We enrolled and pedigreed 48 families with FNMTC, as defined by the presence of 2 or more affected first-degree relatives. We extracted genomic DNA from the peripheral blood of 126 family members, and hybridized the DNA to high-resolution Affymetrix GeneChip SNP arrays. We performed genotyping and linkage analysis using the Merlin software program, calculating exponential logarithm-of-the-odds (LOD) scores with the Kong-Cox model in order to determine chromosomal loci with a significant likelihood of linkage.

Results: Eighty affected and 46 unaffected members of FNMTC families were selected for SNP array-based linkage analysis. In pooled analysis of all 48 families, two distinct chromosomal loci with significant linkage were detected at 6q22 and 1q21 (LOD score=3.3 and 3.04, respectively). No known genes map to either locus.

Conclusions: We have identified two distinct loci on chromosomes 1 and 6 that demonstrate linkage in a broad sampling of families with FNMTC. Our findings suggest the presence of germline mutations in heretofore-undiscovered genes at these chromosomal regions, which may lead to genetic tests that could identify susceptible families. Future studies will consist of technical validation and suet analyses of higher-risk pedigrees, such as those with greater numbers of affected members.

Notes:

Paper 15* (0815)

PROGNOSTIC RELEVANCE OF CIRCULATING THYROID CANCER CELLS IN PATIENTS WITH THYROID MICROCARCINOMAS

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Background: Circulating thyroid cancer cells detected by peripheral blood TSH receptor (TSHR) mRNA have demonstrated usefulness for thyroid cancer diagnosis and long-term surveillance. The aim of this study was to evaluate whether TSHR mRNA may have prognostic importance in patients with microcancers.

Methods: From 2002-2008, 510 patients underwent TSHR mRNA detection with quantitative RT-PCR to define that levels >1 ng/ug signify thyroid cancer. 159 of 510 patients had thyroid cancer and 37 of 159 (23%) had papillary thyroid microcancers (PTMC; tumor size<1 cm), confirmed or diagnosed after total thyroidectomy (n=32) or lobectomy (n=5). We compared the clinical characteristics of patients with PTMC whose preoperative blood test showed undetectable (-) versus detectable (+) TSHR mRNA. Chi-squared analysis and t-test were used to determine statistical significance.

Results: 41% of patients with PTMC had (-) TSHR mRNA and 59% had (+) TSHR levels (mean 11 ng/ug). All patients with (-) TSHR mRNA had classical PTMC. In contrast, (+) TSHR mRNA patients had fewer classical PTMC (67%) and manifested the subtypes of follicular variant 23%, tall cell 5% and Warthin 5% (p=0.001). Average diameter of the largest tumor focus (5 mm) and multifocality rates (45%) were similar in both mRNA groups. Synchronous lymph node metastases were diagnosed in 5 patients (14%) preoperatively in the lateral neck (100% had (+) mRNA) and in 7 patients (19%) postoperatively as central neck micrometastases (60% had (+) mRNA). Lymph node metastases occurred more frequently with tumors > 5mm (p=0.04). Patients with (+) TSHR mRNA also tended to have more lymph node metastases (9/22 or 41% vs. 3/15 or 20%, p=0.18). No patients with incidentally-detected PTMC and (-) TSHR mRNA had metastases (n=11).

Conclusion: Preoperative TSHR mRNA can detect thyroid microcancers, and characterizes patients with potentially more aggressive clinical profiles. This is the first study to demonstrate that the presence of circulating thyroid cancer cells may have prognostic relevance. It may identify patients at higher risk for lymph node metastases, who could benefit from additional therapy.

Notes:

Paper 16* (0830)

IMPROVEMENT IN THE ACCURACY OF REPORTING KEY PROGNOSTIC AND ANATOMICAL FINDINGS DURING THYROIDECTOMY BY UTILIZING A NOVEL WEB-BASED SYNOPTIC OPERATIVE REPORTING SYSTEM

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Background: Documentation of thyroidectomies (Tx) is traditionally performed by surgeon-dictated reports(DOR). Intraoperative findings provide valuable prognostic information needed for a rational approach to adjuvant therapy and critical for reoperative surgery. A web-based operative reporting system that generates a synoptic report (SOR) for Tx was developed. The purpose of this study was to assess the accuracy and completeness of documentation in SOR compared to DOR.

Methods: Information derived from operative reports were grouped into 3 categories:1. prognostic information needed to calculate the MACIS score (metastases, completeness of resection, invasion and size), 2. key anatomical structures (recurrent laryngeal (RLN), external branch of superior laryngeal (ELN), parathyroid glands, pyramidal lobe) and 3. non-essential information (middle thyroid vein ligation (MTV) and the suture used on strap muscles, platysma and skin). With ethical board approval, 160 randomly selected DOR from an endocrine surgeon and 102 DOR from non-endocrine surgeons were compared to 133 SOR.

Results: The presence/aence of invasion was documented in only 20% of non-endocrine DOR, 28% of endocrine surgeon DOR and 100% of SOR ($p<0.01$). Completeness of resection was recorded in only 2% of DOR yet 100% of SOR ($p<0.01$). Tumor size was found in 33% of DOR and 100% of SOR ($p<0.01$). MACIS scores could not be calculated from any of the DOR, where as SOR have a MACIS calculator incorporated into the document. The key anatomical structures are required fields in all SOR. DOR were equally as good in documenting the RLN (99%) and the parathyroids (94%). The ELN however, was documented in only 4% of non-endocrine and 72% of endocrine surgeon DOR. The pyramidal lobe was recorded in 23% of non-endocrine DOR, 78% of endocrine surgeon DOR and 95% of SOR. Documentation of preoperative RLN function was found in only 5% of the DOR and 95% of SOR ($p<0.01$). DOR were good at including nonessential information; MTV (82%), strap muscle (94%), platysma (96%) and skin (98%) suture.

Conclusions: Although there are some subtle differences in the information extracted from the endocrine surgeon's and non-endocrine surgeons' DOR, both failed to provide key information. The SOR not only accurately documented anatomical information; it also provided prognostic information allowing for the calculation of a MACIS score. Therefore, the SOR produces a superior document that can aid in postoperative care

Notes:

Paper 17* (0845)

INCIDENTAL PAPILLARY CARCINOMA IN PATIENTS TREATED SURGICALLY FOR BENIGN THYROID DISEASES

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Background: Previous studies have shown that the frequency of incidental papillary carcinoma is between 4.6 % and 10% in surgically treated benign thyroid diseases. This study reviews the occurrence of incidental papillary carcinoma in thyroid glands removed for benign disease.

Design: From January 2000 to May 2008, 677 patients underwent partial/ total thyroidectomy for benign thyroid diseases, of whom 346 underwent partial thyroidectomy and 331 underwent total thyroidectomy. The overall incidence of papillary carcinoma was compared among patients with Hashimoto's thyroiditis, toxic/non-toxic nodular goiter, follicular adenoma, and Graves' disease. The clinical and pathologic data of patients with incidental papillary carcinoma were reviewed.

Result: The primary histologic diagnoses were 445 goiters, 146 follicular adenomas, 74 Hashimoto's thyroiditis, and 12 Graves' disease patients. Eighty-one(12.0%) incidental papillary carcinomas were recorded. Of this group, there were 68 females and 13 males (mean age=52 years old, range=15-81). Papillary carcinoma was detected in decreasing order of frequency: Hashimoto's thyroiditis(21/74 = 28.4%), follicular adenoma(15/146 = 10.3%), goiter(44/445 = 9.9%), and Graves' disease(1/12 = 8.3%). Multifocality was present in 22 patients(27%). Overall, contralateral lobe involvement was seen in 18/81(22%) cases [follicular adenoma 6/15(40%), goiter 8/44(18%), and Hashimoto's thyroiditis 4/21(19%)]. The tumor size ranged between 0.25 mm to 7 mm (mean size=2.82 mm, SD=1.67 mm). The average weight of the surgical specimen was 28.5 grams. The average number of histologic sections taken was 8, which corresponded to an average of one histologic section per 3.6 grams of tissue.

Conclusion:
1. Our study shows an overall incidence of 12.0% of incidental papillary carcinoma in benign surgically resected thyroid disease.
2. Patients with Hashimoto s thyroiditis had a much higher rate of incidental papillary carcinoma compared to other benign thyroid diseases (P-value <0.00063).
3. Overall, 18 patients (22%) showed contralaterality with the highest number encountered in follicular adenoma patients (6/15 = 40%).
4. The higher association of incidental papillary carcinomas with Hashimoto's thyroiditis may indicate a link to thyroid cancer.
5. Total thyroidectomy may be needed as an elective surgical treatment in patients with Hashimoto s thyroiditis and follicular adenoma due to high incidence and contralaterality, respectively.

Notes:

Paper 18* (0900)

PROGNOSIS OF PRIMARY THYROID LYMPHOMA: DEMOGRAPHIC, CLINICAL AND PATHOLOGIC PREDICTORS OF SURVIVAL IN 1408 CASES

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Background: Primary thyroid lymphoma (PTL) is rare, with an incidence of 1-5% of thyroid malignancies, and 2% of all lymphomas. There is a paucity of data regarding prognosis, with only case reports and institutional series (maximum N=108); this is the first population-based study of PTL in the U.S.

Methods: All patients with PTL with active follow-up in the SEER database from 1973-2005 were included. Univariate (Chi square, Kaplan Meier method, log rank test) and multivariate (Cox proportional hazards modeling) analyses were used to assess associations between demographic, clinical and pathologic characteristics of patients and overall survival.

Results: 1408 patients with PTL were identified over 32 yrs of follow-up (median, 3 yrs). Mean age was 66 yrs; 75% were female, and 93% white. 98% had Non-Hodgkin's lymphoma; 61% were large B-cell, 17% follicular/marginal zone, and 6% small B-cell. 88% had Stage 1-2 disease. Over time, patients were diagnosed at an earlier Stage (Stages 1-2, 83% in 1988-90 to 88% in 2003-5; Stage 4, 17% to 9%, respectively). 68% had surgery, 58% radiation, and 40% both. Median survival was 9 yrs. Predictors of worse prognosis on univariate analysis were female gender (Hazards Ratio 1.2, $p<.05$); older age (46-64 yrs, HR 2.7; 65-79 yrs, HR 7.2; ≥80 yrs, HR 14.9); single marital status (HR 1.9); no surgery (HR 1.4); Stage 4 disease (HR 1.9); follicular/marginal zone (HR 2), large B-cell (HR 3.5), and small B-cell (HR 3.7) histologies (all, $p<.01$). Older age was associated with more aggressive histology (small and large B-cell, $p<.001$), but not with Stage. Radiation was associated with localized PTL ($p<.001$). In multivariate analysis, independent predictors of worse prognosis were patient age ≥65 yrs ($p<.01$), single marital status ($p<.05$), advanced Stage ($p<.01$), and large-B cell PTL ($p<.001$). Use of thyroidectomy appears to have declined over time, from 81% in1973-1987 to 61% in 1997-2005. A similar trend was seen for radiation (69% to 53%).

Conclusion: PTL is an aggressive malignancy. Older age, advanced stage, and histology were significantly associated with survival for patients with PTL. In contrast, thyroid resection did not appear to offer significant benefit. While surgeons play an important role in the diagnosis of PTL, management of these patients requires a multidisciplinary collaborative team.

Notes:

Paper 19 (0915)

A PROSPECTIVE, RANDOMIZED CONTROLLED TRIAL OF PARATHYROIDECTOMY IN PATIENTS WITH ASYMPTOMATIC PRIMARY HYPERPARATHYROIDISM

Nancy D. Perrier, Glenda G. Callender, Dave Balachandran, Ed Jackson, Jeffrey S. Wefel, B. Nebiyou Bekele, Jeffrey E. Lee and Douglas B. Evans
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Background: Disruptions in sleep and cognitive function are part of the constellation of symptoms associated with "asymptomatic" primary hyper parathyroidism(PHPT), but the etiology of such complaints and the role of parathyroidectomy(PTX) in improving these symptoms are unclear. Current consensus guidelines do not consider subjective symptoms as indications for surgery. The aim of this study was to determine the impact of PTX on brain function and sleep in asymptomatic PHPT patients.

Methods: In a prospective, randomized, blinded surgical trial, we compared immediate PTX to oervation(O) in patients with asymptomatic PHPT who did not meet consensus guideline criteria for surgery. Demographics and biochemical parameters were recorded. Independent, objectively measured tests including brain functional MRI(fMRI), sleep assessment with actigraphy, and a validated neuropsychological battery were performed at baseline, and at 6 weeks and 6 months. Wilcoxon rank-sum tests, Spearman and Pearson correlations were performed.

Results: 18 patients aged >50 years were randomized to PTX or O. Increased sleep efficiency positively correlated with left precentral cortical activation at 6 weeks for both groups(0.537,p= 0.038). For both groups, greater total sleep was associated with increased cingulate cortex activation on fMRI at baseline and 6 weeks(0.484,p=0.05;0.505,p=0.05) and increased subjective sleepiness correlated with worse performance on executive function at 6 weeks and 6 months(-0.473,p=0.047;-0.673,p= 0.002). Total sleep time correlated with PTH levels at 6 weeks and 6 months for both groups(0.518, p=0.048;0.567,p=0.018). There was no correlation between sleep parameters and calcium levels. At 6 weeks, reduced hypersomnolence was oerved in the PTX group, while increased hypersomnolence was oerved in the O group(-2.56 vs 2.22,p=0.029).

Conclusion: This prospective, randomized trial of asymptomatic PHPT patients demonstrates an association between sleep and cognitive performance, using fMRI as a physiological measure of brain function. Objective measured sleep function appears to be an important indicator for brain activation in the anterior cingulate gyrus and precentral cortex, whereas subjective sleepiness shares a relationship to executive function. Despite the small sample size, this pilot study suggests that decreased PTH correlates with improved sleep and that PTX significantly decreases sleepiness in patients with asymptomatic PHPT.

Notes:

Paper 20* (0930)

WORLD WIDE WHAT? THE QUALITY OF INFORMATION ON PARATHYROID DISEASE AVAILABLE ON THE INTERNET

Julie F. McGill, Tracey-Ann Moo, Meredith Kato, Raza Hoda, John D. Allendorf, William B. Inabnet, Thomas J. Fahey III, Laurent Brunaud, Rasa Zarnegar and James A. Lee
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Background: Patients are relying on the internet with greater frequency to learn about diseases and make medical decisions. Anecdotally, many practitioners believe that sites may contain biased or incorrect information. We hypothesized that there is a disparity between patients' and surgeons' perception of the accuracy of information regarding primary hyperparathyroidism on the internet.

Methods: Prospective, multicenter study of patients with primary hyperparathyroidism seen in endocrine surgery clinics in France (30 patients) and the United States (32 patients). Patients responded to a survey regarding internet use to prepare for upcoming parathyroid surgery. A panel of endocrine surgeons from France and the United States reviewed the top 10 "hits" retrieved for keywords parathyroid surgery, parathyroid surgeon, primary hyperparathyroidism, parathyroidectomy and hyperparathyroidism using 3 major search engines. Sites were rated using a previously validated web site quality scoring system. The composite score was composed of 16 criteria including clinical and nonclinical factors. An accuracy rating for each site was assigned based on coverage of 10 subtopics including: indications, risks, benefits, operations, anesthesia, recovery, recovery time, alternatives, non-operative management, and overall accuracy.

Results: 75% of the American cohort and 53% of the French cohort used the internet to prepare for parathyroid surgery. Most patients visited between 2 and 4 sites. The choice of surgeon was influenced by internet research in 23% of the American compared to 5% of the French cohort (p= 0.04). The majority of patients reported that the information was "somewhat to very accurate" (90% of American patients and 87% of French patients). Using the validated web scoring system the panel gave similar average scores to the French 8.7 (range: 4-13) and American sites 8.5 (range 2-13) with a combined overall average qualitative score of 8.6 (53%). The sites received an average accuracy score of 2.6 (26%) with a range of 0-10. Most inaccuracies occurred in the areas of benefits, recovery, alternatives and non-operative management.

Conclusions: Surgeons and patients have different perceptions as to what constitutes an accurate web site. Since patients are depending more and more on the internet to guide them in preparing for parathyroid surgery and choosing a surgeon, there is a clear need to create comprehensive, high quality patient-oriented web sites.

Notes:

SESSION IV

Paper 21* (1030)

TERTIARY HYPERPARATHYROIDISM: IS LESS THAN A SUBTOTAL RESECTION EVER APPROPRIATE? A STUDY OF LONG-TERM OUTCOMES

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Background: The majority of patients with tertiary hyperparathyroidism (3-HPT) have multiple hyperplastic glands; however, a suet of these patients has disease due to one or two enlarged parathyroids. The objective of this study was to examine our experience with limited resection of one or two parathyroid glands in patients with 3-HPT.

Methods: We reviewed 142 patients with 3-HPT who underwent parathyroid surgery at our institution between January 1984 and December 2007. The patients were divided into 2 groups based on their underlying disease: adenoma(s) (group A) or hyperplasia (group H). Outcomes between groups A and H were compared using Fisher's exact and Student's t-tests.

Results: Group A consisted of 28 patients with either a single (n=11) or double (n=17) adenoma who underwent resection of only the diseased glands. The other 114 patients in Group H were treated by either a subtotal (n=101) or total (n=13) parathyroidectomy with forearm graft implantation. The two groups were comparable in terms of age and gender distribution. The mean duration of follow-up for the entire cohort was 70.6 months. Post-operatively, 98% of the patients (139 of 142) were cured of their hyperparathyroidism. All 3 patients with persistent disease after their initial surgery were in the H group. Recurrence, more than 6 months following resection, occurred in 5 patients (4.3%) in the H group versus no patients (0%) in the A group (p=NS). The incidence of permanent hypocalcemia was higher in the H group compared to the A group, though this difference was not statistically significant (6.5% vs 0%, p=NS). Furthermore, in the H group, one patient each suffered a permanent recurrent laryngeal nerve injury and a post-operative pneumonia.

Conclusion: Long-term outcomes in patients with 3-HPT are similar for those undergoing appropriate limited resection of one or two parathyroid glands compared to patients undergoing subtotal or total parathyroidectomy. With over 5 years of follow-up, all of the patients with 3-HPT treated by a limited resection were cured of their disease, recurrence free, and without permanent complications. Therefore, a strategy of limited parathyroid resection is appropriate for patients with 3-HPT when the disease is limited to one or two glands.

Notes:

Paper 22* (1045)

NEUROCOGNITIVE DYSFUNCTION IN PRIMARY HYPERPARATHYROIDISM: A RISK FACTOR FOR PARATHYROID HYPERPLASIA

Daniel Repplinger, Sarah Schaefer, Herbert Chen and Rebecca S. Sippel
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Background: Successful minimally invasive parathyroidectomy relies on the ability to accurately predict preoperatively which patients have single gland disease. Current imaging, with sestamibi scanning, remains poor at identifying hyperplastic disease. In order to determine if there was a symptomatic presentation that was associated with parathyroid hyperplasia, we retrospectively examined preoperative symptom profiles of patients who underwent parathyroidectomy.

Methods: From October 2007 to July 2008, 117 consecutive patients with primary hyperparathyroidism completed a preoperative symptom questionnaire prior to parathyroidectomy, of which 19.7% were found to have parathyroid hyperplasia. The symptom profiles of patients with and without hyperplasia were compared and statistically analyzed using SPSS.

Results: Neurocognitive symptoms (difficulty concentrating, memory problems, depression, or anxiety) occurred in 51.3% (60/117) of patients. Patients self-reporting at least one of these neurocognitive symptom had a 27% (16/60) of having parathyroid hyperplasia. Additional neurocognitive symptoms increased the risk of hyperplasia linearly, with hyperplasia occurring in 37% of patients reporting two neurocognitive symptoms ($p=0.002$) and 64% of patients reporting three or more of these symptoms ($p<0.001$). The predictive value of these symptoms was additive to a negative sestamibi scan. A negative sestamibi scan was associated with a 33.3% (11/33) risk of hyperplasia. Conversely, a negative sestamibi scan coupled with at least one neurocognitive symptom was associated with a 56.3% risk of hyperplasia ($p<0.001$). A negative scan with at least two symptoms correlated with an 80% risk of hyperplasia ($p<0.001$). Of patients with three or more neurocognitive symptoms and a negative localizing scan, 100% were found to have parathyroid hyperplasia ($p<0.001$).

Conclusion: The presence of neurocognitive dysfunction in a patient with hyperparathyroidism may be used as a predictor of parathyroid gland hyperplasia. Three or more of these symptoms, coupled with a negative sestamibi scan, was 100% predictive of parathyroid hyperplasia in our cohort.

Notes:

Paper 23* (1100)

REOPERATION FOR PARATHYROID ADENOMA: A CONTEMPORARY EXPERIENCE

Anathea C. Powell, H. Richard Alexander, Richard Chang, Stephen J. Marx, Monica Skarulis, James F. Pingpank, David L. Bartlett, Marybeth Hughes, Lee S. Weinstein, William F. Simonds, Michael F. Collins, Thomas Shawker, Clara C. Chen, James Reynolds, Craig Cochran and Steven K. Libutti.
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Background: We reviewed re-operations for sporadic parathyroid adenoma to evaluate and compare our current localization results and outcomes to our previous results.

Methods: From 1996-2008, 237 patients with persistent or recurrent hyperparathyroidism after failed operation underwent re-operation at a single institution. All patients underwent pre-operative non-invasive imaging; some had invasive imaging as determined by a standard algorithm. All patients were re-explored as assisted by the imaging.

Results: A missed adenoma was suspected in 163 patients. Re-operation resulted in resolution of hypercalcemia in 95% (156/163). Most patients underwent bilateral exploration at their first failed operation. Adenomas were in entopic locations in 32%; the most frequent ectopic location was the thymus (20%). Sestamibi and ultrasound were the most successful non-invasive imaging studies (96% positive predictive value (PPV) and 84% PPV respectively). CT (79% PPV), and MRI (80% PPV) were less successful. Based solely on non-invasive imaging , 44% had a re-operation. The remaining 56% had invasive studies; 50% had arteriography (n=80), 44% had hypocalcemic stimulated arteriography (n=72), 23% had selective venous sampling (n=37), and 9% (n=15) had fine needle aspiration (FNA) of a lesion prior to re-operation. Arteriography resulted in excellent localization (92% PPV). Selective venous sampling provides more true positives than hypocalcemic stimulation (73% vs. 47%), but has a lower PPV (84% vs 92%); neither provides precise localization. FNA yielded 80% true positives with no false positives. Intraoperative parathormone assay (IOPTH) and intraoperative ultrasound (IOUS) were used in 78% (n=127) and 45% (n=74) of cases respectively. A drop of over 50% in PTH occurred in 122 of 127 cases and 98% of these 122 patients had resolution of hypercalcemia. IOUS assisted in localizing a gland in 57 cases. Recurrent laryngeal nerve injury occurred in 2.4% of patients.

Conclusions: Compared to our prior experience (1982-1995), outcomes remained similar (95% vs. 97% resolution of hypercalcemia and 2.4% vs. 1.3% nerve injury, current and previous experience respectively). Fewer patients required invasive studies for pre-operative localization (56% vs. 73% respectively). IOPTH was useful in predicting success. The decreased invasive imaging requirements are due to technical improvements and greater confidence in the combination of ultrasound and sestamibi.

Notes:

Paper 24* (1115)

IS ADRENAL VEIN SAMPLING (AVS) NECESSARY FOR ALL PATIENTS UNDERGOING SURGERY FOR ALDOSTERONOMA?

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Background: Primary hyperaldosteronism is a potentially surgically treatable cause of hypertension. 75% to 80% of patients have a solitary adenoma, and resection is curative. 20% to 25% have bilateral hyperplasia, and are managed medically. We reviewed our series of patients seen for surgical management of hyperaldosteronism to evaluate the predictive value of adrenal vein sampling versus cross sectional imaging.

Methods: Between January 1997 and December 2007, 292 patients underwent adrenalectomy including 78 patients for aldosteronoma. All patients underwent preoperative aldosterone and plasma renin activity levels which demonstrated primary hyperaldosteronism. 100% of patients underwent cross-sectional imaging with CT/MRI. 89.7% of patients underwent adrenal vein sampling after ACTH stimulation.

Results: Cross-sectional imaging identified a unilateral adrenal mass in 90.2% of the patients, bilateral adrenal masses in 4.2%, and no masses were seen in 5.6% of the patients. Adrenal vein sampling was considered to show conclusive lateralization when there was a gradient of aldosterone/cortisol ratio >4 comparing right to left adrenal veins used as a criteria to undergo unilateral adrenalectomy. In this population, the adrenal vein sampling gradient was positive on the side of the mass in 95.7%, and contralateral to the mass lesion in 4.3% of patients. In patients with no mass lesions seen on cross sectional imaging, AVS demonstrated the site of the adenoma in 100% of the cases. Furthermore, of patients who had unilateral masses on cross sectional imaging, 11.5% were identified as bilateral hyperplasia after undergoing AVS. 67 patients (85.9%) had a laparoscopic adrenalectomy, 9 (11.5%) patients were managed medically, and 2 (2.6%) patients had an open adrenalectomy.

Conclusion: In our sample, 16 out of 78 (20.5%) had a change in surgical management by the inclusion of adrenal vein sampling in their evaluation. This included identification of occult adenomas not seen by CT/MRI, identification of occult adenomas in the setting of contralateral non-functional incidentalomas, and the identification of bilateral hyperplasia in the presence of a unilateral non-functional adenoma. We feel all patients who have biochemically proven primary hyperaldosteronism should be recommended to have adrenal vein sampling to regardless of cross-sectional imaging results.

Notes:

Paper 25* (1130)

BIOPSY OF PHEOCHROMOCYTOMA AND PARAGANGLIOMAS: POTENTIAL FOR DISASTER

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Background: Pheochromocytomas and paragangliomas are highly vascular neuroendocrine tumors that often secrete excess catecholamines. Percutaneous biopsy has been associated with life-threatening hemorrhage, hypertensive crisis, capsular disruption with tumor implantation, and death. This study was undertaken to review the outcomes of biopsying unsuspected pheochromocytomas and paragangliomas.

Methods: A retrospective chart review (1995-2005) was performed of 20 consecutive cases referred to our Endocrine division (post-biopsy) for definitive management of their pheochromocytoma or paraganglioma. Biopsy complications, operative findings, and outcomes are reviewed.

Results: Twenty patients (14 pheochromocytomas and 6 paragangliomas) were percutaneously biopsied prior to referral. Mean tumor size was 6.4 cm (range 1-15 cm). Nearly half (45%) were identified during evaluation of abdominal symptoms, 20% were discovered during cancer surveillance, 30% were incidentally discovered, and 1 patient (5%) had a palpable abdominal mass. Only 6 patients (30%) had a history of hypertension, and one presented with classic pheochromocytoma "spells". Pre-biopsy biochemical testing was not performed in 90% of patients, and was inconclusive in the remainder. Overall, 15 patients (75%) had a biopsy complication. The surgeon noted that the difficulty of the definitive operation was increased as a result of the preoperative biopsy in 8 of the 17 resectable cases (47%) and resulted in conversion to an open procedure in 1 patient. Additional consequences of biopsy included: severe hypertension (15%); hematoma (30%); incorrect or inadequate biopsy (25%); severe pain (25%); and delay in surgical treatment (15%). Postoperatively, 12 of 14 patients (86%) had normalization of their postoperative biochemical studies on follow-up lab tests. Mean follow-up was 28 months, with 4 known recurrences to date (all malignant tumors).

Conclusions: Biochemical testing prior to biopsy of vascular adrenal or retroperitoneal masses is critical to exclude a catecholamine-secreting tumor. As significant complications can result from biopsy of these tumors, we strongly advise against this practice. Biopsy leads to a delay in definitive treatment and can result in a more technically difficult operation. Long-term follow-up is necessary to determine whether biopsies resulting in hemorrhage and capsular disruption lead to an increased local recurrence rate.

Notes:

Paper 26* (1145)

NERVE MONITORING OF THE EXTERNAL BRANCH OF THE SUPERIOR LARYNGEAL NERVE DURING THYROIDECTOMY UNDER LOCAL ANESTHESIA: A PROSPECTIVE RANDOMIZED TRIAL

Jean-Christophe Lifante, Julie McGill, Thomas Murry, Jonhatan Aviv and William B. Inabnet
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Background: Voice alterations are commonplace following thyroid surgery. Identification and preservation of the external branch of the superior laryngeal nerve (ELN) is paramount to prevent limitations in pitch, strength and projection yet routine identification of the ELN is rare. Conventional nerve monitoring requires a general anesthesia and placement of an endotracheal tube equipped with electrodes to evoke the laryngeal nerve. This study aims to assess the efficacy of neuromonitoring of the ELN during thyroidectomy under local anesthesia.

Methods: Patients undergoing mini-incision thyroidectomy under local anesthesia were prospectively randomized for either nerve monitoring of the ELN (group 1) or no nerve monitoring (group 2).Voice and swallowing assessments were obtained by using the Voice Handicap Index 10 questionnaire (VHI 10) and the reflux symptom index questionnaire (RSI) before surgery, 3 weeks and 3 months after surgery.

Results: Recruitment led to 22 patients in group 1 and 25 patients in group 2. No significant differences were noted between the two groups in terms of age, gender, procedure, mean incision size, pathological findings, or mean thyroid weight. For patients undergoing thyroid lobectomy mean operating time was higher in group 1 than in group 2 (p=0.04) while there was no statistical difference in duration of surgery for total thyroidectomy. The rate of visualized ELN was higher in group 1 (66 %) compared to group 2 (21 %) (p=0.003).In group 1 there was no difference between the median total VHI 10 score before surgery, 3 weeks after surgery and three months after surgery. In group 2, the median total VHI 10 score was significantly higher three weeks (p=0.039) and 3 months after surgery (p=0.034) compared to before surgery. In both group 1 and group 2 patients, there was no difference in median total RSI score before surgery, 3 weeks and three months after surgery.

Conclusion: Nerve monitoring aids with vizualization of the ELN during mini-incision thryoidectomy under local anesthesia. The use of nerve monitoring led to better patient-assessed post-operative voice quality in thyroid surgery patients, but did not impact swallowing.

Notes:

SESSION V

Paper 27 (1400)

LONG-TERM OUTCOME OF FUNCTIONAL POST-THYROIDECTOMY SWALLOWING AND VOICE SYMPTOMS

Celestino P. Lombard, Marco Raffaelli, Carmela De Crea, Lucia D'Alatri, Daria Maccora, Maria R. Marchese, Gaetano Paludetti and Rocoo Bellantone
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Background: Voice and swallowing symptoms are frequently reported early after thyroidectomy even in aence of laryngeal nerves injury. We evaluated long-term outcome of these functional alterations.

Methods: Two hundred and sixty-five consenting patients undergoing total thyroidectomy (TT) were enrolled in the study. Exclusion criteria were: age <21 and >65 years; laryngeal or pulmonary diseases; previous neck surgery; malignancy other than papillary thyroid carcinoma. Fibrolaryngoscopy (FL), acoustic voice analysis (AVA) and maximum phonation time (MPT) evaluation were performed preoperatively and 3 months after TT. The Multi-Dimensional Voice Program and Voice Range Profile program were used for AVA. Subjective evaluation of voice (Voice Impairment Score=VIS) and swallowing (Swallowing Impairment Score=SIS) were obtained preoperatively, 1 week, 1 and 3 months after TT. Long-term patients evaluation (FL, AVA, MPT, VIS, SIS) was obtained later than 1 year after TT.

Results: The long-term evaluation was completed in 110 patients. Mean follow up was 29.1 months. No ILN injury was found at postoperative FL. No significant difference was registered between pre- and postoperative MPT. Mean Frequency Range of Phonation was significantly lower than the preoperative 3 months after surgery (16.0 Vs 18.2 semitones) ($P<0.05$), but not at long-term evaluation (17.8 semitones) (P=NS). No other significant difference was found between pre- and postoperative AVA. Percentage of patients complaining of vocal and swallowing symptoms one week after surgery (97/110 and 88/110, respectively) was significantly higher than preoperatively (73/110 and 59/110, respectively) ($P<0.001$), while it was significantly lower at long-term evaluation (45/110 and 29/110, respectively) ($P<0.001$). Mean VIS was significantly worse than preoperatively one week, one month and 3 months after TT (11.1 Vs 9.4 Vs 5.6 Vs 3.4) ($P<0.05$). Mean SIS was significantly worse one week (4.7 Vs 2.4) ($P<0.001$), but not one month (2.9) and 3 months after TT (1.7) (P=NS). Long-term mean VIS (2.1) and SIS (0.7) were significantly lower than the preoperative ($P<0.05$).

Conclusions: Early vocal and swallowing symptoms are frequent after TT. Nonetheless, in absence of any laryngeal nerve injury, after an initial impairment, late after surgery (>than 1 year), patients in this series experienced subjective amelioration of their voice and swallowing performances, maybe related to resolution of mild compressive symptoms.

Notes:

Paper 28 (1415)

DOES FAILURE TO PERFORM PROPHYLACTIC LEVEL VI NODE DISSECTION LEAVE ULTRASOUND-DETECTABLE NODAL DISEASE

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Background: There is controversy regarding the need for prophylactic Level V1 node dissection on patients with papillary thyroid carcinoma. The most common site for recurrent papillary carcinoma is level V1 lymph nodes. Ultrasound (U/S) is the most sensitive test for detecting level V1 nodal metastases, and is even more sensitive following total thyroidectomy.

Methods: A retrospective analysis was conducted on patients who underwent thyroid surgery from 2000–2006 at a tertiary care hospital. All patients with a known papillary thyroid cancer preoperatively or at the time of surgery had a careful exploration of the level VI nodes by a single experienced surgeon. A therapeutic level VI node dissection was performed only if enlarged or frozen section positive nodes were present. Sonographic evaluation capable of detecting 2 mm nodes in the central compartment was performed in all patients by an experienced radiologist 4-6 months after surgery.

Results: A total of 410 patients who had thyroid surgery between 2000-2006 were evaluated. 190 patients had papillary carcinoma diagnosed preoperatively or at the time of surgery. A Level V1 node dissection was performed in 24 patients (12%). A prophylactic levelV1 node dissection was not done in the remaining 165 patients and are the subject of this report. In these patients that did not have a prophylactic node dissection the thyroid tumor ranged in size from 0.1 – 9 cm, 88 (53%) were multifocal, 36 (22%) had capsular invasion. The post operative U/S showed persistent nodal disease in only 4 patients (2.4%). In these patients who did not have prophylactic level V1 node dissection, 135 (82%) were stage I and 16 (9.7%) were stage II.

Conclusion: In low risk patients (stage I or II) with papillary carcinoma, a careful exploration by an experienced surgeon, without a prophylactic level VI nodal dissection, resulted in a very low incidence of persistent central compartment nodal disease detected by U/S.

Notes:

Paper 29 (1430)

SHOULD SECONDARY PROPHYLACTIC CERVICAL LYMPH NODE DISSECTION BE PERFORMED IN THE MANAGEMENT OF DIFFERENTIATED THYROID CANCER ?

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Background: Management of differentiated thyroid cancer (DTC) > 1cm consists in total thyroidectomy and prophylactic cervical lymph node dissection (LND) (at least central) habitually in our group. Because of the lack of preoperative or peroperative diagnosis of cancer, some patients did not undergo this treatment. In this situation, a second operation is planned with completion thyroidectomy and lymph node dissection. The aim of the study was to evaluate morbidity and oncologic results of this strategy.

Methods: All patients treated by total thyroidectomy (in 1 or 2 operations) and a secondary lymph node dissection were included in this retrospective study from january 1992 to june 2007.

Results: 140 patients (mean age 42 years) were included. None of them had pre or peroperative diagnosis of cancer. Initial treatment consisted in 29 total thyroidectomies and 111 lobectomies. The second operation (111 lobectomies and 140 LND) was performed 5.6 months after initial surgery. Definitive histologic diagnosis was papillary-follicular cancers in 43 (31%) cases, classic papillary cancers in 62 cases (44%), follicular cancers in 25 cases (18%) and Hürthle cell (oncocytic) cancers in 10 cases (7%). Cancers were classified as T1 in 51 cases, T2 in 72, T3 in 16 and T4 in 1 case. Morbidity of the 2nd operation consisted in one hematoma, 30 hypoparathyroidism (6 were definitive – 4.2%), 13 recurrent nerve palsies (4 definitive – 2.8%). After reoperation, 14 microcancers (mean size 3 mm) were diagnosed after the 111 completion thyroidectomy (12.6%). Eleven patients had lymph node metastases (7.8%). Overall, 25 patients (17.8%) had residual disease. After a mean follow-up of 59.6 months and Radioiodine ablation therapy used in 126 patients, 2 patients had distant metastases (bone, lung), 2 had elevated thyroglobulin level with negative examination (US, W) and 136 (97%) were disease free.

Conclusions: We conclude that completion total thyroidectomy should be performed because of second cancers incidence and to allow radioiodine ablation therapy. Prophylactic secondary cervical LND has an important morbidity and a low benefit (only 7.8% of node involvement) which questions its routine recommendation.

Notes:

Paper 30 (1445)

THE LONG TERM OUTCOME OF PAPILLARY THYROID CARCINOMA PATIENTS WITHOUT PRIMARY CENTRAL LYMPH NODE DISSECTION: EXPECTED IMPROVEMENT OF ROUTINE DISSECTION

Yasemin(Senyurek) Giles, Fatih Tunca, Harika Boztepe, Faruk Alagöl,T. Terzoglu and Serdar Tezelman
ISTANBUL UNIVERSITY,FACULTY OF MEDICINE,DEPARTMENT OF GENERAL SURGERY, ISTANBUL

Background: The prognostic impact of routine central lymph node dissection (CLND) for papillary thyroid carcinoma (PTC) is controversial. The aim of this study was to investigate the morbidity and mortality rates related to locoregional recurrence in PTC patients who had no central lymph node dissection at the time of primary operation.

Methods: The medical records of 343 patients who underwent operations for PTC between January 1988 and December 2004 without CLND at the time of primary operation and with a mean postoperative follow up period of 8.7± 4 years, were reviewed.

Results: Of 343 patients, 22 (6.4%) had locoregional recurrence. In patients with locoregional recurrence, only lateral or central, or both compartments were involved in 16 (72.7%), 2 (9.1) and 4 (18.2%) patients, respectively. The mean age of the patients with central comparment recurrence was significantly higher than the patients without central comparment recurrence (57.5±8.6 vs 43.4±8.6 years, p=0.01). Locoregional recurrence was significantly more frequent in male than in the female patients (15% vs 4.3%, p=0.002). Palpable lateral cervical lymph nodes at the initial presentation significantly increased the risk of locoregional recurrence (41% vs 4%,p=0.0001). Primary tumor size >= 3 cm, microscopic extrathyroidial extension, and aggressive histological subtypes (diffuse sclerosis,tall-cell,poorly differentiated) of PTC were significant risk factors for locoregional recurrence (p=0.0001). The tumor size of the patients with central compartment recurrence was significantly higher than the patients without central compartment recurrence (3.9±0.8 vs 1.4±1.3 cm,p=0.0001).None of the patients with PTC < 3 cm had central compartment recurrence. The mortality rate was 1.5% (5/343). Of 6 patients with central compartment recurrence, 5 died due to PTC. The cause of mortality was locoregional invasion (tracheal and esophageal invasion) in 3 and distant metastasis in 2 patients.

Conclusions: CLND for PTC is valuable in patients with initial palpable cervical lymph nodes, male gender, older age (age >= 60), primary tumor size >= 3 cm and agressive subtypes of PTC. Further studies are needed to evaluate the impact of CLND in younger patients with PTC < 3 cm without clinical and histopathological risk factors.

Notes:

SESSION VI

Paper 31 (0800)

A NOVEL HSP-90 INHIBITOR WITH HIGHLY SELECTIVE ACTIVITY AGAINST PAPILLARY AND ANAPLASTIC THYROID CANCERS

Abbas Samadi, Peter Loo, Gemma O'Donnell, Xiaqin Tong, Barbara N. Timmermann and Mark S. Cohen
UNIVERSITY OF KANSAS MEDICAL CENTER, KANSAS CITY, KS

Background: HSP90 chaperones several client proteins involved in thyroid cancer development including B-RAF and AKT. While HSP90 inhibitors such as 17-AAG have been evaluated clinically in thyroid cancer, their success has been limited by toxicity creating a need for improved drug development. We have identified a novel naturally derived HSP90 inhibitor with selectivity for thyroid cancers. The purpose of this study is to evaluate the mechanism of activity of this compound in thyroid cancer cell lines for future in vivo studies and clinical applications.

Methods: Compound extraction/analysis was completed on 285 plants/ extracts from our institutional plant library. BTIMNP_D004 (a withanone), was compared to 17-AAG in thyroid cancers and other cell lines by MTS assay. HSP90 chaperone and client protein inhibition was analyzed by western blot analysis. Apoptosis and cell cycle arrest were examined by annexin V-PI flow cytometry analysis and confirmed by Western analysis.

Results: Of the 285 plants/extracts screened, 45 had activity by MTS assay against thyroid cancer cells(BTIMNP_D004 was the most potent). IC50 values for D004 in thyroid cancers ranged from 0.19±0.02uM (NPA;papillary) to 0.26±0.03uM (DRO;anaplastic) compared to 3.1±0.1uM(NPA) and 9.1±0.2uM(DRO) with 17-AAG($p<0.001$). No toxicity was oerved in fibroblasts and moderate activity was oerved in breast, melanoma and HNSCC (0.3 to 0.6uM). Western analysis demonstrated inhibition of HSP90, B-RAF, pERK, and AKT, caspase 3, and PARP cleavage in NPA and DRO cells at nanomolar[D004]. Annexin V/PI staining showed 1 uM D004 induced significant apoptosis after 18 hours in DRO cells(74% cells gated vs <6% in controls; $p<0.0001$) but only moderately in NPA cells (22% vs. 6% controls; $p<0.05$). Similarly, 1 uM D004 induced cell cycle arrest after 18 hours from G1/G0 to S and G2/M phases more in DRO cells (30% cells shifted vs. controls $p<0.001$) than NPA cells (20% shifted vs. controls; $p<0.01$).

Conclusion: BTIMNP_D004 is a novel inhibitor of HSP90 that selectively inhibits both differentiated and anaplastic thyroid cancers more potently than 17-AAG. Its action in papillary and anaplastic cancers is mediated through inhibition of HSP90 client protein pathways including the MAP-Kinase pathway, induction of apoptosis and cell cycle arrest. These data provide support for future in vivo studies, drug development, and clinical applications.

Notes:

Paper 32 (0815)

AUTOPHAGY: A NEW TARGET FOR ADVANCED PAPILLARY THYROID CANCER THERAPY

Chi-Iou Lin, Edward E. Whang, Michael Abramson, Xiaofeng Jiang, Brendan D. Price, Francis D. Moore, Jr. and Daniel T. Ruan
BRIGHAM AND WOMEN'S HOSPITAL, BOSTON, MA

Background: Autophagy is an evolutionarily conserved mechanism in which cellular stress promotes degradation and recycling of macromolecules and organelles. Hypothesized to preserve cell viability in times of stress, autophagy is reportedly dysregulated in some cancers. We sought to determine whether: 1) autophagy is activated in papillary thyroid cancer (PTC), 2) autophagy inhibition modulates chemoresistance to doxorubicin, and 3) autophagy inhibition impacts radiosensitivity.

Methods: We monitored autophagy activation by assaying LC3 conversion (LC3-I to LC3-II) by immunoblot analysis. We compared the expression of LC3-II in normal thyroid to that in PTC from freshly harvested thyroidectomy specimens. Two PTC cell lines, 8505-C and TPC-1, were treated with doxorubicin over a range of 0 to 100 uM. Each cell line was exposed to external beam radiation over a dose range of 0 to 6 Gy. Doxorubicin treatment and radiation exposure were done in the presence or aence of 1 uM of 3-MA, an autophagy-specific inhibitor. Cell viability was assayed using MTS.

Results: LC3-II protein expression was undetectable in normal thyroid tissue and in PTC from 6 patients who underwent thyroidectomy. Each PTC cell line had low baseline LC3-II expression under standard culture conditions. Doxorubicin (4 uM, 48 hr exposure) induced a 76% increase in LC3-II expression in 8505-C cells and an 80% increase in TPC-1 cells. 3-MA abrogated these increases by 79% in 8505-C cells and 84% in TPC-1 cells. Moreover, 3-MA significantly increased doxorubicin IC50 both in 8505-C cells (control, 95.85 ± 0.38 nM vs. 3-MA-treated, 127.34 ± 3.82 nM, p = 0.01) and in TPC-1 cells (control, 78.00 ± 0.25 nM, vs. 3-MA-treated, 108.6 ± 0.94 nM, p = 0.003). Radiation exposure (4 Gy) induced a 76% increase in LC3-II expression in 8505-C cells and a 68% increase in TPC-1 cells. 3-MA abrogated radiation-induced LC3-II expression by 74% in 8505-C cells and by 67% in TPC-1 cells. 3-MA significantly reduced radiosensitivity by 49% (p = 0.04) in 8505-C cells and by 31% (p = 0.02) in TPC-1 cells.

Conclusions: Doxorubicin and radiation each strongly activate autophagy in PTC cells. Inhibition of autophagy activation promotes resistance to doxorubicin and to radiation. Autophagy activation may be a novel treatment strategy for patients with advanced PTC that is refractory to conventional therapy.

Notes:

Paper 33 (0830)

OPTIMIZING SURGICAL TREATMENT OF PAPILLARY THYROID CARCINOMA ASSOCIATED WITH BRAF MUTATION

Linwah Yip, Marina N. Nikiforova, Sally E. Carty, John H. Yim, Michael T. Stang, Mitchell J. Tublin, Shane O. LeBeau, Steven J. Hodak, Jennifer B. Ogilvie and Yuri E. Nikiforov.
UNIVERSITY OF PITTSBURGH, PITTSBURGH, PA

Background: To date, mutation of the BRAF oncogene is the most common genetic alteration found in papillary thyroid carcinoma (PTC) and is associated with extrathyroidal extension, lymph node metastasis and tumor recurrence. It is not known whether preoperative identification of BRAF in cytologic specimens should alter surgical management.

Methods: From 2004-2008, the clinical, cytologic, and pathologic parameters of 107 consecutive patients treated surgically with BRAF mutations of PTC were examined and were compared to a concurrent cohort of 70 patients treated for PTC without BRAF, RAS mutations or RET/PTC rearrangements. BRAF and RAS were detected by real-time PCR and fluorescence melting curve analysis and RET/PTC rearrangements were determined by FISH.

Results: Initial treatment of 100 BRAF-positive PTC patients was accomplished in 90 patients by total thyroidectomy (TT) and in 10 patients by lobectomy then completion thyroidectomy; 7 BRAF-positive patients had surgical resection of persistent PTC. Preoperative BRAF testing of cytology (FNA) samples was available for 44/100 thyroidectomy patients and BRAF mutations were present in 31/44 (sensitivity 71%). Of these, 29 patients also had PTC diagnosed by cytology and received TT. In 2 patients with cytology read as inadequate, BRAF-positive FNA was the sole indication for TT. All 31 patients with BRAF-positive FNA had PTC at thyroidectomy (100% specificity). Preoperative imaging to detect cervical metastases had low sensitivity (42%), specificity (74%) and positive predictive value (67%). Lymph node metastasis (51% vs 24%, $p=0.002$) and extrathyroidal extension (57% vs 17%, $p<0.0001$) were more common in BRAF-positive PTC than in the BRAF-negative cohort. In short-term follow-up, a total of 12/107 BRAF-positive patients have required reoperation for persistent disease in the central (5), lateral (2), or both (4) cervical compartments or the mediastinum (1), whereas no patient in the BRAF-negative cohort has required reoperation ($p=0.01$). Altogether, preoperative knowledge of the positive BRAF status could have productively altered initial surgical management of PTC in up to 19% of patients.

Conclusions: In PTC, BRAF mutations are associated not only with extrathyroidal extension and lymph node metastasis but also with cervical reoperation. Preoperative cytologic identification of BRAF mutations has high specificity, and may guide initial extent of thyroidectomy and node dissection.

Notes:

Paper 34 (0845)

GLOBAL VARIATION IN DISTRIBUTION OF THYROID CANCER SUBTYPES

Stacey L. Woodruff , Adeolu O Arowolo, Olusola O. Akute, Adefemi O. Afolabi and Fiemu Nwariaku
UNIVERSITY OF TEXAS SOUTHWESTERN MEDICAL CENTER, DALLAS, TX

Background: The distribution of thyroid cancer subtypes is believed to depend on local factors such as iodine deficiency, which is considered a risk factor for follicular thyroid cancer. With the introduction of iodine sufficient diet in many Western countries, papillary thyroid cancer has become more prevalent. However, the distribution of thyroid cancer subtypes in developing countries has not been examined. The aim of this study is to compare the demographics and contemporary distribution of thyroid cancer subtypes in a developing country (with high iodine-deficiency) with an iodine-sufficient Western country.

Method: A retrospective review of the histologic subtypes of thyroid cancer at two tertiary referral centers, one in West Africa and the second in the United States. In the West African center, all patients with histologically proven diagnosis of thyroid cancer from 1980-2004 were retrieved from the Cancer Registry database. The study period was divided into two groups from 1980-1989 and from 1990-2004. In the American center, a review of patients undergoing surgical treatment for thyroid cancer from 1997-2006 was performed.

Results: At the African institution, 322 patients underwent thyroidectomy for cancer from 1980-2004. The male to female ratio was 1:1.9. The mean age at presentation was 44.6 years. Overall, 31.5% of patients had papillary cancer, and 30.3% had follicular cancer. From 1980-1989, 27.3% of patients had papillary cancer and 35.8% had follicular cancer. From 1990-2004, 35.7% of patients had papillary cancer and 24.8% had follicular cancer. The peak age incidence was 21-30 for papillary cancer and 31-40 for follicular cancer. At the American institution, 92 patients underwent surgery for thyroid cancer from 1997-2006. The male to female ratio was 1:5. The mean age at presentation was 44.3 years. In this population, 80.4% of patients had papillary cancer and 0.1% had follicular cancer. The peak age incidence was 31-40 for papillary cancer and 51-60 for follicular cancer.

Conclusion: Although we observed a decrease in the incidence of follicular thyroid cancer over two decades, follicular thyroid cancer still represents a major subtype of thyroid cancer in developing countries. Papillary thyroid cancer remains the predominant subtype of thyroid cancer in developed countries. Efforts to decrease iodine deficiency may improve the outcomesof thyroid cancer in developing countries by changing to a less aggressive subtype.

Notes:

POSTER COMPETITION

Tuesday May 5, 2009 0900-1000

35. PI3K-AKT PATHWAY ACTIVATION: A MARKER OF MALIGNANT POTENTIAL AND A THERAPEUTIC TARGET IN PHEOCHROMOCYTOMA
Joel T. Adler, DG Hottinger, Muthusamy Kunnimalaiyaan, and Herbert Chen
UNIVERSITY OF WISCONSIN, MADISON, WI

36. IDENTIFICATION OF STEM CELL EXPANSION IN PARATHYROID GLANDS FROM PATIENTS WITH HYPERPARATHYROIDISM
Sandy H. Fang, Julie A. Guidroz, Geeta Lal, Sonia L. Sugg, James R. Howe, Chris S. Jensen and Ronald J. Weigel
UNIVERSITY OF IOWA, IOWA CITY, IA

37. ELDERLY PATIENTS RECEIVE LESS AGGRESSIVE TREATMENT WITH SURGERY AND RADIOACTIVE IODINE FOR DIFFERENTIATED THYROID CANCER
Henry S. Park, Sanziana A.Roman and Julie Ann Sosa
YALE UNIVERSITY SCHOOL OF MEDICINE, NEW HAVEN, CT

38. A RISING INTRAOPERATIVE PARATHYROID HORMONE LEVEL IMMEDIATELY AFTER PARATHYROID RESECTION: ARE ADDITIONAL HYPERFUNCTIONING GLANDS ALWAYS PRESENT?
Mackenzie R. Cook, Susan C. Pitt, Sarah Schaefer, Rebecca Sippel and Herbert Chen
UNIVERSITY OF WISCONSIN, MADISON, WI

39. CLINICAL AND CYTOLOGICAL FEATURES PREDICTIVE OF MALIGNANCY IN THYROID FOLLICULAR NEOPLASMS
Carrie C. Lubitz, William C. Faquin, Jinguyn Yang, Michal Mekel, Randall D. Gaz, Sareh Parangi, Gregory W. Randolph, Richard A. Hodin and Antonia E. Stephen
MASSACHUSETTS GENERAL HOSPITAL, BOSTON, MA

40. UTILIZATION OF PARATHYROIDECTOMY IN THE ELDERLY: A POPULATION-BASED STUDY
Bian Wu, Philip I. Haigh, Roy S. Hwang, In-Lu A. Liu, Philip H.G. Ituarte and Michael W. Yeh
UCLA, LOS ANGELES, CA

41. THE SAFE DISTANCE OF HARMONIC SCALPEL APPLICATION NEAR THE RECURRENT LARYNGEAL NERVE: A STUDY USING THE CANINE MODEL
Kyu Eun Lee, Sung-Hye Park, Hoon Yub Kim, Won Seo Park, Jun Ho Choe, Seung Keun Oh and Yeo-Kyu Youn
SEOUL NATIONAL UNIVERSITY COLLEGE OF MEDICINE, SEOUL

42. INHIBITION OF B-RAFV600E ONCOPROTEIN PREVENTS CELL CYCLE PROGRESSION, AND INVASION IN VITRO AND REDUCES TUMOR GROWTH AND METASTASIS IN AN IN VIVO ORTHOTOPIC MODEL OF THYROID CANCER.

Carmelo Nucera, Matthew Nehs, Michal Mekel, Alfredo Pontecorvi, Vania Nose', Jack Lawler, Richard A. Hodin and Sareh Parangi
MASSACHUSETTS GENERAL HOSPITAL, BOSTON, MA

43. CONSERVATIVE MANAGEMENT OF THE CLINICALLY INAPPARENT ADRENAL MASS – DOES IT AFFECT HEALTH-RELATED QUALITY OF LIFE?

Andreas Muth, Charles Taft, Lilian Hammarstedt, Lena Björneld, Mikael Hellström and Bo Wängberg
SAHLGRENSKA UNIVERSITY HOSPITAL, GOTHENBURG

44. DETECTION OF MICRO-RNA 21 IN THYROID NEOPLASMS BY IN SITU HYBRIDIZATION

Shalini Arora, Xiulong Xu and Richard Prinz
RUSH UNIVERSITY MEDICAL CENTER, CHICAGO, IL

45. WHEN SHOULD INTRAOPERATIVE PARATHYROID HORMONE MONITORING BE USED? ALWAYS, NEVER, OR SOMETIMES?

Lilah F. Morris, Roy Hwang, Steven Park, Philip H. G. Ituarte and Michael W. Yeh
DAVID GEFFEN SCHOOL OF MEDICINE, LOS ANGELES, CA

46. IDENTIFYING THE ROLE OF ESTROGEN IN THYROID CARCINOGENESIS

Christopher D. Malone, Zijuan Liu, Youxue Wang, Genevieve Dulan and Fiemu Nwariaku
UNIVERSITY OF TEXAS SOUTHWESTERN, DALLAS, TX

47. PATTERNS OF RECURRENCE FOR ADRENOCORTICAL CARCINOMA

John B. Ammori, Paul G. Gauger, Gary D. Hammer, Gerard M. Doherty and Barbra S. Miller
UNIVERSITY OF MICHIGAN, ANN ARBOR, MI

48. SULINDAC REVERSES ABERRANT EXPRESSION AND LOCALIZATION OF BETA-CATENIN IN PAPILLARY THYROID CANCER CELLS WITH THE BRAFV600E MUTATION

Nancy L. Cho, Chi-Iou Lin, Edward E. Whang, Michael Abramson, Monica M. Bertagnolli, Francis D. Moore and Daniel Ruan
BRIGHAM & WOMEN'S HOSPITAL, BOSTON, MA

49. IMPACT OF INTRAOPERATIVE PARATHYROID HORMONE MONITORING: A PROGRESSION FROM BILATERAL CERVICAL EXPLORATION TO MINIMALLY INVASIVE PARATHYROIDECTOMY

Hasly Harsono, Robert Lewis, Kenechi Ebede and Douglas L. Fraker
UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA

POSTERS

50. XANTHOHUMOL, A NOVEL PRENYLFLAVONOID, ALTERS NEUROENDOCRINE PHENOTYPE AND INHIBITS GROWTH OF CARCINOID CELL LINES

Catherine M. McManus, Nicole L. Seiler, Stephen L. Rose, Herbert Chen and Muthusamy Kunnimalaiyaan
UNIVERISTY OF WISCONSIN, MADISON, WI

51. ENDOCRINE SURGERY: WHERE ARE WE TODAY? A NATIONAL SURVEY OF YOUNG ENDOCRINE SURGEONS

Carmen C. Solorzano, Julie A. Sosa, S. Lechner, John I. Lew, and Sanziana A. Roman
UNIVERSITY MIAMI, MIAMI, FL

52. AN ASSESSMENT OF THE DYSPHONIA SEVERITY INDEX (DSI) OVER THE COURSE OF THYROIDECTOMY

Leonard R. Henry, Leah B. Horst, Nancy P. Solomon, Robin Howard, Joyce Gurevic-Uvena, George Coppit and Alex Stojadinovic
NATIONAL NAVAL MEDICAL CENTER, WALTER REED ARMY MEDICAL CENTER, BETHESDA, MD

53. EFFICACY OF TOTAL THYROIDECTOMY AND I-131 ABLATION TREATMENT IN PATIENTS WITH POST CHERNOBYL THYROID CANCER: 14 YEARS FOLLOW-UP

Paulo Miccoli, Poupak Fallahi, Michele N. Minuto, Mariano Grosso, Giuseppe Boni, Piero Berti and Alessandro Antonelli
UNIVERSITY OF PISA, PISA, ITALY

54. DIFFERENTIAL EXPRESSION OF CONNEXINS IN BENIGN AND PATHOLOGICAL THYROID TISSUE

Claudia Dominguez, Thibault Desurmont, Anthony Beaulieu, Sophie Crespin, Hélène Gibelin, Gaelle Fromont, Pierre Levillain, Marc Mesnil and Jean-Louis Kraimps
POITIERS UNIVERSITY, POITIERS, FRANCE

55. MODULATION OF MATRIX METALLOPROTEINASE ACTIVITY IN HUMAN THYROID CANCER CELL LINES USING DEMETHYLATING AGENTS AND HISTONE DEACETYLASE INHIBITORS

Wen T. Shen, Nick Griff, Electron Kebebew, Quan-Yang Duh, Rajabrata Sarkar and Orlo H. Clark
UCSF/MT. ZION MEDICAL CENTER, SAN FRANCISCO, CA

56. ENDOSCOPIC MODIFIED RADICAL NECK DISSECTION IN THYROID CANCER PATIENTS WITH OR WITHOUT DA VINCI ROBOT SYSTEM; PRELIMINARY REPORT.

Sang-Wook Kang, Jong Ju Jeong, Tae Yon Sung, Seung Chul Lee, Yong Sang Lee, Kee-Hyun Nam, Hang Seok Chang, Woong Youn Chung and Cheong Soo Park
YONSEI UNIVERSITY COLLEGE OF MEDICINE, SEOUL

58. PREOPERATIVE PARESIS OF THE RECURRENT LARYNGEAL NERVE: SURGICAL THERAPY AND PROGNOSIS

Gregor Cammerer, Lars Fischer, Ilker Satiroglu, Andreas Hillenbrand, Bernhard Boehm, Doris Henne-

Bruns, Sibylle Brosch and Theresia Weber
UNIVERSITY HOSPITALS ULM & HEID, GERMANY

59. DUAL SPECIFIC TARGETING VIA THE MATRIX METALLOPROTEINASE-ACTIVATED ANTHRAX LETHAL TOXIN IN ANAPLASTIC THYROID CARCINOMA
Randall W. Alfano, Stephen H. Leppla, Shihui Liu, Thomas H. Bugge, Nicholas S. Duesbery, Arthur E. Frankel and Terry C. Lairmore
TEXAS A&M UNIVERSITY, TEMPLE, TX

60. THE ROLE OF CYTOREDUCTIVE SURGERY AND HYPERTHERMIC CHEMOTHERAPY FOR NEUROENDOCRINE TUMORS WITH PERITONEAL SPREAD
Lloyd a. Mack, Janice L. Pasieka and Walley J. Temple
UNIVERSITY OF CALGARY, CALGARY, AB

61. SURGICAL DRAINS CAN BE SAFELY AVOIDED IN MODIFIED RADICAL NECK DISSECTIONS FOR THYROID CANCER
Michal Mekel, Antonia E. Stephen, Randall D. Gaz, Gregory W. Randolph, Carrie C. Lubitz, Matthew A. Nehs, Sareh Parangi and Richard A. Hodin
HARVARD MEDICAL SCHOOL, BOSTON, MA

62. ANALYSIS OF RISK FACTORS FOR HYPOCALCEMIA FOLLOWING MINIMALLY INVASIVE PARATHYROIDECTOMY FOR PRIMARY HYPERPARATHYROIDISM
Joseph A. Trunzo, Karem Harth, Matthew Strohhacker and Scott M. Wilhelm
UNIVERSITY HOSPITALS CASE MEDICAL CENTER, CLEVELAND, OH

63. IMPACT OF PROPHYLACTIC CENTRAL NECK LYMPH NODE DISSECTION ON RECURRENCE IN PAPILLARY THYROID CARCINOMA
Tracy-Ann Moo, Julie F. McGill, Ben Umunna, John D. Allendorf, William B. Inabnet, James A. Lee, Thomas J. Fahey III and Rasa Zarnegar
NEW YORK PRESBYTERIAN HOSPITAL-CORNELL, NEW YORK, NY

64. USING SENTINEL LYMPH NODE BIOPSY TECHNIQUE TO GUIDE SELECTIVE NECK DISSECTION IN PAPILLARY THYROID CARCINOMA
Scott M. Wilhelm, Melanie Lynch and Julian A. Kim
UNIVERSITY HOSPITALS/CASE MEDICAL CENTER, CLEVELAND, OH

65. PRIMARY HYPERPARATHYROIDISM WITH HISTORY OF HEAD AND NECK IRRADIATION: A MANDATE FOR THYROID ULTRASOUND BEFORE PARATHYROIDECTOMY
Stuart D.Wilson, Tracy S. Wang, Sam G. Pappas, Elizabeth A. Krzywda, Jennifer L. Scheel and Tina Yen
MEDICAL COLLEGE OF WISCONSIN, MILWAUKEE, WI

66. MITOGEN-INDUCIBLE GENE-6 INHIBITS EGFR PHOSPHORYLATION AND PROMOTES CHEMOSENSITIVITY TO DOXORUBICIN IN PAPILLARY THYROID CANCER CELLS
Chi-Iou Lin, Edward E. Whang, Michael Abramson, Francis D. Moore, Jr. and Daniel R. Ruan
BRIGHAM AND WOMEN'S HOSPITAL, BOSTON, MA

67. SALVAGE THERAPY IMPROVES SURVIVAL AFTER RESECTION OF NEUROENDOCRINE LIVER METASTASES

Srinevas K. Reddy, Rebekah R. White, Dan G. Blazer and Bryan M. Clary
DUKE UNIVERSITY MEDICAL CENTER, DURHAM, NC

68. A NEW, VITAMIN D - BASED, MULTIDIMENSIONAL NOMOGRAM FOR THE DIAGNOSIS OF PRIMARY HYPERPARATHYROIDISM

Adrian Harvey, Jean C. Hu, Manjula Gupta, Sam Butler, Jamie Mitchell, Eren Berber, Allan Siperstein and Mira Milas
CLEVELAND CLINIC, CLEVELAND, OH

69. IMPACT OF PREOPERATIVE TERTIARY HYPERPARATHYROIDISM AND PARATHYROIDECTOMY FOR PERSISTENT DISEASE ON RENAL GRAFT SURVIVAL, IN KIDNEY TRANSPLANT RECIPIENTS

Emad Kandil, Haytham H. Alabbas, Salem Noureldine, Tareq M. Islam, Obey Abdullah, Saner S. Florman, Paul L. Friedlander, Tina K. Thethi and Jennifer McGee
TULANE UNIVERSITY MEDICAL SCHOOL, NEW ORLEANS, LA

70. MANAGEMENT OF PATIENTS WITH NON-DIAGNOSTIC THYROID FINE NEEDLE ASPIRATION IS VARIABLE: WOULD THERE BE A STANDARD?

Peter J. Mazzaglia and Jack M. Monchik
BROWN UNIVERSITY, PROVIDENCE, RI

71. SEVERE OBESITY IS ASSOCIATED WITH VITAMIN D DEFICIENCY AND LARGER ADENOMAS IN PRIMARY HYPERPARATHYROIDISM

Mohamed Abdelgadie Adam, Brian R. Untch and John A. Olson Jr.
DURHAM, NC

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 surgeons 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 American Board of Surgery or its equivalent in Canada, Central America, Mexico, and South America. In addition, membership shall be limited to fellows of the American College of Surgeons or its international equivalent.

B. **Types of Members.** There shall be five types of members: Active, Senior, Allied Specialist, Honorary, and Corresponding.

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 one annual meeting (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 who are applying for active membership, who have completed their Endocrine Surgical Fellowship should be in practice at least for one year 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 not have attendance requirements, but 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 Southe America. In addition, Allied Specialist membership shall be limited to Fellows of the American College of Surgeons or its 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 shall pay dues as levied by the Council and approved by the membership, shall have voting privileges, are subject to attendance requirements, shall have the right to attend the annual business meeting, can serve on committees, and are not eligible for election to office or Council.

C. **Election of New Members**

1. Physicians fulfilling the requirements for active 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.

2. Application forms for active or corresponding membership shall be provided by the Secretary-Treasurer. 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. 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.

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 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 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.

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 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 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 the Council), Publication and Program committee, Education and Research committee, and Fellowship committee.

B. The Nominating committee shall consist of the President and two 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.

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 proceedings 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 Illinois General Not for Profit Corporation Act of 1986

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.

AAES MEMBERS
GEOGRAPHICAL LISTING

BRAZIL

PORTO ALEGRE
Alberto S. Molinari, MD
SAO PAULO
Frederico Aun, MD

CANADA

Alberta

CALGARY
Janice L. Pasieka, MD

British Columbia

VANCOUVER
Samuel P. Bugis, MD
Nis Schmidt, MD

Ontario

TORONTO
Irving Bernard Rosen, MD
Lorne E. Rotstein, MD

Quebec

MONTREAL
Roger John Tabah, MD

MEXICO

MERIDA
Rafael Fajardo-Cevallos, MD
MEXICO CITY
Miguel F. Herrera, MD
Juan Pablo Pantoja, MD
Mauricio Sierra, MD

UNITED STATES

Alabama

MOBILE
Donna Lynn Dyess, MD

Arkansas

LITTLE ROCK
Lawrence T. Kim, MD
Anne T. Mancino, MD

Arizona

PHOENIX
Stuart D. Flynn, MD
Richard J. Harding, MD
Richard T. Schlinkert, MD
SCOTTSDALE
Michael J. Demeure, MBA, MD
Jeffrey A. Van Lier Ribbink, MD

California

DUARTE
John Hosei Yim, MD
EL MACERO
Earl Wolfman, MD
HILLSBOROUGH
Robert C. Lim, MD
LA JOLLA
Michael Bouvet, MD
Arthur Sanford, MD
LOS ANGELES
Philip I. Haigh, MD
Oscar J. Hines, MD
Michael W Yeh, MD
NORTHSTAR-TRUCKEE
Lawrence A. Danto, MD
ORANGE
Jay K. Harness, MD
PLEASANT HILL
Horacio Asbun, MD
RICHMOND
Gary C. Clark, MD
SACRAMENTO
Philip D. Schneider, MD, PhD
SAN DIEGO
Melvin A. Block, MD
SAN FRANCISCO
Orlo H. Clark, MD
Haile T. Debas, MD
Quan-Yang Duh, MD
Maurice Galante, MD
Thomas K. Hunt, MD
Electron Kebebew, MD
Elaine U. Yutan, MD
SAN JOSE
Maria D. Allo, MD
SANTA BARBARA
Ronald G. Latimer, MD
SANTA MONICA
Armando E. Giuliano, MD
STANFORD
Ralph S. Greco, MD
Jeffrey Allen Norton, MD
SYLMAR
Lionel Zuckerbraun, MD

Colorado

DENVER
- R. Dale Liechty, MD
- Robert C. McIntyre, Jr., MD

Connecticut

NEW HAVEN
- Roger S. Foster, Jr., MD
- Sanziana Roman, MD
- Julie Ann Sosa, MD
- Robert Udelsman, MD, MBA

District of Columbia

WASHINGTON
- Glenn W. Geelhoed, MD

Florida

CORAL GABLES
- George L. Irvin, MD

HIGHLAND BEACH
- Stuart W. Hamberger, MD

JACKSONVILLE
- J. Kirk Martin, MD
- Stephen L. Smith, MD

MIAMI
- John I. Lew, MD
- Carmen C. Solorzano, MD

MIAMI BEACH
- Victor D. Dembrow, MD
- Michel Gagner, MD

ORLANDO
- Karen R. Borman, MD

PONTE VEDRA BEACH
- William H. Remine, MD

SAFETY HARBOR
- Rick J. Schmidt, MD

STUART
- James J. Vopal, MD

TAMPA
- Bradford Carter, MD
- Peter J. Fabri, MD, PhD
- Scott F. Gallagher, MD
- James G Norman, MD
- Doug Politz, MD

Georgia

MARIETTA
- Robert A Underwood, MD

SAVANNAH
- E. Stephen Yeager, MD

THOMASVILLE
- Arlie R. Mansberger, MD

Hawaii

HONOLULU
- Livingston Wong, MD

NEWTON
- Gregory Stanislav, MD

Illinois

EVANSTON
- David James Winchester, MD

HINSDALE
- Edward Paloyan, MD

MAYWOOD
- Steven A. De Jong, MD

NORTH CHICAGO
- Arthur J. Ross, MD
- Michael J. Zdon, MD

OAKLAWN
- William M. Hopkins, MD

PARK RIDGE
- Sang E. Hann, MD

ZION
- Edgar D. Staren, MD

Indiana

INDIANAPOLIS
- Thomas A. Broadie, MD
- Judiann Miskulin, MD

Iowa

IOWA CITY
- Nelson J. Gurll, MD
- James R. Howe, MD
- Geeta Lal, MD, MSc, FRCS©
- Sonia L. Sugg, MD
- Ronald J. Weigel, MD, PhD

Kansas

KANSAS CITY
- Mark S. Cohen, MD

LAKE QUIVERA
- Arlo S. Hermreck, MD

Kentucky

LEXINGTON
- Richard W. Schwartz, MD

LOUISVILLE
- Richard E. Goldstein, MD

Louisiana

KENNER
- Eugene A. Woltering, MD

NEW ORLEANS
- Bernard M. Jaffe, MD

SHREVEPORT
John C. McDonald, MD

Maine

PORTLAND
Walter B. Goldfarb, MD
Dougald C. MacGillivray, MD
Frederick Roy Radke, MD
VINALHAVEN
Barbara K. Kinder, MD

Massasshusets

PITTSFIELD
Eugene L. Curletti, MD
SHREWSBURY
Nilima Patwardhan, MD
SPRINGFIELD
Nicholas P.W. Coe, MD
WESTON
Menelaos A. Aliapoulios, MD

Michigan

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Vinod Narra, MD
Gary B. Talpos, MD
FRANKFORT
Ward O. Griffen, MD
KALAMAZOO
Michael K. McLeod, MD
MIDLAND
Melwyn J. Sequeira, MD
ROYAL OAK
Peter F. Czako, MD

Minnesota

MINNEAPOLIS
John P. Delaney, MD
John S. Najarian, MD
ROCHESTER
J. Aidan Carney, MD
David R. Farley, MD
Clive Grant, MD
Ian D. Hay, MD, PhD, FRCP
Melanie L. Richards, MD
F John John Service,
MD, PhD
Geoffrey B. Thompson, MD
William F. Young, MD

Mississippi

JACKSON
Andrew D. Parent, MD
TUPELO
John W. Bowlin, MD

Missouri

COLUMBIA
Debra G. Koivunen, MD
SAINT LOUIS
Walter F. Ballinger, MD
L. Michael Brunt, MD
William E. Gillanders, MD
Bruce L. Hall, MD
Jeffrey F. Moley, MD
Lawrence W. O'Neal, MD
William Shieber, MD
Samuel A. Wells, Jr., MD

New Jersey

MORRISTOWN
Eric D. Whitman, MD
NEPTUNE
Alexander L. Shifrin, MD
PATERSON
Daniel C. Budd, MD

New Mexico

RIO RANCHO
Brian G. Miscall, MD

New York

COOPERSTOWN
John E. Olson, MD
M. Bernadette Ryan, MD
ITHACA
Cory Lee Foster, MD
LAKE SUCCESS
Laura A. Sznyter, MD
MOUNT KISCO
Kathryn Spanknebel, MD
NEW YORK
John Allendorf, MD
Murray F. Brennan, MD
John A. Chabot, MD
Thomas J. Fahey, III, MD
Keith S. Heller, MD
William B Inabnet III, MD
Vivian E. Mack Strong, MD
Kepal N. Patel, MD
Jatin P. Shah, MD
Ashok R. Shaha, MD
SYRACUSE
Kara C. Kort, MD
Patricia J. Numann, MD

North Carolina

DURHAM
John A. Olson, MD
Douglas S. Tyler, MD

GREENVILLE
Walter E. Pofahl, MD
Walter J. Pories, MD
RALEIGH
Kirk B. Faust, MD
WINSTON SALEM
David A. Albertson, MD

Ohio

CLEVELAND
Scott Wilhelm, MD
COLUMBUS
Christopher Ellison, MD
William B. Farrar, MD

Oklahoma

TULSA
Thomas A. Broughan, MD

Oregon

PORTLAND
Rodney F. Pommier, MD
Brett C. Sheppard, MD
Kelvin Chiu Yu, MD

Pennsylvania

DANVILLE
David G Sheldon, MD
William E. Strodel, MD
HARRISBURGH
Harold C. Yang, MD
HERSHEY
Gordon L. Kauffman, Jr, MD
PHILADELPHIA
Herbert E. Cohn, MD
Douglas L. Fraker, MD
John C. Kairys, MD
Virginia LiVolsi, MD
John A. Ridge, MD
Charles J. Yeo, MD
PITTSBURGH
Sally E. Carty, MD
David Lawrence Bartlett, MD
Jennifer B. Ogilvie, MD
John Stremple, MD
SAYRE
Douglas R. Trostle, MD

Rhode Island

PROVIDENCE
Jack M. Monchik, MD
RUMFORD
Timothy S. Harrison, MD

South Carolina

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J. Jeffrey Brown, MD
GREENVILLE
Jonathan S Lokey, MD
Jeffreys Macfie, MD
SPARTANBURG
Richard Kenneth Orr, MD

Tennessee

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H. Sperry Nelson, Jr., MD
NASHVILLE
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John E. Phay, MD
Kathleen Crews Williams, MD

Texas

DALLAS
Shelby Holt, MD
Fiemu Nwariaku, MD
William H. Snyder, III, MD
Robert M. Steckler, MD
HOUSTON
Mary L. Brandt, MD
F. Charles Brunicardi, MD
Gilchrist L. Jackson, MD
Jeffrey E. Lee, MD
Nancy D. Perrier, MD
TEMPLE
Terry C. Lairmore, MD
Samuel K. Snyder, MD
WICHITA FALLS
Beth H. Sutton, MD

Utah

SALT LAKE CITY
Leigh A. Neumayer, MD

Virginia

RICHMOND
Amelia C. Grover, MD
Ronald Merrell, MD
H. H. Newsome, Jr., MD

Washington

SPOKANE
Renu Sinha, MD

West Virginia

MORGANTOWN
Bradford K. Mitchell, MD

Wisconsin

LA CROSSE
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