UT Southwestern
Medical Center

Third Annual UT Southwestern Multidisciplinary Endocrine Tumor Symposium

"Elevated Parathyroid Hormone: Diagnostic Dilemmas and Therapeutic Considerations in Hyperparathyroidism"

Friday, September 8, 2023

Sponsored by the Division of Endocrine Surgery, the Division of Endocrinology, the Center Mineral Metabolism and Clinical Research at UT Southwestern, and the UT Southwestern Office of Continuing Education

Course Faculty

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Chief, Division of Endocrine Surgery
Professor of Surgery
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Division of Endocrinology, and Associate Director, Pak Center for Mineral Metabolism and Clinical Research
Professor of Internal Medicine
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Robert Wermers, MD

Consultant and Chair
Division of Endocrinology, Diabetes, Metabolism, and Nutrition
Professor of Medicine
Mayo Clinic Rochester

John Bilezikian, MD, PhD(hon)

Silverberg Professor of Medicine
Chief, Emeritus, of the Division of Endocrinology
Vagelos College of Physicians and Surgeons, Columbia University

Symposium Agenda

1:00-1:05 PM: Welcome/Introductions

1:05-1:50 PM: Dr. Robert Wermers: Biochemical evaluation of hyperparathyroidism
1:50-2:00 PM: Q&A
2:00-2:25 PM: Case Discussion: Diagnostic considerations in hyperparathyroidism

2:25-2:35 PM: Break

2:35-3:20 PM: Dr. John Bilezikian: Management of primary hyperparathyroidism
3:20-3:30 PM: Q&A
3:30-4:00 PM: Case Discussion: Therapeutic considerations in hyperparathyroidism

Disclosure of Financial Relationships

In compliance with the Accreditation Council for Continuing Medical Education (ACCME) Standards for Integrity and Independence in Accredited Continuing Education, all persons in the position to control the content of an educational activity are required to disclose all financial relationships in any amount occurring within the past 24 months with any ineligible company (any entity whose primary business is producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on patients).

Disclosures may be reviewed in the CME Handout.

CME Information

Accreditation Statement

The University of Texas Southwestern Medical Center is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

Credit Designation

The University of Texas Southwestern Medical Center at Dallas designates this continuing education activity for a maximum of 2.5 AMA PRA Category 1 Credits™. Each physician should claim only the credit commensurate with the extent of their participation in the activity.

ABS Continuous Certification Credit

Successful completion of this CME activity enables the learner to earn credit toward the CME requirement(s) of the American Board of Surgery's Continuous Certification program. It is the CME activity provider's responsibility to submit learner completion information to ACCME for the purpose of granting ABS credit.

Course Evaluation and Claiming Credits

All attendees will receive an email next week from the CME Office containing a link and instructions for completing the online course evaluation.

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Everything is completed online in the EthosCE system.

Video Recording of Today's Symposium

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REMINDERS

All attendees are on mute, but you may communicate with the conference organizers and moderators by typing questions in the Zoom broadcast chat box.

Note – we will NOT be using the Zoom Q&A function, only the Chat box during the live Q&A portions of the conference.

Refer to the Chat box to review a copy of the CME Handout and to receive other messages broadcasted during today's symposium.

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Dr. Wermers' Slides

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Diagnostic Considerations- Case 1

Ms. J. is a 60 y/o woman referred for evaluation of hyperparathyroidism w past RYGB

Past history: RYGB in 2011; Fe-deficiency anemia, vitamin D deficiency, hypertension
No past fracture or kidney stone, no past neck radiation
Fam history: Mother with past parathyroid surgery; died of pancreatic cancer

Meds: Ergocalciferol 50,000 IU daily; Losartan/HCTZ

Prior labs: Ca: 10.1 mg/dL (ref: 8.4-10.2), Alb: 3.7 g/dL, Cr 0.78 mg/dl, PTH: 89 pg/mL

Labs: Ca: 9.9 mg/dL (ref: 8.4-10.2), Alb: 3.7 g/dL, Cr 0.71 mg/dl, eGFR: 98 ml/min/ 1.73 m2, Phos: 3.0 mg/dL (2.5-4.5), PTH: 159 pg/mL (ref: 25-105), 25-OH-D: 35 ng/mL

24-hr urine (on HCTZ): Ca: 18 mg/day, Creatinine: 1190 mg/day

DXA scan T-scores: L-spine: -3.7, Fem Neck: -2.4, Tot Hip: -1.7

Imaging: Indeterminate 6 mm extrathyroidal nodule posterior to the Rt thyroid gland - favored to represent parathyroid gland as suspected on same day NM parathyroid scan

Diagnostic Considerations- Case 1

Ms. J. is a 60 y/o woman with hi PTH, past RYGB, HCTZ use, osteoporosis by DXA

Labs: Ca: 9.9 mg/dL (ref: 8.4-10.2), Alb: 3.7 g/dL, Cr 0.71 mg/dl, Phos: 3.0 mg/dL, PTH: 159 pg/mL, 25-OH-D: 35 ng/mL, 24-hr UCa: 18 mg/day (good collection on HCTZ)

Imaging: Indeterminate 6 mm extrathyroidal nodule posterior to the Rt thyroid gland - favored to represent parathyroid gland as suspected on same day NM parathyroid scan

Questions:

1. Overall approach to this patient?
2. Do you stop HCTZ in the evaluation of hypercalcemia/ hyperpara? For how long?
3. How do you use available positive localizing neck imaging studies?

Diagnostic Considerations- Case 2

Mr. R. is a 52 y/o man referred for evaluation of hypercalcemia noted on "physical"

Past history: Healthy. Getting labs for the first time. Asymptomatic. No past fracture or kidney stone, no past neck radiation. No use of medications or OTC supplements.
Fam history: No calcium or parathyroid disorders

Labs: Ca: 10.5 mg/dL (ref: 8.4-10.2), Alb: 3.9 g/dL, Cr 0.75 mg/dl, Phos: 2.9 mg/dL (2.5-4.5), PTH: 29 pg/mL (ref: 15-65), 25-OH-D: 31 ng/mL, 1,25-OH2-D: 70 pg/ml (12-72)

24-hr urine: Ca: 305 mg/day, Creatinine: 1290 mg/day; Ca:Cr Cl Ratio: 1.69%

DXA scan T-scores: L-spine: -1.7, Fem Neck: -1.4, Tot Hip: -1.1, 1/3 Radius: -0.9

What is your working diagnosis?

How low can PTH be in 1ry hyperparathyroidism?

How do you interpret serum 1,25-OH2-D in the setting of hypercalcemia?

Any role for neck imaging in order to reach the diagnosis in this case?

Diagnostic Considerations- Case 3

Mr. L. is a 61 y/o man referred for evaluation of hypercalcemia

Date	5/2019	11/2021	1/2022	4/2022	5/2023
Albumin-Adj. Ca (8.4-10.2)	9.4	9.9	10.3 (H)	10.4 (H)	10.4 (H)

Past history: He is asymptomatic. No past fracture, no stones. 2 servings of dairy/day. Meds: Semaglutide 2.4 mg SQ Qwk since 5/2023. OTC vitamin D 4,000 IU/day for 3 years. No Ca suppl or Tums. Fam hx: No Ca/PTH dz

Labs: Ca: 9.9 mg/dL (ref: 8.4-10.2), Alb: 4.1 g/dL, Cr 1.03 mg/dl, Phos: 3.0 mg/dL, PTH: 121 pg/mL (ref: 25-105), 25-OH-D: 48 ng/mL, TSH: 2.02, Mg: 2.4 mg/dL

24-hr urine: Ca: 503 mg/day, Creatinine: 1823 mg/day; Na: 187 mmol/day

What is your working diagnosis?

Do you perform a “thiazide challenge test” in cases of ↑Uca/↑PTH/nl sCa?

Neck US to f/up on thyroid nodule: No abnormal parathyroid. How do you use this info?

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Therapeutic Considerations- Case 1

Mr. T. is an 83y/o man referred by PCP for evaluation/management of hypercalcemia

Serum Ca elevation first noted in 2006 (Ca: 10.4 mg/dl), has fluctuated since then, reaching peak of 11.0 mg/dl in 2011, with most recent values between 10.3-10.5 mg/dL

Hypercalcemia is asymptomatic. No history of nephrolithiasis or osteoporotic fracture. No culprit medications. No family history of parathyroid disease or calcium.

Labs: Ca: 10.5 mg/dL (ref: 8.4-10.2), Alb: 3.7 g/dL, Cr 0.87 mg/dl, eGFR: 77 ml/min/ 1.73 m2, Phos: 2.6 mg/dL (2.5-4.5), PTH: 141 pg/mL (ref: 25-105), 25-OH-D: 35 ng/mL

24-hr urine: Ca: 188 mg/day, Creatinine: 945 mg/day. U Ca:Cr Clearance Ratio: 1.6%

DXA scan T-scores: L-spine: +0.1 (DJD), Fem Neck: -1.3, Tot Hip: -1.0, 1/3 radius: -4.6

Other imaging: No vertebral compression fracture, no silent nephrolithiasis

Therapeutic Considerations- Case 1

Mr. T. is an 83y/o man with asymptomatic PHPT, osteoporosis only at the 1/3 radius

Based on guidelines on asymptomatic PHPT, parathyroidectomy is recommended
He is asymptomatic, and reluctant to undergo parathyroidectomy. He has questions:

"How will parathyroidectomy help me?" (BMD, fracture risk?)
"What are pros/cons of parathyroidectomy vs using anti-osteoporosis medications?"

Would osteoporosis at sites other than 1/3 radius influence your decision? FRAX?
Do you obtain bone turnover markers in patients with PHPT? How do you use them?

Therapeutic Considerations- Case 1

Mr. T. is an 83y/o man with asymptomatic PHPT, osteoporosis only at the 1/3 radius

Based on guidelines on asymptomatic PHPT, parathyroidectomy is recommended

Does patient age, life expectancy, and/or comorbidities influence how you counsel him?

Would additional presence of neurocognitive symptoms influence how to counsel him?

Would you obtain neck localizing studies to guide how you counsel him?

Therapeutic Considerations- Case 2

Dr. G. is an 81 y/o retired physician seen for management of persistent PHPT

Recurrent nephrolithiasis: stone requiring urologic intervention in 2016, recurrent stone on KUB in 2018 and 2021, no stone on CT scan in 2022

Recent acquired elevation in serum Ca: 9.6 (2016)->10.4 (2021)-> 11.0 (2023)

Other labs: Cr 0.98 mg/dl, Phos: 2.6 mg/dL, PTH: 72 pg/mL (15-65), 25-OH-D: 28 ng/mL

24-hr urine: Ca: 253 mg/day, Creatinine: 1220 mg/day

DXA scan T-scores: T-scores –2.4 at fem neck (13% decline from 2016), -0.6 at L-spine (16% decrease from 2016), no 1/3 radius measurement

Neck imaging: No abnormal parathyroid on neck US or Sestamibi scan/SPECT-CT

5/2023: full neck exploration- resection of 2 Lt parathyroids, biopsy of normal-appearing Rt superior parathyroid gland. Intra-op PTH: 199 -> 110 pg/mL

Therapeutic Considerations- Case 2

Dr. G. is an 81 y/o retired physician seen for management of persistent PHPT

Recurrent nephrolithiasis, worsening BMD, Full neck exploration in May 2023 identifies 3 parathyroid glands in the neck but intra-operative PTH does not drop

Post-operative labs: Ca: 10.6 mg/dL; PTH: 127 pg/mL

Repeat imaging: Questionable mediastinal uptake

Next steps: Would you pursue further imaging / selective venous sampling?

Next steps: Would you treat medically with anti-osteoporosis medications ± cinacalcet?

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