51 year old Female with Mental Status Changes

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HPI

- 51 yo female presented to the ER with confusion, nausea/vomiting, tachycardia 150s
- Recently seen at Cook County and started on MMI for hyperthyroidism 2 weeks prior
- Stopped taking MMI 3 days ago, unknown why MMI stopped
- Patient admitted to MICU, intubated for impending respiratory failure

HPI…

- TFTs checked and consistent with hyperthyroidism
- Endocrine consulted for “thyroid storm”

Past Medical History

HTN

Family History

Niece with ? Grave's disease s/p 2 thyroid surgeries

Medications

Methimazole 30mg daily – stopped 3 days ago
Metoprolol 50mg BID
Ergocalciferol 50,000 IU weekly

NKDA

Social History

No tobacco, EtOH, or illicit drug use
Married, 2 children
Unemployed

Physical Exam

VS: **T:** 100 ^{0}F **BP:** 89/58 **HR:** 143 **RR:** 30 **Ht:** 170 cm **Wt:** 70 kg **BMI:** 24

Gen: Confused, oriented to self only

HEENT: no obvious proptosis, anicteric sclera

Neck: thyroid normal size/texture, no nodules

Chest: CTAB

CV: tachycardia, +S1/S2, no LE edema

Abd: +BS, soft, nontender, nondistended, no hepatosplenomegaly

MSK: difficult to elicit due to confusion

Skin: warm/dry

Lymph: no lymphadenopathy

Neuro: patellar reflexes brisk bilaterally

ROS

- Confusion x 1 day
- 60 lb unintentional weight loss over past 3 months
- +Hot flashes x 3 months, regular menstrual cycle until periods stopped 3 months ago
- No vision changes, no dry eyes, no double vision
- Productive cough x 3 weeks
- +Nausea/vomiting, +Constipation
- **+Generalized muscle weakness and achiness x 3 months**
- +Tremor

Labs – Cook County

2 weeks prior to admission at U of C

1/9/12

TSH: <0.015 (0.34-5.6)

FT4: 1.93 (0.58-1.64)

FT3: 5.83 (2.5-3.9)

T3: 207

TSI: < 1.0

139	103	9	
			65
4.2	24	0.8	

Calcium: 9.9

Phosphate: 4.8

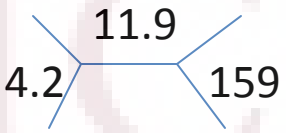
Albumin: 3.8

AST: 42

ALT: 28

Alk phos: 56

TB: 0.9



25-OH D: 11

CK: 73 U/L

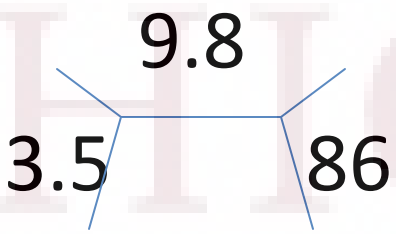
ESR: 27 mm/hr

Thyroid US: mulitple thyroid nodules bilaterally

Labs – Cook County

1/20/12

FT4: 2.52



Increased MMI to 30mg daily

Consulted hematology: attributed pancytopenia to hyperthyroidism and chronic disease, not MMI

Labs at Univ of Chicago

TSH: 0.01 mcU/mL (0.3-4)

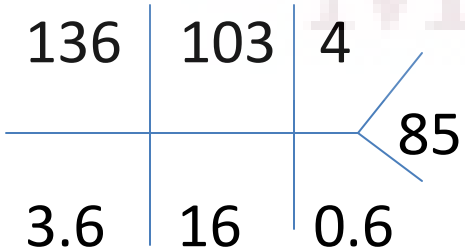
FT4: 2.47 ng/dL (0.9-1.7)

T3: 258 ng/dL (80-195)

FT3: 662 pg/dL (230-420)

TPO Ab: 20

TG Ab: negative



Ca: 8.7 mg/dL
Phosphate: 4.1 mg/dL
Mg: 1.1 mg/dL
AST: 49 U/L
ALT: 38 U/L
CK: 1888 U/L

Cortisol: 0.8 mcg/dL (1pm)

ABG: 7.2/22/91

Infectious w/u including LP
negative

Does this patient have thyroid storm?

- Clinical diagnosis (*Burch HB, Wartofsky L. Endocrinol Metab Clin North Am. 1993*)
  - Fever
  - CNS (agitation→delirium→coma)
  - GI (N/V/D→Jaundice)
  - CV (Tachycardia, Heart failure)
  - Precipitating event
  - Score of 45 or greater highly suggestive (pt=65-70)
- Degree of hyperthyroidism is not a criteria (*Brooks MH, Annals, 1980*).

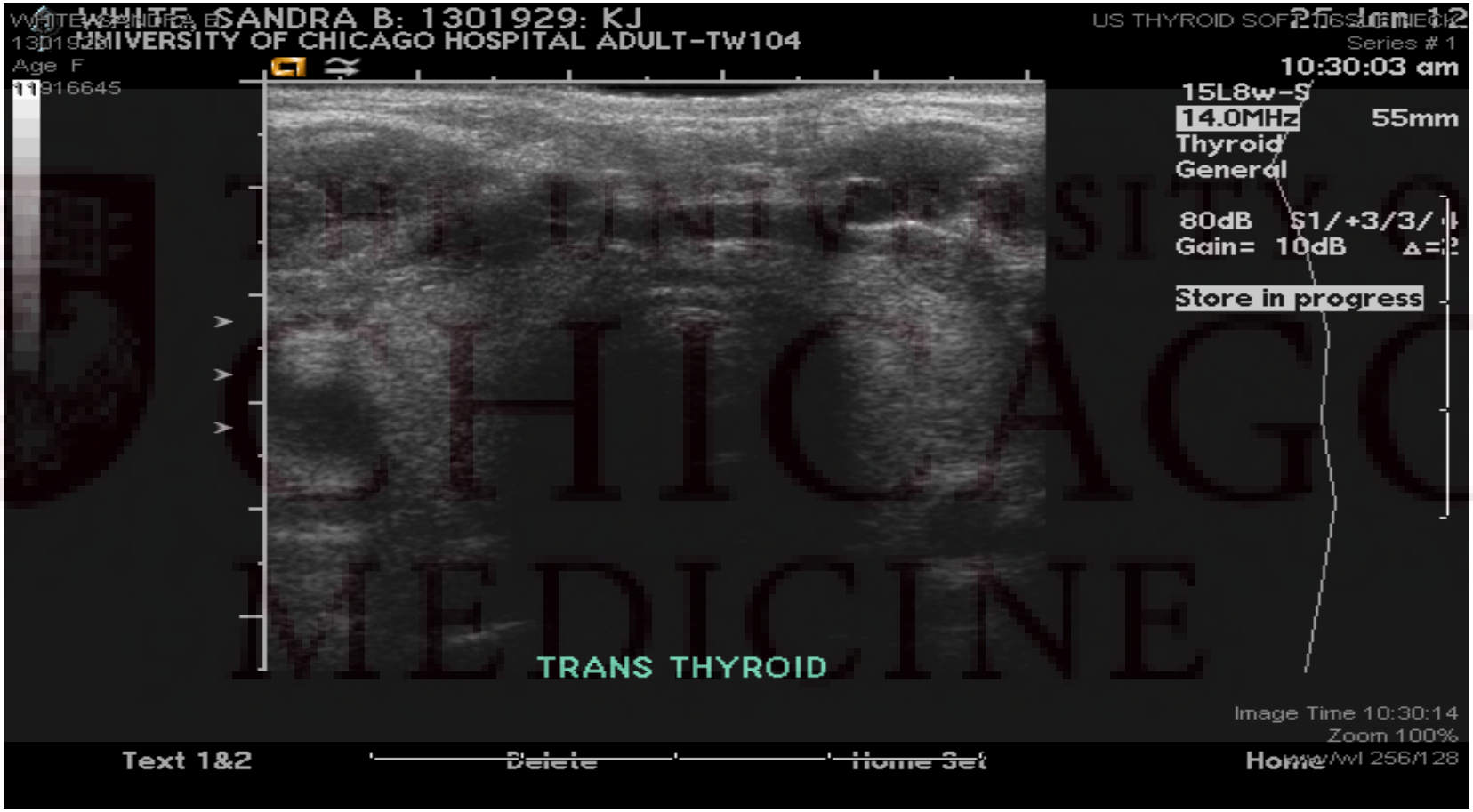
Recommendations

- PTU 300mg Q6hrs
- Propranolol 80mg PO Q6hrs
- Lugol's 10 drops TID start one hour after ATD
- Hydrocortisone 100 mg IV Q8hrs

Hospital Course

- Extubated less than 24 hours later
- Echo consistent with stress-induced cardiomyopathy EF 25-30%
- Mental status slowly improved
- **Thyroid US** normal
  - Should we think about another source – struma ovarii?
  - Can't do a thyroid scan

Thyroid Ultrasound



Right lobe: 4.7 x 1.8 x 2 cm

Left lobe: 4.5 x 1.8 x 1.7 cm. 0.3x0.3x0.3 cm hypoechoic focus

CT wo contrast

- No adrenal or ovarian lesion, but not the best image wo contrast

Follow up Labs

	1/9/12	1/20/12	1/23/12	1/27/12	1/30/12	2/1/12
TSH	<0.015 (0.34-5.6)	0.02	0.01 (0.3-4)	0.01	0.02	0.14
Free T4	1.93 (0.58-1.64)	2.52	2.47 (0.9-1.7)	1.91	1.32	0.76 (0.58-1.64)
T3	207		258 (80-195)	57		
Free T3	5.83 (2.5-3.9)	6.6	662 (230-420)	137	44	2.03 (2.5-3.9)
Reverse T3			713 (160-353)			
TSI	Negative		Negative			
TPO Ab			+ 20			
TG Ab			Negative			

Is she adrenally insufficient and Why?

- Denies history of steroid use
- Cortisol binding globulin normal
- Central Adrenal insufficiency
  - FSH low (0.4 mIU/mL) – periods stopped abruptly 3 months ago
- Due to hyperthyroidism – 2 case reports (*Karl M, et al. Hypocortisolemia in Graves Hyperthyroidism. Endocr Pract, 2009*)
  - After treatment of hyperthyroidism, baseline cortisol levels returned to normal.

Take Home Points

- Thyroid storm is a clinical diagnosis and should be treated aggressively in an ICU.
- Do not forget to evaluate for adrenal insufficiency in a patient with unexplained weight loss.