

Case 1: 24 yo pregnant female presenting with abnormal TFTs and tachycardia



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Chief Complaint



The ER calls about a 24 year old, 12 weeks pregnant. She presented with tachycardia into the 190s.

En route with EMS, heart rate was 190s. She received adenosine 6 mg and 12 mg IV without improvement.

Endocrinology called due to TSH of 0.01

HPI



- The patient had actually been discharged from Jackson Park earlier in the day after 6 day stay for hyperemesis.
- She had a PICC line placed 4 days PTA for which she was receiving TPN. She tolerated PO for 2 days but was discharged with the PICC line in place anyway.
- Palpitations and chest pain began shortly after discharge

HPI Extended



- She states that, at Jackson Park, her thyroid was mentioned but no specifics were given
- She did not think she received any medications for her thyroid.
- No personal history of thyroid disease
- Weight loss in the setting of hyperemesis
- No heat intolerance, no tremors, no diarrhea

Extended History



PMH: gall stone pancreatitis in 2012 (also during pregnancy)

PSH: History of ERCP/biliary stent in 2012, C-section in the past

Allergies: None

Meds: Prenatal vitamin

Social History: Former smoker.

Family history: Aunt may have had thyroid disease but she is not sure.

Physical Exam



Vitals: 36.6, HR 106-166, BP 81-156/50-126, RR 16, SpO2 100%, BMI 26.9

Gen: No acute distress

HEENT: EOMI, no increased insertions, no proptosis/exophthalmos

Neck: thyroid gland normal in size, no nodules, no thyroid bruit

CV: regular rhythm, tachycardic, no murmurs

Abd: Soft, non-tender

MSK: Moving all extremities, no edema

Neuro: sensation intact to touch

Skin: warm, dry

Psych: normal mood and affect

Labs



143	118	11	63	Ca 5.5
2.5	12	0.3		Ph 1.8
				Mg 1.0
136	106	10	97	Ca 8.6
5.2	17	0.4		Ph 2.8
				Mg 2.9

4.2	1.9
0.1	
8	11
34	

	8.1	
6.9		107
	23.5	

TSH 0.01

FT4 1.26 (0.9 – 1.7)

T4 12.7 (RR 5.0-11.6)

Total T3 205 (80-195)

What else do you want?

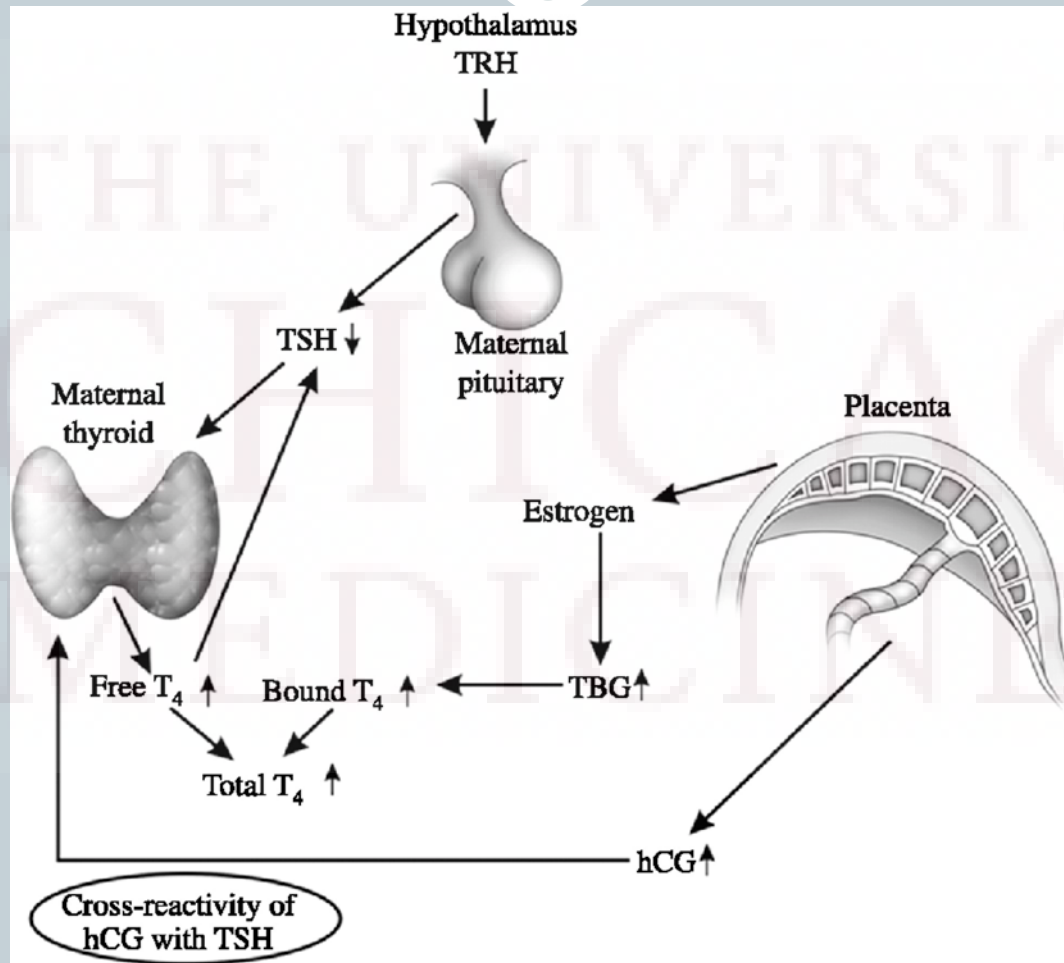
What is your differential?

Differential Diagnosis?



- Graves' disease
- Gestational transient thyrotoxicosis (sometimes referred to as Transient hyperthyroidism of hyperemesis gravidarum)
- Trophoblastic disease
- Hyperfunctioning nodule(s)
- ?Nonthyroidal illness

The thyroid in pregnancy

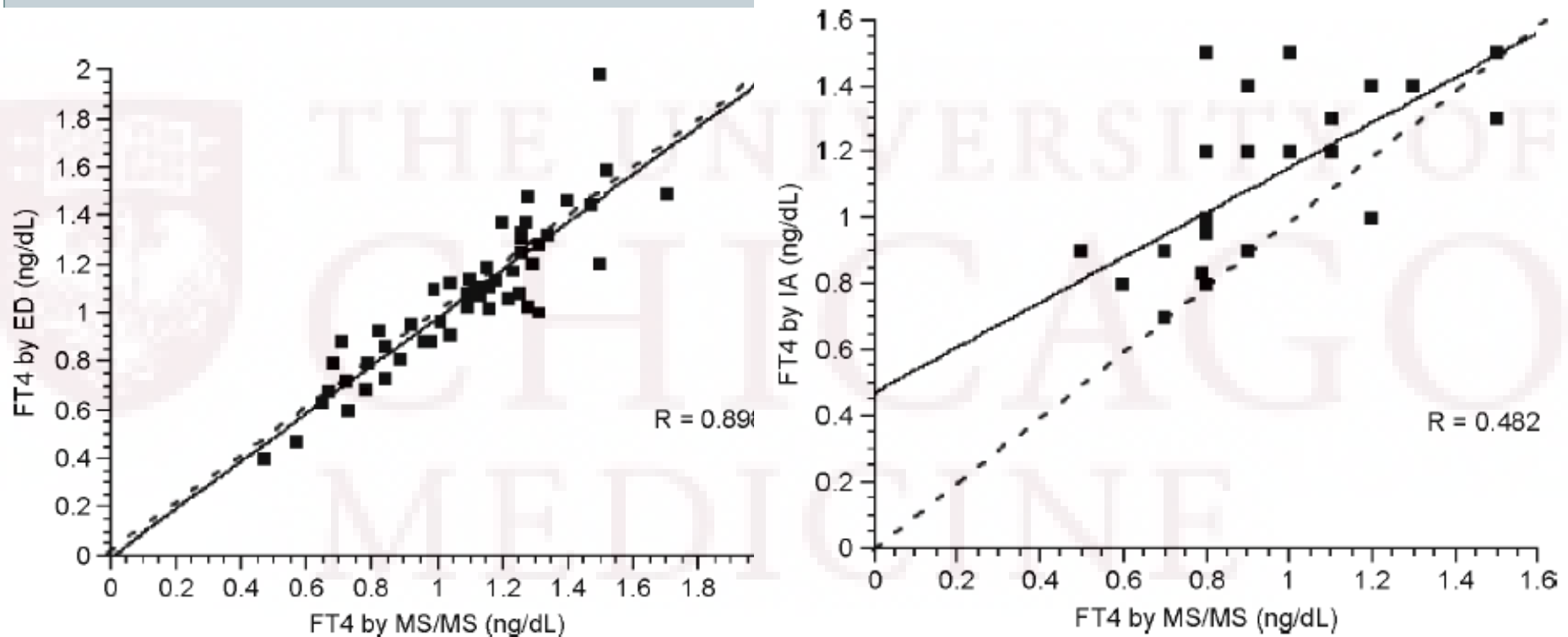


Free T4 in Pregnancy



- Measurement of FT4 by automated immunoassays results in a significant and assay dependent reduction in the measured FT4 in the 3rd trimester, even though this is not seen with more precise methods (dialysis, mass spectrometry)
- Automated assays influenced by pregnancy associated changes in serum proteins

FT4 by IA vs. MS vs. ED



Involved 98 healthy pregnant patients

Kahric-Janjic et al. Tandem mass spectrometry improves the accuracy of free thyroxine measurements during pregnancy. *Thyroid* 2007.

What exactly is the reference range for T4 in pregnancy?

2017 Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease during Pregnancy and the Postpartum

- After 16 weeks of pregnancy, can increase the non-pregnant upper reference limit by 50%
- Before week 7, non-pregnant range should be used
- Between weeks 7-16, the upper reference limit can be calculated by increasing the non-pregnant reference by 5% per week
 - E.g. at 11 weeks of gestation (4 weeks beyond week 7), the upper reference range for T4 is increased by 20% (4 weeks x 5%)

Workup?



- What is the workup for suppressed TSH in the first trimester of pregnancy?

Reference Data

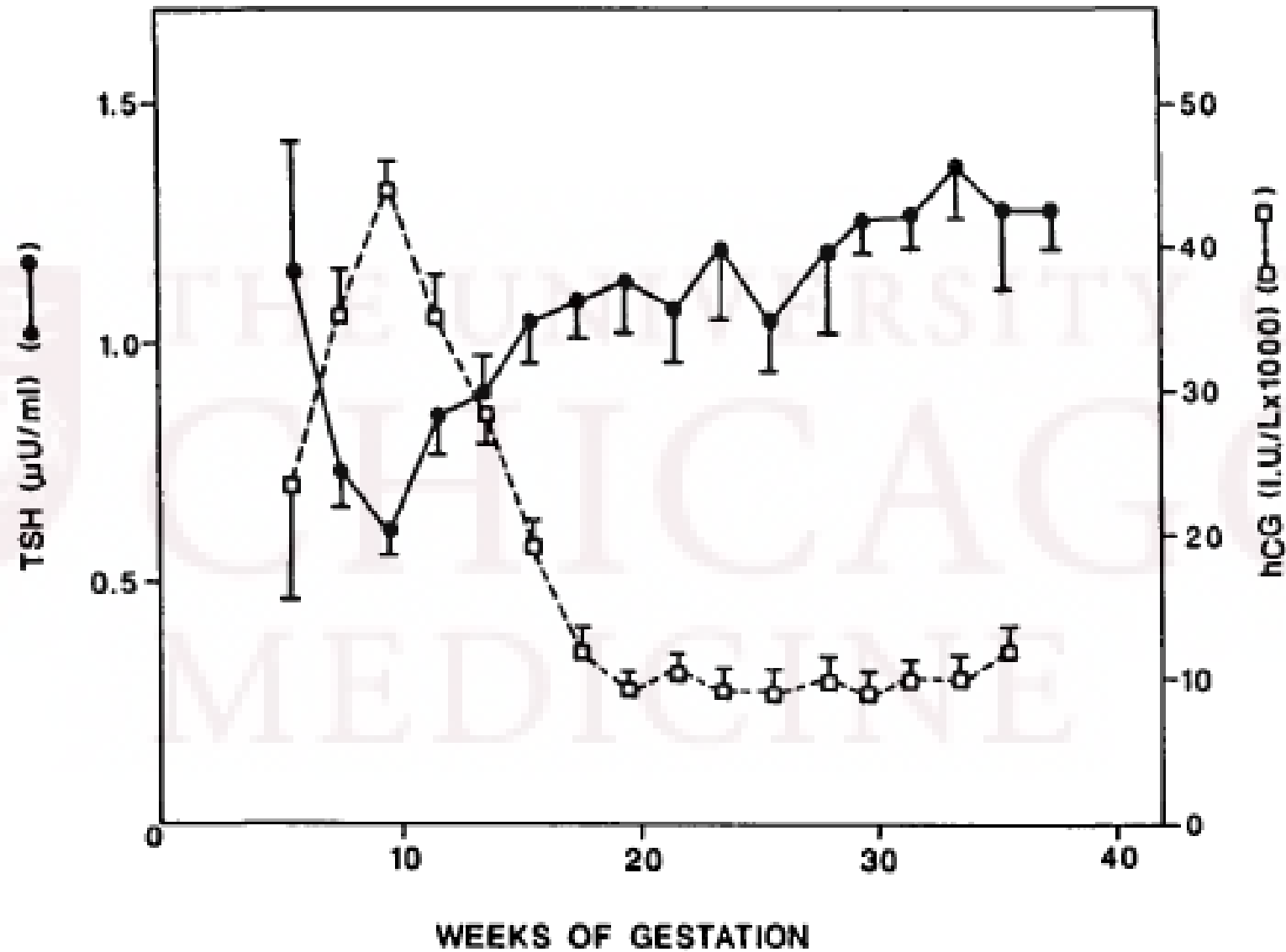


- Not uncommon!

TABLE 1
TSH measurements (mIU/L) by selected centiles for 9562 women who provided a serum sample in both the first and second trimesters of pregnancy, stratified by antibody status

	N	5th	25th	50th	75th	95th	98th
1st trimester							
All	9562	0.13	0.63	1.05	1.66	3.07	4.15
Ab neg	8351	0.12	0.59	1.00	1.56	2.68	3.37
Ab pos	1211	0.32	0.99	1.64	2.71	5.17	7.65
TG pos	321	0.30	0.78	1.43	1.98	3.53	4.23
TPO pos	507	0.34	1.03	1.75	2.78	5.13	7.83
Both pos	383	0.34	1.14	1.94	3.24	6.47	9.80

Lambert-Messerlian et al. First- and second-trimester thyroid hormone reference data in pregnant women: a FaSTER (First- and Second-Trimester Evaluation of Risk for aneuploidy) Research Consortium study. AJOG 2008;199:e1-62.



Gestational transient thyrotoxicosis



- Related to direct stimulation of the thyroid by bHCG
- Associated with hyperemesis gravidarum (5% weight loss, severe nausea/vomiting, ketonuria)
- 1-3% of pregnancies

Patient course



- IUP was confirmed by OB
- Patient was given IVF, metoprolol, and electrolyte replacement
- HR remained in the 140s, patient continued to have symptoms

Now what???

Would you consider antithyroid drugs?

Patient course



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- Patient was given IVF, metoprolol, and electrolyte replacement
- ~~HR remained in the 140s, patient continued to have symptoms~~

Now what???

Would you consider antithyroid drugs?

Patient course



- IUP was confirmed by OB
- Patient was given IVF, metoprolol, and electrolyte replacement
- HR came down to 100-110, patient's symptoms resolved
- Patient found to have a DVT in arm with the PICC line and was started on Lovenox. CT PE negative.

Workup and management?



- Because patient was feeling better, no antithyroid drug
- Sent TSI, Ab to TPO/Tg, Reverse T3

2017 ATA Guidelines

The appropriate management of abnormal maternal thyroid tests attributable to gestational transient thyrotoxicosis and/or hyperemesis gravidarum includes supportive therapy, management of dehydration, and hospitalization if needed. Antithyroid drugs are not recommended, though beta-blockers may be considered. (*Strong recommendation, Moderate quality evidence*)

Workup and management?

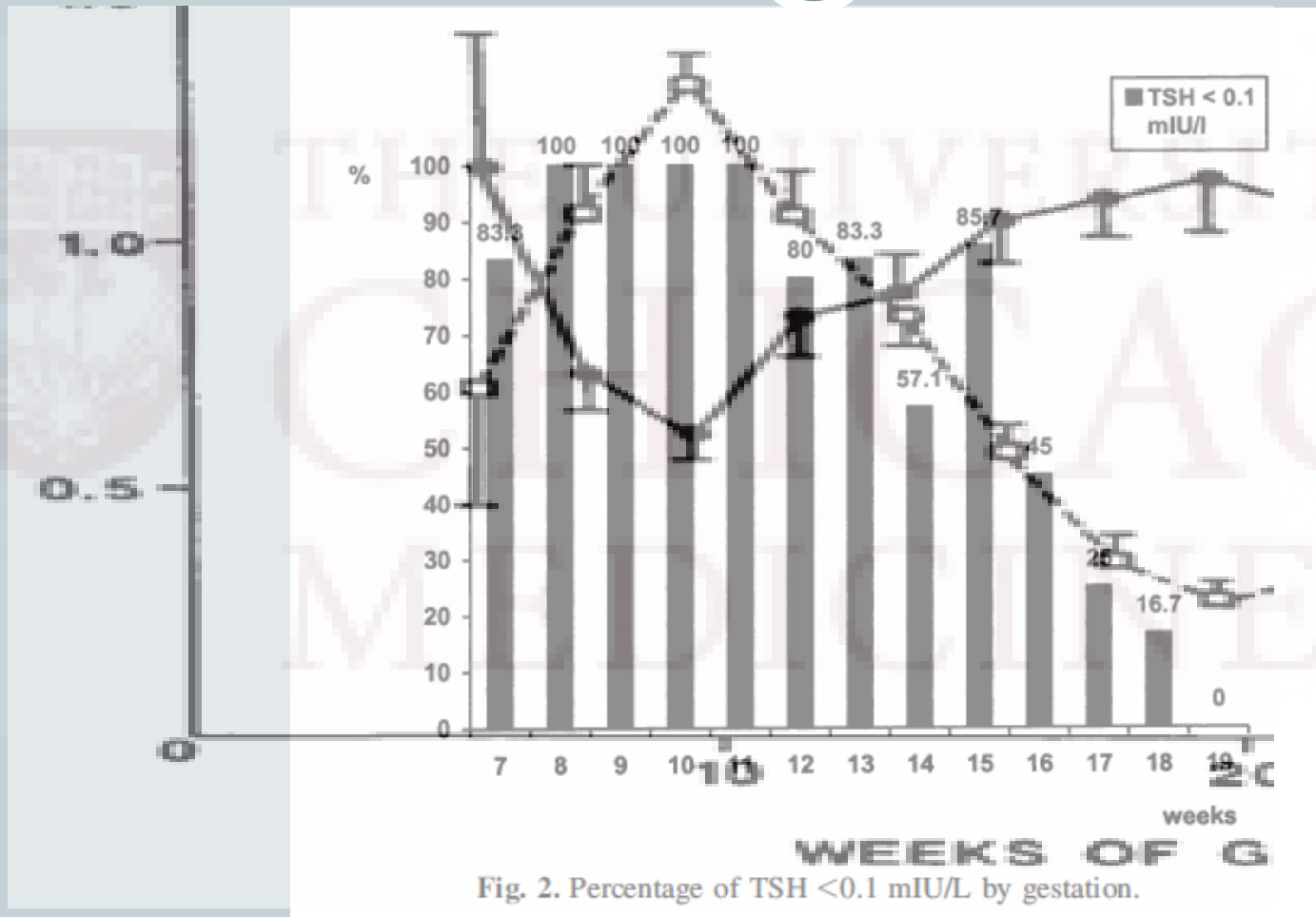


- Because patient was feeling better, no antithyroid therapy
- Sent TSI, Ab to TPO/Tg, Reverse T3

Endo Society Guidelines

3.2. Most women with hyperemesis gravidarum, clinical hyperthyroidism, suppressed TSH, and elevated free T₄ do not require ATD treatment. USPSTF recommendation level: A; evidence, good (1|⊕⊕⊕⊕). Clinical judgment should be followed in women who appear significantly thyrotoxic or who have in addition serum total T₃ values above the reference range for pregnancy. Beta blockers such as metoprolol may be helpful and may be used with obstetrical agreement. USPSTF recommendation level: B; evidence, poor (2|⊕○○○).

Course of gestational transient thyrotoxicosis



Patient Course



- Patient discharged with Maternal Fetal Medicine follow up given her tachycardia, anemia
- We chose not to use a beta blocker
- All antibodies returned normal
- Reverse T3 480 (RR 119-330)
- At MFM follow up, she reports feeling well other than arm pain.
- TFTs to be re-checked next visit (~week 18)

References



2017 Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease during Pregnancy and the Postpartum

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