

Board Questions

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PGY I

April 25th, 2013

Question 1

17 year old female with a pmhx of graves disease currently on medical therapy was brought to the ED by EMS after she experience a MVC. Her initial set of vitals are Temp 104, HR 140, BP 130/85, RR 30. She is anxious and speaking fast when interviewed (med students think she is intoxicated!). While examining her she experiences a seizure which stops on its own. She has exophthalmos (fig 1) and feels warm to touch. RR Tachy s1s2 no murmurs. CTAB. There are no other pertinent findings on PE. Her first labs to be resulted showed an elevated T3 & T4, but a low TSH. She does have a negative Utox. What is she currently suffering from?



Figure 1. Exophthalmos

<http://bunsenburner.deviantart.com/art/Exophthalmos-190928294>

Answers

- a) Septic shock
- b) Pneumothorax
- c) Thyroid storm
- d) Intoxicated by a drug not tested
- e) None of the above

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Thyroid Storm

- Rare, but life threatening condition
- Severe clinical manifestations of thyrotoxicosis
- Precipitated by an acute event (thyroid surgery, trauma, infections, acute iodine load, or parturition). Patient could also have poor compliance to meds before the traumatic event.
- Dx made on clinical findings. (table I)
 - Clinical manifestations: marked fever, tachycardia, agitation or psychosis, confusion, and GI symptoms (N/V, diarrhea).
- T3 & T4 are elevated. TSH is decrease.
- Treatment should not be delayed

Thermoregulatory dysfunction	
Temperature (°F °C)	
99 to 99.9 37.2 to 37.7	5
100 to 100.9 37.8 to 38.2	10
101 to 101.9 38.3 to 38.8	15
102 to 102.9 38.9 to 39.4	20
103 to 103.9 39.4 to 39.9	25
≥104.0 >40.0	30
Central nervous system effects	
Mild	10
Agitation	
Moderate	20
Delirium	
Psychosis	
Extreme lethargy	
Severe	30
Seizure	
Coma	
Gastrointestinal-hepatic dysfunction	
Moderate	10
Diarrhea	
Nausea/vomiting	
Abdominal pain	
Severe	20
Unexplained jaundice	

Cardiovascular dysfunction	
Tachycardia	
99 to 109	5
110 to 119	10
120 to 129	15
130 to 139	20
≥140	25
Atrial fibrillation	10
Heart failure	
Mild	5
Pedal edema	
Moderate	10
Bibasilar rales	
Severe	15
Pulmonary edema	
Precipitant history	
Negative	0
Positive	10

Table I (sensitive but not specific)

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Question 2

15 year old female with a pmhx of hyperthyroidism was brought to the ED by EMS since parents found her unconscious at home. Parents state that she has not been compliant with her thyroid medications as she has been depressed for the past week (she broke up with her long time boyfriend). Her initial vitals are T 103, HR 140, BP 130/80, RR 26, and O2 sats 100% on RA. She is sleepy and tired. Has exophthalmos, but not other findings. Labs showed elevated T3 & T4, and low TSH. She is diagnosed with Thyroid Storm. How should she be treated?

Answers

- a) Beta blocker
- b) Thionamide (PTU or Methimazole)
- c) Glucocorticoids
- d) IV fluids
- e) Cooling blankets
- f) All of the above

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- d) IV fluids
- e) Cooling blankets
- f) **All of the above**

For those of you who got the question right!!! Celebrate!



Treatment of Thyroid Storm

- Start supportive therapy
 - cooling blanket
 - IV fluids
- Medications
 - Acetaminophen to treat fevers. No aspirin
 - Beta Blocker (Propranolol 0.5 – 1 mg IV q10 min until stable HR or 60-80 mg po q4-6 hrs until stable HR).
 - Thionamides (PTU 200 mg po q4 hrs vs Methimazole 20 mg po q4-6hrs). PTU reduces T3 levels faster.
 - Iodine (Iugol's solutions 10 drops TID) helps prevent release of T3 & T4.
 - Glucocorticoids (hydrocortisone 100 mg IV q8hrs).
 - Lithium is only use when patient experiences side effects to Thionamides (agranulocytosis).
- Admit to ICU (depending in status)
- Long term management
 - Once afebrile, no CNS or CV issues → iodine therapy d/c'd, glucocorticoids tapered then discontinued. D/c beta blockers. Thionamides can titrated for euthyroidism. For patient's with Graves Disease they require definitive therapy (surgery vs radioactive iodine).

References

- Ross, D., Cooper, D., Mulder, J. Thyroid Storm. uptodate.com. Last up date January 11, 2013
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- Hay, W., Levin, M., Sondheimer, J., Deterding, R. Current diagnosis and treatment: Pediatrics 20th Edition. Lange McGraw Hill, New York, 2011. Page 957-958.
- Agabegi, S., Agabegi, E.D. Step up to medicine 2nd edition. Lippincott, Williams, & Wilkins, Philadelphia, 2008. Page 159.
- Picture was taken from: <http://bunsenburner.deviantart.com/art/Exophthalmos-190928294>