ENDOCRINE EMERGENCIES

Thyroid storm · myxoedema coma · adrenal crisis

TREAT ON *suspicion*

ALL THREE ARE CLINICAL DIAGNOSES: treat on suspicion - never wait for thyroid function or cortisol results to come back. Take the sample, then give the drug.

THYROID STORM

fever + tachycardia + agitation in thyrotoxicosis

1	BLOCK SYNTHESIS	Propylthiouracil 500-1000 mg load then 250 mg q4h (preferred - also blocks T4→T3) OR carbimazole 20 mg q4-6h.
2	BLOCK RELEASE	Iodine (Lugol's / potassium iodide) - give at least 1 HOUR AFTER the thionamide, never before.
3	BLOCK EFFECT	Propranolol 60-80 mg PO q4h or esmolol infusion. Hydrocortisone 100 mg IV q8h (blocks T4→T3, treats relative adrenal insufficiency).
4	SUPPORT + TRIGGER	Cool actively, fluids, treat the precipitant (infection, surgery, iodine load, non-adherence). Avoid aspirin (displaces T4).

MYXOEDEMA COMA

- **Recognise -** hypothermia, ↓ GCS, bradycardia, hypoventilation (↑ CO_2), hyponatraemia, hypoglycaemia
- **Levothyroxine -** 200-400 mcg IV load, then 50-100 mcg daily (lower dose if elderly / cardiac)
- **Liothyronine (T3) -** 5-20 mcg IV may be added in severe cases
- **STEROID FIRST -** hydrocortisone 100 mg IV BEFORE thyroid hormone - may be co-existing adrenal failure
- **Support -** passive rewarming, ventilate if hypercapnic, treat sepsis, correct Na SLOWLY

ADRENAL CRISIS

- **Recognise -** shock RESISTANT to fluids and vasopressors, ↓Na, ↑K, ↓glucose, abdominal pain, fever
- **Who -** known Addison's / on long-term steroids, or sudden withdrawal; sepsis, surgery, trauma
- **HYDROCORTISONE -** 100 mg IV STAT, then 200 mg / 24 h (infusion or 50 mg q6h) - give it FIRST
- **Fluids + glucose -** rapid 0.9% saline; treat hypoglycaemia; correct Na slowly
- **Then -** treat the precipitant; no mineralocorticoid needed at high hydrocortisone dose

STEROID SICK-DAY RULES: anyone on long-term steroids (or with adrenal insufficiency) needs DOUBLE their usual dose when unwell, and IV hydrocortisone if vomiting, shocked, or for major surgery. Never stop steroids abruptly in a sick patient.

ALSO CONSIDER

less common, equally lethal

PHAEOCHROMOCYTOMA CRISIS

Severe labile hypertension, headache, sweating, palpitations. ALPHA-block FIRST (phentolamine); NEVER beta-block alone - unopposed alpha causes a hypertensive crisis.

HYPERCALCAEMIC CRISIS

Ca > 3.5 mmol/L (14 mg/dL): confusion, vomiting, dehydration, short QT. Aggressive 0.9% saline, then IV bisphosphonate ± calcitonin. Usually malignancy or hyperparathyroid.

PITUITARY APOPLEXY

Sudden severe headache, visual field loss, ophthalmoplegia, ↓ consciousness. Give HYDROCORTISONE immediately, urgent MRI and neurosurgical referral.

LAB CLUES: ↓Na + ↑K + ↓glucose → adrenal crisis · ↓Na + ↓temperature + ↑CO_2 → myxoedema · ↑Ca + short QT → hypercalcaemic crisis · suppressed TSH with ↑fT4/fT3 → thyrotoxicosis. Always send cortisol + TFTs BEFORE giving steroid, but never delay treatment for the result.

PEARLS & PITFALLS

- Take the cortisol / TFT sample, then treat immediately - waiting for the result is how these patients die.
- Give hydrocortisone before levothyroxine in myxoedema - thyroid hormone alone can precipitate adrenal crisis.
- In thyroid storm give the thionamide BEFORE iodine; iodine first can worsen the storm.
- Shock that will not respond to fluids and noradrenaline should make you think adrenal crisis.

References: ATA Thyrotoxicosis 2016 · Endocrine Society Adrenal Insufficiency 2016 · Society for Endocrinology emergency guidance.

Educational aid; verify doses against local protocol and patient factors.

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