

Thyroid Emergencies

Prompt recognition of thyroid emergencies is critical to decrease complications and mortality. Management requires both medical and supportive treatment provided in the critical care setting.

Myxedema Coma

Myxedema coma is a severe, life-threatening emergency that can occur in long-standing, untreated hypothyroidism. Diagnosis is based on laboratory results consistent with hypothyroidism and corresponding clinical manifestations. Treatment should be started quickly given the increased risk of mortality.

Signs and Symptoms of Myxedema Coma

- Extreme lethargy and decreased mental status
- Hypothermia
- Hypotension
- Hypoventilation
- Hypercapnia
- Hypoglycemia
- Hyponatremia
- Bradycardia
- Pericardial effusion

Treatment of Myxedema Coma

- Thyroid hormone replacement with T₄ and/or T₃, usually IV
- Glucocorticoids, until coexisting adrenal insufficiency is ruled out
- IV fluids for electrolyte replacement
- Warming blankets

Nursing Considerations

- IV hormone replacement should be administered only as IV push through a syringe, rather than through infusion tubing due to high concentrations lost from adherence to polypropylene tubing.
- Improvements in serum T₃ and T₄ concentrations may be seen before the normalization of serum TSH concentrations, and serum thyroid function tests should be obtained every one to two days during treatment.
- Improvements in clinical cardiovascular, renal, pulmonary, and metabolic parameters may take as long as a week.

Thyroid Storm

Thyroid storm refers to elevated thyroid hormone concentrations; thyroid storm is a rare diagnosis and is usually triggered by events such as trauma, myocardial infarction, surgery or infection. Diagnosis of thyroid storm is made using a combination of biochemical laboratory tests confirming thyrotoxicosis in a patient displaying the severe, life-threatening symptoms of hyperthyroidism.

Symptoms of Thyroid Storm

Clinical manifestations include exaggeration of common hyperthyroid symptoms (anxiety, fatigue, diaphoresis, heat intolerance, tremors, palpitations, tachycardia, weight loss, hyperreflexia, warm and moist skin, menstrual abnormalities). The following may also be present:

- Fever
- Tachycardia and congestive heart failure
- Vomiting
- Impaired mental status

Treatment of Thyroid Storm

- Beta-blocker to control heart rate
- Methimazole or propylthiouracil to decrease production of thyroid hormone
- Iodine solution to inhibit thyroid hormone release
- Glucocorticoids to decrease the conversion of T₄ to T₃
- Supportive measures include:
 - IV fluids
 - Oxygen
 - Cooling
 - Treatment of any precipitating causes
- Plasmapheresis when traditional therapy is unsuccessful

Nursing Considerations

- Thyroid storm can occur in patients with or without preexisting hyperthyroidism.
- Patients with known severe hyperthyroidism who are noncompliant with prescribed antithyroid medications may develop thyroid storm.

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