Thyroid Emergencies

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Introduction

Thyroid emergencies include clinical conditions associated with fulminating increase in signs and symptoms of thyrotoxicosis also considered as thyrotoxic crisis or thyroid storms.

Thyrotoxic Crisis

It is seen in poorly prepared patients for surgery, inadequately treated thyrotoxic patients precipitated by infection, trauma or surgery and rarely follow \textsuperscript{131}I therapy where antithyroid drugs are withdrawn long before therapy. These conditions are rare nowadays with routine use of iodides, antithyroid drugs and elective surgery.

Clinically thyroid storm presents with fever/hyperpyrexia, profuse sweating, tachycardia or tachyarrhythmia, congestive cardiac failure, behavioral disorders or psychosis, gastrointestinal symptoms like nausea, vomiting, progressing to microcirculatory collapse due to adrenocortical failure and hypotension, coma and death. The onset is acute and progress rapidly downhill. The precipitating factors for Thyroid storm are infection, stress, contrast dye studies, radio iodine therapy, thyroid surgery, diabetic ketoacidosis, parturition, vigorous palpation of thyroid gland and discontinuation of antithyroid drugs and high dose of Iodine administration. Diagnosis is made by high index of suspicion and clinical situation. Both total and free form of T3 and T4 will be in high range.

Management is directed to initiate general supportive measures which include treatment of dehydration and glucocorticoids. Hyperpyrexia to be treated with cooled atmosphere, wherever available humidified oxygen tent, cooling blanket, aspirin, foams or wet packs. Digitalization is done to counteract high ventricular rate in presence of atrial fibrillation.

Excessive thyroid hormones can be treated with iodides for prompt reduction of thyroid hormone in circulation. It can be given as potassium iodide 15 mg 6 hrly orally or specially prepared intravenous preparation. Alternatively iodinated X-Ray contrast media can be given to inhibit peripheral conversion of T4 to T3 in dosage of 1 gm/ day can be started to further block thyroid hormone synthesis.

Increased catecholamine activity can be treated with propranolol 80 mg 6 hrly and dexamethsone to counteract shock and block conversion of T4 to T3. All patients with thyrotoxic crisis should be evaluated carefully for the presence of associated illness that may have precipitated the crisis and appropriate treatment initiated.\textsuperscript{1,2}

Myxoedema Coma

It is a state of hypothermic coma due to prolonged and severe thyroid hormone deficiency. It is an emergency situation where profound coma with hypothermia carries a mortality of more than 50%. With the improvement in of intensive care medical management of critically ill patients and successful specific treatment of intercurrent illness the mortality is slowly coming down. The condition is rare.

Clinical symptoms and signs are related to intake of thyroid hormones seriously affecting all vital systems.

- Depression of respiration and subsequent hypercapnia
- Cardiovascular involvement includes severe bradycardia, pericardial effusion; generalized swelling and raised cardiac enzymes may be diagnosed as acute myocardial infarction.
- Gastrointestinal system involvement includes paralytic ileus with abdominal distension
- Water retention leads to hyponatremia
- Hypoglycemia has been reported.

Precipitating factors that need to be attended to are sedative drugs, surgery, CCF, Seizures, infections, gastrointestinal bleeding, cerebrovascular accidents and cold exposure.

The patient apart from drowsy or comatose state will have swollen face and feet, dry skin, fall of eye brows, cold extremities, temperatures as low as 23°C. The ankle jerk will have typical delayed relaxation or may be absent. Diagnosis includes clinical feature of hypothyroidism, laboratory evidence of primary hypothyroidism and findings of hypoventilation, hypotension, raised cardiac enzymes and uric acid.

Management includes maintaining of vital parameters and administration of 400 to 500 mcg of L-thyroxine through nasogastric tube initially and subsequently 100 mcg/day. Corticosteroids may be given as parenterally supportive measure, along with assisted ventilation and O2 administration. Hypothermia is managed with insulating blankets and also precipitating factors of myxoedema coma needs to be treated urgently for survival of the patient.\textsuperscript{3,4}

Conclusion

- With early management of thyroid disorders, thyroid emergencies are a rare clinical scenario now days.
- Management of thyroid crises is an emergency requiring pharmacotherapy and assisted ventilation.

References