

## Brief Communications

## INTRODUCTION

Thyroid hormones have a wide variety of functions in every organ system. They play a crucial role in regulating important functions such as cardiac contractility, vascular tone, water, electrolyte balance and normal function of the central nervous system.<sup>[1]</sup> Hypothyroidism is more common in females than males<sup>[1]</sup> and may present in subclinical form. Hypothyroidism may result in myocardial depression, decreased spontaneous ventilation, abnormal baroreceptor function, reduced plasma volume, anemia, hypoglycemia, hyponatremia and impaired drug metabolism.<sup>[1,2]</sup> Elective surgical procedures should not be undertaken in the presence of untreated hypothyroidism. Thyroid supplements should be given pre-operatively to hypothyroid patients before emergency surgery.<sup>[1,2]</sup>

## CASE REPORT

A 50-year-old female patient was brought to surgical emergency department with the chief complaints of pain in the abdomen since 1 month and constipation since 5 days. She was a known case of hypothyroidism since 4 years on tablet levothyroxine ( $T_4$ ) 100  $\mu$ g once daily (OD) on irregular treatment. On presentation, patient was stuporose (Grady coma scale: Grade II), with Glasgow coma scale (GCS) score of 11 ( $E_2M_5V_4$ ).

The patient was immediately shifted to intensive care unit (ICU) with oxygen. Arterial blood gas (ABG) analysis revealed pH of 7.36 with  $PO_2$  of 86 mmHg,  $PCO_2$  of 38 mmHg with normal bicarbonate. General physical examination revealed generalized non-pitting oedema and pallor, and other physical findings were unremarkable. Clinical examination revealed tense abdomen with restricted chest movements. Blood investigations revealed haemoglobin of 9.4 g/dl, haematocrit 28.9%, serum  $T_3$ -0.7 ng/ml (normal range - 0.7-2.0 ng/ml),  $T_4$ -2.7  $\mu$ g/dl (normal range 4.5  $\mu$ g/dl to 11.0  $\mu$ g/dl) and thyroid stimulating hormone (TSH) of 73.5  $\mu$ IU/ml (normal range - 0.4-4.2  $\mu$ IU/ml). Abdomino-pelvic ultrasound revealed few dilated bowel loops in the lower abdomen. Case was posted for emergency laparotomy. Patient was not responding to verbal commands; the thyromental distance was 5.5 cm with short neck, pulse rate 78 bpm, respiratory rate of 18/min and blood pressure (BP), 150/90 mmHg.

Informed high risk consent was obtained from the

## A case of subacute intestinal obstruction with overt hypothyroidism in stupor scheduled for emergency laparotomy



patient attenders and normal saline was started. Monitoring included pulse oximeter, non-invasive BP, electrocardiogram, urine output and temperature. Under strict aseptic precautions epidural space was identified in T7 - T8 interspace with the loss of resistance technique, an 18 G epidural catheter was inserted and activated using inj. lignocaine 2% with adrenaline (1:200000) 12 ml and injection tramadol (50 mg/ml) 2 ml. Adequate blockade was tested with pin prick and blockade achieved up to T<sub>4</sub> level. Intraoperative haemodynamics were within normal limits throughout the course of surgery and ABG was within normal limits with pH of 7.35. Intraoperative surgical findings were left sided tuboovarian mass with 50-60 ml of pus in mass with dilated large bowel. In view of non-availability of intravenous (IV) levothyronine (T3), tablet levothyroxine-T4 200 µg was mixed in sterile normal saline and injected into the jejuno - ileal junction intraoperatively [Figure 1].

Postoperatively, the patient was shifted to ICU for observation and analgesia. Tablet levothyroxine (T4) 100 µg OD was administered via Ryle's tube. Analgesia was maintained with epidural infusion of inj.bupivacaine 0.125% at the rate of 5 ml/h for 48 h. Subsequent analgesia was maintained with inj. paracetamol 1 g IV infusion 8<sup>th</sup> hourly. Thyroid function test on first post-operative day revealed serum T3-0.8 ng/ml (normal range - 0.7-2.0 ng/ml), T4-5.2 µg/dl (normal range 4.5 µg/dl to 11.0 µg/dl) and TSH of 38 µIU/ml (normal range - 0.4-4.2 µIU/ml). On post-operative day 3, patient was conscious, alert, oriented and was obeying oral commands and was shifted to ward.



Figure 1: Levothyroxine injection in jejunum

## DISCUSSION

Hypothyroidism is characterized by abnormally low thyroid hormone production. Hypothyroidism is more common in females than males<sup>[1]</sup> and may present in an overt or subclinical form. The latter has an elevated serum level of TSH as the only positive finding in an apparently healthy individual. No study has analyzed anaesthetic Requirements of hypothyroid patients, but by clinical observation they have been found to be more sensitive to anaesthetic drugs and sedatives owing to factors such as reduced cardiac output, decreased blood volume, abnormal baro-receptor function, decreased hepatic metabolism and diminished renal excretion.<sup>[2]</sup> They can be extremely sensitive to narcotics and sedatives. Sedatives and hypnotic drugs may precipitate myxoedema coma in a hypothyroid patient.<sup>[2]</sup>

The gastrointestinal dysfunction accompanying hypothyroidism may significantly complicate the management of the postoperative patient. Atony and hypomotility of the gastrointestinal tract are well described entities in these patients who may develop paralytic or "myxoedema ileus."<sup>[3,4]</sup> Rarely megacolon<sup>[3,4]</sup> can develop, which in childhood can mimic Hirschprung's disease.

The stress of surgery has a direct effect on the thyroid axis with alteration in concentrations of TSH and T3. Patients undergoing surgery will manifest the classic euthyroid sick syndrome.<sup>[5,6]</sup> Total T3 is decreased 30 min after induction of anaesthesia and remains low for at least the first 24 h postoperatively. Observed alterations in serum total T4 will vary depending on the type of anaesthesia, with an increase associated with general anaesthesia, whereas a slight decrease in T4 is seen with epidural anaesthesia.<sup>[7]</sup> Serum TSH concentrations remain unchanged with the exception of an increase seen at the time hypothermia induction (in cardiac surgery).<sup>[7]</sup> Should the response of TSH to thyrotrophic releasing hormone be assessed, it will be seen to be somewhat blunted and cortisol has been implicated as at least one of the causative factors for these changes. Surgery induces an increase in serum cortisol, which may precede the changes seen in the thyroid axis, suggesting a possible causal relationship.<sup>[7]</sup> Due to lack of availability of IV triiodothyronine (T3), IV treatment was not possible and hence levothyroxine was administered into jejunum. In general, about 70-80% of the administered T4 is absorbed in the proximal small intestine (jejunum).<sup>[8]</sup>



Regional anaesthesia is preferred technique over general anaesthesia in hypothyroid cases.<sup>[2]</sup> In view of decreased consciousness, delayed recovery was anticipated under general anaesthesia technique. Hence the contemplated technique for this patient was thoracic epidural anaesthesia. The haemodynamic changes under epidural anaesthesia occur in a graded manner which are easier to manage. Thoracic epidural anaesthesia is particularly effective for reducing pain after thoracic and upper abdominal surgery and likely permits major surgical procedures to be performed on patients with moderate to severe comorbid diseases especially so hypothyroid cases.

## CONCLUSION

Uncontrolled hypothyroid cases presenting for an emergency procedure need utmost precaution in view of precipitation of myxoedemic coma. Meticulous titration of drugs and appropriate anaesthetic technique leads to a good outcome in such cases.

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## CASE REPORT

# A case of toxic epidermal necrolysis in a young infant successfully treated with intravenous immunoglobulin

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## ABSTRACT

Toxic epidermal necrolysis (TEN) is a severe adverse cutaneous drug reaction characterized by widespread keratinocyte death. Clinically, TEN is characterized by rapidly progressing erythematous, purpuric rash to widespread blistering and denudation of skin and severe mucositis, with fatal complications like sepsis and multiorgan failure. TEN is considered to be rare in infants and usually has a fatal outcome due to sepsis. As yet, only few reports have been documented in the literature. We hereby report a case of TEN in a young infant successfully treated with intravenous immunoglobulin (IVIG).

**Key words:** Drug rash, intravenous immunoglobulin, toxic epidermal necrolysis

## INTRODUCTION

Toxic epidermal necrolysis (TEN) is a severe adverse cutaneous drug reaction characterized by widespread keratinocyte death.<sup>[1]</sup> Clinically, TEN is characterized by rapidly progressing erythematous, purpuric rash to widespread blistering and denudation of skin and severe mucositis, with fatal complications like sepsis and multiorgan failure. Drugs are the commonest cause of TEN, and the commonly implicated drugs include antiepileptics, sulfonamide antibiotics, penicillins, allopurinol, and oxicam nonsteroidal anti-inflammatory drugs (NSAIDs).<sup>[2]</sup> The pathophysiology of TEN is incompletely understood; massive keratinocyte apoptosis seems to be due to Fas-mediated mechanisms, and cytotoxic T-cell and natural killer cell damage by perforin/granzyme B/granulysin and tumor necrosis factor-alpha.<sup>[3]</sup> TEN is considered to be rare in infants and usually has a fatal outcome due to sepsis. Until now, only few reports have been documented in the literature.<sup>[4-9]</sup> Treatment with intravenous immunoglobulin (IVIG) has been unsuccessful in an infant who reported with TEN.<sup>[9]</sup> We hereby report a case of TEN in a young infant successfully treated with IVIG.

## CASE REPORT

A 5-month-old female baby born prematurely at 32 weeks of gestation was treated with inj. ceftriaxone intravenous (IV) for fever since 2 days. One day later, she developed rapidly progressing reddish rash which started on face, chest, arms, and later to trunk and lower limbs. As the rash worsened, the child developed oral and lip ulcers, redness of eyes, and was poorly feeding. The parents brought the child to pediatric OPD after 2 days of onset of rash. On examination, the baby was irritable and febrile. Vital parameters were suggestive of tachycardia and tachypnea. She had an extensive, generalized, purpuric rash predominantly seen on face, chest, thighs, buttocks, and perineal region. There were blisters leading to separation of sheets of skin and erosions with positive Nikolsky's sign at sites where the rash was confluent [Figure 1]. Skin lesions involved more than 30% of total body surface area (TBSA). She had hemorrhagic erosions of the lips, with ulcers in the oral cavity and vulva and congested eyes. At birth, weight of the baby was 2.5 kg (preterm). Postnatally, the newborn was hospitalized for respiratory distress and treated with IV cefotaxime for 5 days without any adverse effects.

Investigations showed that there was leukopenia (1500 cells/mm<sup>3</sup>), and hemoglobin was 10.8 g/dl and

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