CASE REPORT

Undiagnosed subclinical hypothyroidism associated with Chilaiditi's syndrome affecting anesthetic management

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ABSTRACT

Chilaiditi's syndrome, comprising internal herniation of intestine into sub-diaphragmatic space, may cause acute intestinal obstruction necessitating emergency laparotomy. It is associated with several co-morbidities. In our case its association with subclinical hypothyroidism was detected on the fourth post-operative day, which affected anesthetic management by markedly delaying recovery from general anesthesia.

Key words: Subclinical hypothyroidism; Hollow viscus perforation; Chilaiditi's syndrome; Delayed post-anesthetic recovery

(Citation: Sharma MS. Undiagnosed subclinical hypothyroidism associated with Chilaiditi's syndrome affecting anesthetic management. Anaesth Pain & Intensive Care 2010; 14(2):118-119)

INTRODUCTION

Hypothyroidism is more common in females than males[1] and may present in an overt or subclinical form. The latter has an elevated serum level of thyroid stimulating hormone (TSH) as the only positive finding in an apparently healthy individual. No study has analyzed anesthetic requirement of hypothyroid patients; but by clinical observation they are found to be more sensitive to anesthetic 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[2]. They can be extremely sensitive to narcotics and sedatives. Surgical trauma may precipitate myxoedema coma in a hypothyroid patient.

Normal range of TSH is 0.3 to 4.5mU/L and values of 5 to 15mU/L are often found in sub-clinical hypothyroidism[3]. In a retrospective study it has been found that hypothyroid patients required prolonged post-operative endotracheal intubation[4]. A rising TSH level in serum is the most sensitive indicator of failing thyroid function. Drug metabolism is reported to be slowed down and awakening times from sedatives are reported to be prolonged in hypothyroidism[5].

A case of Chilaiditi's syndrome with undiagnosed sub-clinical hypothyroidism, mistakenly diagnosed as hollow viscus perforation and taken up for an emergency laparotomy under general anesthesia in Manipal Teaching Hospital, Pokhara (Nepal), required forty hours of endotracheal intubation and oxygen therapy through a T-piece in intensive care unit, is being reported.

CASE REPORT

A sixty years old female patient, weighing 51 kg, was diagnosed to have perforation of a hollow viscus, as plain x-ray abdomen showed gas under the diaphragm and was scheduled for emergency laparotomy. The diagnosis was confirmed by ultrasonologist. A quick

pre-operative evaluation revealed a quiet patient with all clinical parameters within normal range. Laboratory investigations, including blood sugar, serum creatinine and electrolytes were within normal limits. Hemoglobin was 10.7g/dL. Electrocardiogram showed a normal tracing of normal voltage.

With pre-operative pulse rate of 90/min and arterial pressure of 110/70 mmHg, she was induced with 250 mg of inj. thiopentone sodium (2.5%) and intubated under 75mg of inj. suxamethonium with 7.5 mm ID cuffed endotracheal tube.

During the intra-operative period, she received inj. pethidine (25 mg), inj. vecuronium (3 mg) and a mixture of 0.2 to 0.5% halothane in 50% and 50% nitrous oxide. She was ventilated by IPPV throughout the intra-operative period.

On opening the abdomen no perforation was found anywhere. The intestines were seen interposed between the right lobe of liver and the diaphragm. The intestine was returned to the abdominal cavity. On return of spontaneous respiration, neuromuscular block was antagonized by a mixture of inj. neostigmine methyl sulfate (2.5 mg) and inj. atropine sulfate (1.2 mg). Patient neither opened her eyes nor showed any sign of recovery of consciousness, hence was not extubated. She appeared deeply comatosed, not responding even to severe painful stimuli. As oxygen saturation (SpO^2) and $EtCO^2$ were well maintained, she was observed in Intensive Care Unit (ICU) with endotracheal tube in situ. Oxygen was administered at a rate of 3-4 lit/min through a T-piece.

In the ICU, except the depressed sensorium, her general condition and hemodynamic state remained stable. She regained consciousness 24 hours post-operatively when she opened her eyes, but did not react to the presence of endotracheal tube and appeared to be sleeping for most of the time. Blood samples were sent for glucose, urea, uric acid, creatinine, electrolytes and thyroid hormones TSH, Free T4 and T3. All the investigation results (except the thyroid profile, which was received after three days) revealed nothing abnormal to explain the delay in recovery of consciousness. After another 16 hours the patient started bucking vigorously on the endotracheal tube which was removed after thorough suctioning of the pharynx. Thereafter, patient remained fully alert and had normal cognitive functions. The results of thyroid function were received on the 4th post-operative day. The only positive finding was a raised TSH (14 mU/L) with normal FT4 and T3. She was discharged on 10th post-operative day with the advice to consult an endocrinologist for her thyroid problem

DISCUSSION

Chilaiditi's syndrome, described in 1911 by Demetrius Chilaiditi, is a hepato-diaphragmatic interposition of the intestines that can be mistaken for pneumoperitoneum(6) as happened in our case. Apparently normal looking, though poorly nourished and mildly dehydrated, old woman without a low-voltage electrocardiogram did not arouse any suspicion of hypothyroidism pre-operatively. The cause of delayed awakening was not discernible till 4th post-operative day when results of thyroid function tests were received and a raised TSH was found. As her FT4 and T3 values were within normal limits her final diagnosis was Chilaiditi's syndrome with sub-clinical hypothyroidism.

Sub-clinical hypothyroidism has been defined as an elevated TSH with normal FT4 and T3 levels in the serum7. Its association with Chilaiditi's syndrome has not been described in the literature, though other co-morbidities have been mentioned such as angina(8), obesity,(9) ,Rett syndrome(10), mental deficiency(11) and schizophrenia(12). Delayed recovery of consciousness was most probably due to hypothyroidism though sub-clinical. The contribution of other co-existing factors, such as old age, dehydration, malnutrition and toxemia of intestinal obstruction in delay of return to a fully awake state must also be entertained.

CONCLUSION

A case of acute abdomen with radiological evidence of gas under the diaphragm diagnosed as hollow viscus perforation turned out to be that of Chilaiditi's syndrome on opening the abdomen (Pandora's Box). Post-operative return of consciousness was markedly delayed and was thought to be due to lowered thyroid function as revealed by raised TSH level. The association of sub-clinical hypothyroidism with Chilaiditi's syndrome appears to be very unusual as no reference in medical literature could be found by the author.

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