ACUTE ABDOMEN IN A PATIENT WITH OVERT HYPOTHYROIDISM: A CASE REPORT

Ağır Hipotiroidili Hastada Akut Batın: Bir Olgu Sunumu

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ABSTRACT
Acute abdomen and hypothyroidism are two commonly encountered conditions in clinical practice, individually. However, simultaneous occurrence of both is an infrequent and crucial condition which requires a multidisciplinary approach.

We present the management of a 69 year-old, obese woman diagnosed with clinical symptoms of severe hypothyroidism and acute appendicitis. She was operated under general anesthesia and discharged from hospital after postoperative intensive care unit follow up.

Key words: abdomen; acute; appendicitis; critical care; hypothyroidism

ÖZET
Akut batın ve hipotiroidizm klinik pratikte sık rastlanan iki ayrı durumudur. Ancak hipotiroidinin eşik ettiği akut batın sık rastlanmaya, multidisipliner yaklaşım gerektiren zor bir durumdur.

Bu yazida ağır hipotiroidi ve akut apandisiti olan 69 yaşındaki obez kadının sağaltımı sunuldu. Genel anestezi altında ameliyat edilen hasta postoperatif yoğun bakım ünitesi takibinden sonra taburcu edildi.

Anahtar kelimeler: karn; akut; appendisit; kritik bakım; hipotiroidi

CASE REPORT
A 69 year-old, obese (body mass index was 32 kg/m²) woman was evaluated in the emergency room. She had abdominal pain, constipation, loss of appetite and nausea. The symptoms had begun two days ago.

On physical examination, her facial skin was rough, wrinkled and dry, also her hair was poured. Abdominal wall was distended and defensive. In addition, there was rebound tenderness in the right lower quadrant.

Laboratory examination revealed a white blood cell count, hemoglobin, creatinine, urea and CRP values of 16.4 L⁻¹, 10.1 g/dL, 1.34 g/dL, 66 mg/dL, and 12.6 mg/dL, respectively.

Abdominal X-ray was unremarkable. On computed tomography (CT) scan dirty mesenteric fat plans due to inflammation in the right lower quadrant were determined in addition to a 35 mm hyper-dense mass in the left liver lobe (Fig. 1).

An emergent exploratory laparotomy with a median abdominal incision was performed under general anesthesia. During the beginning of the anesthesia induction, the patient had deep bradycardia and hypotension worldwide and early surgical treatment is the gold standard treatment option5. Herein, we presented an appropriate management of acute abdominal surgical disease superimposed on overt hypothyroidism.

Introduction
Association of severe thyroid diseases with surgical emergencies is rarely encountered in clinical practice1. The condition is crucial and occurs in patients with extremely malfunctioning thyroid glands and may be life-threatening2–4. Appendectomy for appendicitis is the most commonly performed emergency operation worldwide and early surgical treatment is the gold standard treatment option5. Herein, we presented an appropriate management of acute abdominal surgical disease superimposed on overt hypothyroidism.
and needed 1 mg intravenous atropine, intense fluid replacement and the administration of vasoconstrictive agent infusion throughout the operation.

Abdominal exploration revealed an edematous and inflamed appendix with 200–300 ml of serous fluid around it. The remaining intra abdominal structures were normal in appearance and color. Following appendectomy (Fig. 2), the mass in the liver (type 5 hydatid cyst) was palpated; however emergent surgical treatment was not necessary in that case. A drain was placed in pouch of Douglas and abdominal wall was closed anatomically.

We tried to awake the patient from general anesthesia, however the depth of spontaneous breathing and consciousness could not be maintained at satisfactory levels, thus the patient was transferred to the intensive care unit and connected to a mechanical ventilator. Intravenous methylprednisolone was given for suspicious adrenal gland insufficiency, because the patient was hypoglycemic in early postoperative phases of the operation.
The laboratory findings of the patient were summarized in Table 1.

Stress dose intravenous methylprednisolone was started upon the endocrinology specialist’s suggestion. Hemodynamic clinical picture and blood glucose level returned to normal levels, and thus, the vasoconstrictive agent was discontinued after gradual dose decrease.

The woman gained consciousness and was weaned from the mechanical ventilator on the second postoperative day. Levothyroxine at a dose of 25 μg via nasogastric tube was added to the treatment after three days of methylprednisolone use and then dose was increased day by day.

The intestinal gas was discharged after 72 hours and following the removal of the nasogastric tube oral regimen was started. An elective pituitary magnetic resonance imaging (MRI) was performed and a consultation was requested from neurosurgery department. MRI revealed that suprasellar cistern was herniated into the sella and pressed the pituitary gland. The diagnosis was empty sella as the cause of central hypothyroidism.

The woman was discharged on postoperative ninth day with a prescription containing daily doses of oral levothyroxine and prednisolone.

The pathological examination of the operative specimen was reported as acute phlegmonous appendicitis. The long term follow up the patient has been uneventful (Fig. 3).

**Table 1. The laboratory findings on postoperative day 1**

<table>
<thead>
<tr>
<th>Laboratory test</th>
<th>Measured value</th>
<th>Normal range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free-T3</td>
<td>0.78 pg.mL⁻¹</td>
<td>2.5–3.9 pg.mL⁻¹</td>
</tr>
<tr>
<td>Free-T4</td>
<td>0.1 ng.mL⁻¹</td>
<td>0.54–1.24 ng.mL⁻¹</td>
</tr>
<tr>
<td>TSH</td>
<td>0.81 mIU.L⁻¹</td>
<td>0.34–5.60 mIU.L⁻¹</td>
</tr>
<tr>
<td>Prolactin</td>
<td>0.59 μg.L⁻¹</td>
<td>2.7 to 19.64 μg.L⁻¹</td>
</tr>
<tr>
<td>Growth Hormone</td>
<td>&lt;0.030 ng.dL⁻¹</td>
<td>0 to 9.88 ng.dL⁻¹</td>
</tr>
<tr>
<td>FSH</td>
<td>2.04 mIU.mL⁻¹</td>
<td>16.74 to 113.6 mIU.mL⁻¹ for PMP*</td>
</tr>
<tr>
<td>LH</td>
<td>0.78 mIU.mL⁻¹</td>
<td>10.87 to 58.64 mIU.mL⁻¹ for PMP**</td>
</tr>
<tr>
<td>Estradiol</td>
<td>3 pg.mL⁻¹</td>
<td>20–40 pg.mL⁻¹</td>
</tr>
<tr>
<td>ACTH</td>
<td>9.6 pg.mL⁻¹</td>
<td>10 to 60 pg.mL⁻¹</td>
</tr>
<tr>
<td>Cortisol</td>
<td>8.4 g.dL⁻¹</td>
<td>6.7–22.6 g.dL⁻¹</td>
</tr>
</tbody>
</table>

*PMP: post-menopausal period.

**Discussion**

Thyroid hormones have multiple functions and affect almost all of the body. They have important role in neuromuscular stimulation, cardiac contractility and vascular tone, electrolyte balance, regulation of menstrual cycle and skin tonus. Hypothyroidism is a condition characterized by inadequate production of thyroid hormones or by insufficient effect on the target organs. It may occur primarily or secondarily. Hashimoto’s thyroiditis, thyroidectomy,
Findings and abdominal CT helps in diagnosis. There is always muscular defense and rebound tenderness in right lower quadrant and immediate open or laparoscopic appendectomy is gold standard for treatment of acute appendicitis. Low levels of free-T3, T4 and high TSH are determined in primary hypothyroidism while in secondary hypothyroidism, a low or normal level of TSH, which is expected to increase logarithmically due to decreased levels of free-T3/ T4, are detected. Our patient had a normal value of TSH, but low levels of free-T3 and T4 and a severe clinical picture of hypothyroidism. The levels of prolactin, growth hormone, ACTH were all lower than normal. The cortisol level also seemed normal according to laboratory cut-off values. In addition, FSH and LH levels were under normal levels. The free-T4 is the treatment guiding parameter for secondary hypothyroidism while it is TSH for primary hypothyroidism. Thus, it is important to reveal the underlying cause and the type of hypothyroidism to manage the disease. A history of thyroid surgery, excessive bleeding in the previous births or multiparity, intracranial mass or neck radiation therapy should be investigated. In addition, the presence of antibodies against thyroid hormones and thyroid nodules may cause hypothyroidism. In patients with severe hypothyroidism, reduced cardiac output and blood volume, abnormal baroreceptor function, decreased hepatic metabolic function and diminished renal extraction may occur and the sensitivity to anesthetic and sedative agents may develop. Sedative, analgesic and hypnotic agents may yield a myxomatous coma in severe hypothyroidism. On the other hand, level of cortisol should be measured for concomitant adrenal insufficiency. Our patient had deep bradycardia and hypotension following anesthesia induction and could not awaken from general anesthesia; that’s why she was followed up in intensive care unit and connected to a mechanical ventilator. Both the hypothyroidism and hypocortisolemia were the possible causes.

The cornerstones in the treatment of overt hypothyroidism are the relieving of symptoms and avoiding progression of disease to myxomatous coma. Severe hypothyroidism is usually treated by oral replacement of levothyroxine which is classically administered as a once-daily dose of 1.6 mg/kg (or 25–50 mg daily). Levothyroxine should be increased by controlling the levels of TSH. The initial dose in elderly patients...
with ischemic heart disease should be 25 mg daily. Levels of free T3 and T4 should be maintained in normal ranges in patients requiring elective surgery. During emergency surgery regional anesthesia may be preferred. Thoracic epidural anesthesia may be an option in upper gastrointestinal surgeries to cause less postoperative pain and morbidity.

Conclusion

The management of association of severe hypothyroidism and an acute abdominal surgical disease requires a multidisciplinary approach and an advanced hospital facilities.

References