

CASE REPORT

A rare cause of fever and icterus: Thyroid crisis

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ABSTRACT

Thyroid crisis is the severe form of hyperthyroidism. The predisposing factors are mostly surgeries and additional diseases. Although the case is rare, the mortality rate is high. Here, we present a thyroid crisis case which implies infectious diseases. A 36-year-old female patient admitted to the hospital with high fever, abdominal pain, and unstable mental state. Physical examination revealed icterus, tachycardia, and hepatosplenomegaly. Serum free triiodothyronine (FT3), and free thyroxine (FT4) levels were elevated and thyroid-stimulating hormone (TSH) was highly suppressed. An infectious etiology was suspected on admission, but further investigation revealed thyroid crisis. Patients with high fever should be considered in differential diagnosis of non-infectious causes such as thyroid crisis. In these cases, early and correct diagnosis is important for prognosis. *J Microbiol Infect Dis 2013; 3(1): 36-38*

Key words: Thyroid crisis, fever, icterus, hyperthyroidism

Nadir görülen bir ateş ve ikter nedeni: Tiroid krizi

ÖZET

Tiroid krizi, hipertiroidinin yaşamı tehdit edecek kadar ağırlaşması durumudur. En sık hazırlayıcı nedenler ameliyatlar ve ek hastalıklardır. Nadir görülmesine rağmen mortalite yüksektir. Bu makalede infeksiyon hastalıklarını taklit eden bir tiroid krizi olgusu sunduk. 36 yaşında bayan hasta yüksek ateş, karın ağrısı ve mental durum değişiklikleri ile hastaneye başvurdu. Fizik muayenesinde ikter, taşikardi ve hepato-splenomegalisi vardı. FT3, FT4 düzeyleri yükselmişti ve TSH oldukça baskılanmıştı. İlk başvuruda infeksiyöz bir neden düşünülen hastada yapılan tetkikler sonucu mevcut klinik tablonun tiroid krizine bağlı olduğu saptandı. Bu olgularda doğru ve erken tanı prognoz açısından önemlidir.

Anahtar kelimeler: Tiroid krizi, ateş, ikter, hipertiroidi

INTRODUCTION

Thyroid crisis is a rare and life threatening form of hyperthyroidism sometimes named thyrotoxicosis.¹ The clinical findings of thyroid crisis are high fever above 38.5°C, tachycardia, central nervous system and gastrointestinal findings.^{2,3} The diagnosing may sometimes be mistaken as infectious diseases. The preliminary factors of the thyroid crisis are infections, trauma, diabetic ketoacidosis, surgery, radioactive iodine treatment for untreated hyperthyroidism.⁴ While the estimated mortality rate of thyroid crisis is 10-30%; it is as high as 75% when the treatment is late.^{2,5} Since thyroid crisis can be mistaken with infectious diseases, careful differential diagnosis is needed.

In this paper we present a case presenting with high fever, icterus, elevated liver enzymes, and personality change. The aim of presenting this case is to underline the fact that thyroid crisis imitate the

laboratory and clinical findings of infectious diseases.

CASE REPORT

A 36-year-old female patient was admitted to the emergency service with high fever, headache, appetite loss, icterus, and change in her personality. History of the patient showed that she was operated with the diagnosis of Para nasal sinusitis and septum deviation due to headache, 3 months ago. Lately, after the surgery, personality change and headache became evident. Patient admitted with these complaints to a state hospital. A suspected lesion was reported on the magnetic resonance imaging (MRI). The patient was transferred to our hospital with the initial diagnosis of encephalitis because of not being able to perform lumbar puncture and identify the type of lesion.

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The initial examination at emergency service showed that the patient's hemoglobin value was 10.5 g/dl, thrombocyte was 191.000 mm³, white blood cell count was 5600 / mm³, and no particularity in urine sample. Aspartate aminotransferase (AST) was 104 U/l, alanine aminotransferase (ALT) was 70 U/l, total bilirubin (TB) was 10.6, direct bilirubin (DB) was 9.9, creatin kinase (CK) was 426 mcg/l, lactate dehydrogenase (LDH) was 311 U/l,

alkaline phosphatase (ALP) was 100 IU/L, gamma glutamyl transpeptidase GGT was 47 IU/L, total protein was 4.2 g/dl, albumin was 2.4 g/dl (Table 1). Patient's INR (international normalized ratio) was 2.5. Lumbar puncture could not be performed due to high level of INR. The patient was hospitalized in infectious disease clinic prediagnosis with pneumonia, encephalitis, sepsis and disseminated intravascular coagulation.

Table 1. The progress of laboratory values

	FT3	FT4	TSH	WBC	INR	AST	ALT	T.Bil	D.Bil	LDH	CK
First day	11.4	7.7	0.005	5600	2.32	104	70	10.6	9.9	311	426
Second day	7.5	6.8	0.005	5100	2.3	205	90	12.9	9.7	470	1058
Discharged	0.26	0.54	0.24	14500	1.1	35	142	1.4	1	346	44

WBC: white blood cell, INR: international normalized ratio, AST: aspartate aminotransferase, ALT: alanine aminotransferase, T. Bil: total bilirubin, D. Bil: direct bilirubin, LDH: lactate dehydrogenase.

The physical examination at the service showed that the patient's speech was childlike and she had agitations. Her axillary temperature was 39°C; pulse was 140 bpm, TA 120/70 mmHg. Skin and sclera were icteric. The patient was confused and she had a suspected stiff neck. She had no neurological deficits. Glasgow coma score was 14. The patient's liver and spleen were palpable. Breathing voices were rough and rhonchus was heard. In the cardiac examination, the heart was tachycardia and there were no additional sounds or murmurs. The patient's thyroid gland was bigger than normal. There was no pretibial edema on her legs. Apart from anti HAV IgG positivity, hepatitis B, hepatitis C, hepatitis E, Cytomegalovirus and Epstein Barr Virus markers were negative. Patient's auto-antibodies (thyroid receptor antibody, thyroglobulin antibody and antibody anti-peroxidase) were negative. Abdominal ultrasonography showed that the patient's liver was in normal size, gallbladder was normal. Thyroid ultrasonography presented hypo-echoic well-circumscribed nodule with the size of 5x3.7 mm in the left lobe. On thoracic computerized tomography, a 3 cm pleural effusion on right and a 2 cm one on left accompanying passive atelectasis were observed. On thoracic computerized angiography, bilateral pleural effusion and passive atelectasis on the neighbor lung were observed. The gastrointestinal tract endoscopy performed due to stomachache and second MRI taken on our hospital was normal. The results obtained from echocardiography showed that the ejection fraction was 60%, structure of the pericardium and aorta was normal. The patient had no history of smoking, al-

cohol and substance addiction. Since the causes of the patient findings could not be explained, her thyroid hormones were examined. FT3 was 11.4, FT4 was 7.7, and TSH was 0.005. Due to high suppression in TSH, endocrinology consultation was requested and the patient was considered as thyroid crisis. The patient had no known history of thyroid disease and she was not using any medicine. We thought that the patient's thyroid crisis was triggered by operation or infection. A treatment was started in Propylthiouracil plus Propranolol was started in 4x100 mg and 3x40 mg respectively.

DISCUSSION

Thyroid crisis is rare but a life threatening exacerbation of hyperthyroidism accompanied by fever, seizure, coma, throwing up, diarrhea, and icterus. It is generally seen in patients with thyrotoxicosis; suddenly appearing after a trauma, an operation, or an acute infection. In some cases, it appears as a result of stopping the antithyroid drugs, or after Iodine-131 treatment, or it can develop spontaneously.^{3,6} Although it is a rare endocrine disease, if it is not treated urgently, It can be fatal.^{6,7} The incidence of thyroid crisis among patients with hyperthyroidism is 1-2%. The case is more common among women than in man 5-10 times and it generally is seen in elderly.^{2,6,8} Examination showed no finding of thyroid disease or exophthalmos. On very rare occasion, thyroid crisis can appear without any clinical findings (goiter, exophthalmia) and history of thyrotoxicosis.¹

Hyper kinesis, weight loss, sweating, palpitation and nervousness are among the clinical features of hyperthyroidism. Tachycardia, atrial fibrillation, cardiac dysfunction, tremor, and asthenia are also seen frequently. Menstruation irregularity, pruritus, proximal myopathy, and psychotic abnormalities can cause different clinical tables.^{2,5,6,9}

Fever is one of the most significant findings of classic thyroid crisis. Mazzaferri and Skillman reported temperatures above 38.4°C in all their 22 cases.¹⁰ In some cases the fever is observed to be above 40.6°C.¹¹ Our patient had a fever of 39°C which started two days before hospital admission.

Gastrointestinal symptoms of thyroid crisis are nausea, throwing up, diarrhea, abdominal pain and icterus. The existence of icterus is a criterion of bad prognosis.^{2,3} In our case, abdominal pain and icterus was prominent. Abdomen of the patient was painful; but there were no rebound and ascites. In some patients, hyperventilation and respiratory alkalosis can be seen. Depending on the increase in basal metabolic rate, hyperventilation, decrease in cardiac output or decrease in the cleansing ability of the liver metabolic acidosis can improve. Lung infection should be considered in differential diagnosis.^{5,6,11}

Encephalitis, encephalopathy and meningism findings can also be present. Neuropsychiatric findings, anxiety, discomfort, agitation, delirium, confusion, psychosis, and even coma can be seen.^{8,11,12} Likewise, our patient had severe personality changes, agitation, and headache. In thyroid crisis, other than thyroid hormones, there is no specific laboratory finding.^{2,3} The cause of high level of transaminases could not exactly be found. It is thought that the level of serum lactate dehydrogenase, transaminase and bilirubin increase because of hepatic dysfunction and cardiac ischemic hepatitis.^{8,13} There are some reports of severe cholestatic hepatitis.³ Hepatitis and hepatotoxicity should be considered in differential diagnosis. In some cases, mild leukocytosis and a shift to left can be seen; however, other hematological parameters are normal.^{2,3} Our patient, had a mild anemia and normal leukocyte count.

Although infections are among the factors that trigger thyroid crisis, the blood, urine and stool cultures were negative. C-reactive protein (CRP) value was significantly high. In the study conducted by Sasaki et al in presents mild CRP elevation.⁸ High fever and CRP elevation in these cases must be consider infectious in differential diagnosis.

At the initial stage of the treatment, since we could not eliminate the infection probability, we gave empirical ampicilline-sulbactam treatment. Later on, because we could not find a significant infection focus, we determined the abnormality in thyroid functions with further examinations. In order to treat the organ dysfunctions, the treatment should decrease the thyroid hormones rapidly.^{2,6,7,9} If the medical treatment is not sufficient, surgery may be applied in selected cases.^{7,8} The literature suggests the most important parameters of management is early treatment.^{1,9,12,14} In our case fast clinical and biochemical response were obtained with appropriate treatment.

In conclusion; high fever, anxiety, emotional lability, agitation, confusion, psychosis, and even coma can be seen in thyroid crisis cases, which can cause multiple organ failures. It is important to consider thyroid crisis differential diagnosis when the patient is admitted to emergency service with laboratory and clinical multiple organ failure and imply infection. Fast diagnosis and treatment is important to prevent fatal consequences.

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