CASE REPORT

A Rare Presentation of Hyperthyroidism as Pyrexia of Unknown Origin

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Abstract

Introduction: The disease known as hyperthyroidism is brought on by the thyroid gland producing too many thyroid hormones. Thyrotoxicosis is a condition brought on by an overproduction of thyroid hormone for whatever reason. The most typical cause of hyperthyroidism is Grave's disease. Other causes include multinodular goitre, toxic adenoma, thyroid inflammation, iodine overconsumption, excessive synthetic thyroid hormone use, and, in rare cases, pituitary adenoma.

Signs and symptoms: Vary between people and may include irritability, muscle weakness, sleeping problems, a fast heartbeat, heat intolerance, diarrhea, enlargement of the thyroid, hand tremors, and weight loss. Treatment depends partly on the cause and severity of the disease.

Treatment options: Antithyroid drugs (carbimazole, methimazole, and propylthiouracil), surgery (thyroidectomy), β-blockers, diet (avoid food rich in iodine), and radioiodine. The presentation of hyperthyroidism as pyrexia of unknown origin (PUO) is rarely reported. So here we report a patient with a rare association of hyperthyroidism with PUO.

Keywords: Hyperthyroidism, Pyrexia of unknown origin, Thyrotoxicosis.

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Introduction

Hyperthyroidism is a condition that occurs due to the excessive production of thyroid hormones by the thyroid gland. Thyrotoxicosis is a condition that occurs due to excessive thyroid hormone due to any cause.[1] Graves' disease is the most common cause of hyperthyroidism. Other causes include multinodular goiter, toxic adenoma, inflammation of the thyroid, eating too much iodine, taking too much synthetic thyroid hormone, and rarely pituitary adenoma.[2,3] Irritability, muscle weakness, trouble sleeping, a rapid heartbeat, heat intolerance, diarrhoea, thyroid enlargement, hand tremor, and weight loss are just a few of the signs and symptoms that might vary from person to person.

Treatment depends partly on the cause and severity of the disease. Treatment options—anti-thyroid drugs (carbimazole, methimazole, and propylthiouracil), surgery (thyroidectomy), β-blockers, diet (avoid food rich in iodine), and radioiodine.[4]

The presentation of hyperthyroidism as PUO is rarely reported. So here we report a patient with a rare association of hyperthyroidism with PUO.

Case Description

A 40-year-old male came with complaints of on-and-off fever with malaise and slight loss of weight for the last 5 months.

The fever was without chills and rigor, most of the time ranging between 99 and 100.5°F. Sometimes, with fever, he used to feel malaise, perspiration, and disinterest in working. All these complaints, whenever felt, persist for 2–3 hours, mostly in the evening. Initially, such spells of symptoms were two to three times a week, but the frequency gradually increased and manifested almost every day.

No history is suggestive of any allergic symptoms, pain in the chest, neck, or any other part of the body, hemoptysis, change in voice, palpitation, or paroxysmal nocturnal dyspnea. He had no symptoms referable to other systems. No past history is suggestive of tuberculosis, diabetes mellitus, hypertension, or any other significant illness.

Not consuming alcohol opium or any form of tobacco including smoking (never smoked).

Examination

On general and physical examination, the patient was having normal build, and hair distribution, eyebrows, skin, face, and nails were normal. Examination of the nose, neck, buccal cavity,

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teeth, gums, palate, uvula, and tongue was normal. No abnormal movements of the tongue were observed. Lymph nodes were not palpable. At the time of examination, his resting pulse rate was 122 beats/minute of normal character and rhythm. All other arterial pulses were normal. His respiratory rate was 16 breaths/minute, the temperature was 99.5°F, and his weight was 55 kg. Mark of bacille Calmette-Guérin vaccination was present on the left shoulder.

No abnormality was detected on the systemic examination except tachycardia. No organomegaly was noticed, and testicular examination was normal.

Recent investigations were done 5 days back, e.g., X-ray of chest posteroanterior view, X-ray of paranasal sinuses, erythrocyte sedimentation rate (ESR), and complete blood count (CBC), blood urea, serum creatinine, liver function tests, rheumatoid arthritis factor, C-reactive proteins (CRP), and urine for complete and microscopic were within normal limits. Blood and urine cultures were sterile. No abnormality was detected in ultrasonography for the whole abdomen. Electrocardiography (ECG) and echocardiography were normal except for sinus tachycardia.

The Mantoux test was positive (8 mm), which was done 15 days back.

X-ray of chest PA view, ESR, CBC, and urine examination were done and were within normal limits.

The ophthalmic examination was normal. No bulging of eyeballs or abnormal movements were observed.

The patient consulted physicians at Jaisalmer, Bikaner, and Jaipur and took courses of antibiotics at different times, comprising tablet cefixime 200 mg twice daily (BD) for 10 days, tablet Amoxicillin + Clavulanate acid 625 mg thrice daily for 7 days, and tablet levofloxacin 750 mg once daily for 7 days, but no response.

Review

After reviewing the history, clinical examination, investigations, and treatment were taken.

Two major positive observations came up as follows:

- Fever with perspiration mostly in the evening.
- Tachycardia was disproportional to body temperature (body temperature is an independent determinant of heart rate, causing an increase of approximately 10 beats/minute/°C).

The following possibilities were considered:

- Endocarditis—may be viral or tubercular.
- Hyperthyroidism.
- Constructive pericarditis—may be tubercular.

In view of the absence of congestive heart failure and other signs of cardiac involvement, for example, engorged neck veins, edema, murmurs, normal ECG, and echo (except sinus tachycardia), probability of subacute thyroiditis, and hyperthyroid state was considered.

Investigations Planned

- Free triiodothyronine (FT3), free thyroxine (FT4), thyroid-stimulating hormone (TSH).
- Radioactive iodine uptake test.
- Thyroid ultrasound.

After 2 days, the patient came with only reports of FT3, FT4, and TSH estimation, and expressed his unwillingness for undergoing other investigations with the plea that he is tired of frequent consultations and investigations, with a request for prescribing treatment based on these investigations and clinical evaluation. In view of the absence of pain in the neck, no abnormality in ESR, CBC, CRP, and the patient's refusal of other tests, a diagnosis of hyperthyroidism was made and the following treatment started.

Treatment Advised

- Tablet carbimazole 10 mg BD.
- Tablet paracetamol 500 mg; one when needed.
- Maintain pulse rate, temperature chart, and body weight (weekly).
- Follow-up after 15 days.

Follow-up

The patient came for the first follow-up after 24 days, and the patient was much better. At the time of examination, the patient had no fever, no perspiration, and palpitation. The temperature was 98.6°F and pulse rate was 87 beats/minute and 0.5 kg increase in weight.

The patient did not turn up for subsequent follow-ups.

Discussion

Pyrexia of unknown origin (PUO) is described as a persistent fever above 38.3°C (100°F) that evades diagnosis for at least 3 weeks, including 1 week of hospital admission for investigation.

Fever as an indicator of disease has always been an important clinical symptom.

Four major categories—infective, inflammatory, neoplastic, and other—can be used to classify the causes of PUO. The relative importance of each category may shift over time depending on the percentage of patients who continue to lack a diagnosis.

As such endocrine causes of fever are rare, but some endocrine diseases having pyrexia reported in the literature include subacute thyroiditis, thyrotoxicosis, adrenal insufficiency, and pheochromocytoma. Among these, subacute thyroiditis and thyrotoxicosis are the most common.

Thermogenesis, energy balance, and metabolism all heavily rely on thyroid hormones. Thyroid hormones regulate body temperature by boosting available energy in the body, as well as, by raising appetite, pulse, the amount of oxygen given to different body areas, and fat formation. The neurological system and thyroid hormones collaborate to keep the body at a constant temperature.

Adenosine triphosphate (ATP), an energy molecule, is created by the body in response to thyroid hormones. The production of heat in the body is closely correlated with ATP, the energy unit of the cell. The majority of hyperthyroid individuals have high body temperatures (heat intolerance), whereas the body temperature is towards the lower side in hypothyroid states (cold intolerance).

In our case, the patient had signs of hyperthyroidism (tachycardia and fever) but except for fever no other evidence of inflammation of the thyroid especially pain and abnormality in inflammatory markers (ESR, CBC, and CRP) was found. He was treated for hyperthyroidism. The patient responded well.

Message

While evaluating a patient of pyrexia, especially when remained undiagnosed after other investigations, hyperthyroidism and thyroiditis should be ruled out.

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