CASE REPORT

Unveiling The Unseen: Apathetic Hyperthyroidism in Primary Care – A Case Report.

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Abstract
Thyrotoxicosis is significantly more challenging to diagnose in elderly patients compared to younger individuals. The thyroid disorder may be masked and overlooked, yet its confounding effects may be devastating. The atypical presentation of the elderly thyrotoxic makes the patient's recognition difficult, and if left untreated, the morbidity may be considerable, but once correctly diagnosed, the condition is readily treatable. We report the case of a 67-year-old man with an unknown medical illness who presented with excessive weight loss for the past 4 months. On examination, he was not tachycardic, and his pulse was in regular rhythm and of normal volume. There was no palpable thyroid nodule. His biochemical investigation revealed hyperthyroidism.

Keywords: *Apathetic Hyperthyroidism, Thyroid Disorder in the Elderly.*

Introduction

In elderly populations, the prevalence of overt hyperthyroidism is 2%, and 10 - 15% of patients are over 60 years of age [1]. Only about 25% of hyperthyroid patients aged 65 years or older present with typical symptoms and signs [2]. Hyperthyroidism in the elderly is not uncommon and often presents in an atypical manner. Signs and symptoms are usually non-specific and may be easily attributed to ageing or diseases in other organ systems, leading to delayed diagnosis and complications [2]. This case report highlights the non-specificity of symptoms of hyperthyroidism in elderly patients, and any delay in recognizing this can cause significant morbidity and mortality.

Case report

A 67-year-old Malay gentleman, an active chronic smoker with no known medical illnesses, presented to the clinic with a complaint of excessive weight loss for the past 4 months. The patient was accompanied by his wife; this was the first time he had sought medical attention since feeling unwell early this year. He had lost almost 20 kg, from 82 to 62 kg, with loss of appetite, accompanied by symptoms of fatigue, lethargy and reduced effort tolerance during routinehousehold chores. Then, 3 weeks ago, his wife noted that he had developed difficulty in sleeping at night. Otherwise, he denied low mood, sadness, anxiety, heat intolerance, palpitations, tremors, or neck swelling.

There was no history of prolonged fever, chronic cough, shortness of breath at rest, night sweats, leg swelling, orthopnea, paroxysmal nocturnal dyspnea, altered bowel habits, or urinary symptoms. He had no family history of malignancy, and was not on any medications.
On examination, he appeared cachexic, but was not pale, jaundiced, or tachypneic. There were no signs of anxiety, exophthalmos, thyroid swelling, or fine tremors. No cervical or supraclavicular lymphadenopathy were detected. Blood pressure was normotensive, pulse rate was not tachycardic, and SpO2 was 99% on room air. Abdominal examination revealed hepatomegaly about 3 fingerbreadths in the right hypochondriac region, with a smooth surface and regular margin. Otherwise, no stigmata of chronic liver disease were noted. Other systemic examinations were unremarkable.

Baseline laboratory investigations were done (Table1), including full blood count, renal and liver profiles, urine analysis, fasting blood sugar, electrocardiogram (ECG) and sputum acid-fast bacilli (AFB) direct smear and viral screening, and all the results were found to be normal.
Chest X-ray was normal, with no evidence of malignancy or infection. Abdominal ultrasound confirmed mild hepatomegaly without other abnormalities (eg, renal stones, renal disease, bladder/prostate masses).
An urgent surgical referral was made for upper and lower gastrointestinal scope to look for any malignancies. However, while waiting for the scope appointment date, the patient developed acute onset of cough, shortness of breath, and fever for two days, prompting hospital admission. On arrival, the patient appeared restless, with extreme lethargy and tachypneic. The patient experienced an episode of desaturation on room air, requiring supplemental oxygen, and was tachycardic (159 beats per minute) and febrile (39ºC). The patient was treated for community-acquired pneumonia with intravenous antibiotics. Further history obtained from his wife revealed that the patient had occasional on-and-off episodes of tremors accompanied by palpitations three years prior. However, these episodes were very infrequent and did not affect his daily activities.

Subsequently, an urgent thyroid function test was sent from the ward, revealing significant thyrotoxicosis with serum-free T4 of 55.63 pmol/L and suppressed serum TSH of < 0.005mIU/L. The calculated Burch-Wartofsky point score (BWPS) was 75, highly suggestive of a thyroid storm. The patient was immediately transferred to the intensive care unit (ICU) and

started on intravenous hydrocortisone, anti-thyroid drugs with Lugol's iodine. However, in the ICU, the patient developed persistent hypotension despite maximal triple inotropic support and eventually progressed to asystole, leading to death. The cause of death was determined to be thyroid storm precipitated by community-acquired pneumonia. Laboratory investigations during admission to the hospital are shown in Table 2.

Discussion

Hyperthyroidism in the elderly is a common yet serious clinical disorder. Peak incidence of hyperthyroidism is in the second and third decades of life, with 10%-15% of hyperthyroid patients are over 60 years of age [3]. Recognition and diagnosis of thyroid diseases among the elderly are challenging due to subtle and non-specific symptoms, and therefore, clinicians need to have a high index of suspicion and a low threshold to investigate for thyroid abnormalities [4].

The clinical features of hyperthyroidism are due to overstimulation of the sympathetic system and the direct effects of thyroxine on end organs [4]. Younger patients tend to exhibit symptoms of sympathetic over-activation, such as anxiety, hyperactivity, and tremors. In older patients, they may be apathetic, rather than hyperactive [4].

Apathetic thyrotoxicosis is a distinct entity first described by Lahey (1931) [5]. The salient features of apathy and depression are associated with profound weight loss, proximal and distal muscle weakness and wasting, ptosis, dry skin, mild tachycardia, and often congestive cardiac failure. Noteworthy is the absence of hyperkinetic motor activity, hand tremors, and ocular signs typical of Graves' disease. This absence of the usual signs and symptoms of thyrotoxicosis may cause the diagnosis to be missed [6].

Older patients have more cardiovascular symptoms, including dyspnoea, increased cardiac output, and atrial fibrillation with unexplained weight loss [4]. Weight loss in thyrotoxicosis results from increased metabolic rate, gut motility, and malabsorption [4]. Our patient, presented with reduced effort tolerance, weight loss, loss of appetite, and fatigue - atypical for hyperthyroidism initially prompting investigation for malignancy or tuberculosis, given his heavy smoking history (≥1 pack/day). Thyroid function tests were overlooked during early assessments.

Additionally, lethargy and reduced effort tolerance in this patient were mistakenly attributed to aging rather than thyroid dysfunction. Insomnia and weight loss raised suspicion for depression, even though the patient denied having any form of persistent low or sad mood. A study by G. R. Sridhar et al (2011) analysed sleep patterns in large sample of thyrotoxicosis patients at an endocrine centre in southern India. They found out that individuals with hyperthyroidism/thyrotoxicosis primarily had difficulty in falling asleep, which was associated with hyperkinetic features [7].

Tachycardia (≥100 beats per minute) is absent in 40% of older hyperthyroid patients, primarily due to coexistent conduction system disease [4]. In this case, the patient had a normal pulse rate of 92 beats per minute, normal blood pressure, absence of thyroid eye signs, and no thyroid swelling. Graves' ophthalmopathy, caused by sympathetic overactivity, possibly mediated by increased alpha-adrenergic receptors, is less common in the elderly [4]. Older patients with Graves' hyperthyroidism are also less likely to have goitre. With aging, the thyroid gland undergoes moderate atrophy and develops non-specific histopathologic changes, such as fibrosis, increased colloid nodules and lymphocytic infiltration. These age-related histological changes make physical thyroid examinations less helpful in diagnosing thyroid disorders. In fact,

the thyroid gland may not be palpable in most elderly patients with thyroid disorders [4].

Despite what was documented in our case, other reported cases of elderly apathetic hyperthyroidism present with cardiac manifestations, such as new onset pulmonary hypertension as well as tricuspid regurgitation [8,9]. Additionally, some reported cases describe elderly patients with apathetic hyperthyroidism who do not exhibit any unintentional weight loss, despite having other features like generalized fatigue and muscle cramps, without typical symptoms such as heat intolerance, palpitations, or diaphoresis [10].

Unfortunately, due to its nonspecific features, hyperthyroidism in this patient was diagnosed at a later stage, after he presented with pneumonia symptoms, which precipitated a thyroid storm. Life-threatening thyrotoxicosis or thyroid storm is a rare disorder characterized by multisystem involvement with mortality rates in the range of 8%–25% in modern case series [11]. A high index of suspicion for thyroid storm should be maintained in patients with thyrotoxicosis associated with any evidence of systemic decompensation. Diagnostic criteria for thyroid storm in severe thyrotoxicosis was first proposed in 1993 and later formalized as the BWPS for thyroid storm. These criteria (Table 3) include hyperpyrexia, tachycardia, arrhythmias, congestive heart failure, agitation, delirium, psychosis, stupor, and coma, as well as nausea, vomiting, diarrhoea, hepatic failure, and the presence of an identified precipitant [12]. Points in the BWPS system are based on the severity of individual manifestations, with a score of > 45 consistent with a thyroid storm, 25–44 suggests impending thyroid storm, and <25 makes thyroid storm unlikely [11]. In this case, the patient scored 75 points due to a precipitating event, restlessness with extreme lethargy, fever (39 degrees Celsius), and tachycardia (159 beats/min), and sinus tachycardia on electrocardiogram (ECG) , absent of symptoms and signs of congestive heart failure as well as no features of gastrointestinal-hepatic dysfunction. Precipitants of thyroid storm in a patient with previously compensated thyrotoxicosis include abrupt cessation of anti-thyroid drugs, thyroidectomy, or nonthyroidal surgery in a patient with unrecognized or inadequately treated thyrotoxicosis, and several acute illnesses unrelated to thyroid disease [11]. Here, community-acquired pneumonia, manifested by days of coughing, was likely to trigger the thyroid storm in this elderly patient .

This case highlights the challenges or dilemmas in diagnosing hyperthyroidism in the elderly primary care patients, who often present with nonspecific symptoms. Given the atypical presentations, a high index of suspicion is important for early diagnosis and management of thyroid disorders to avoid major complications that may result from this as an otherwise easily treatable condition [4]. We recommend that primary healthcare professionals, whenever they encounter elderly patients in their daily practice, always look and ask for symptoms of fatigue or lethargy. If these symptoms are present, proceed with thyroid T3/T4 and TSH levels to screen for possible hyperthyroidism in the elderly population.

Conclusion

This case underscores the significance of sound clinical judgment and heightened suspicion of hyperthyroidism in elderly patients when confronted with atypical symptoms and signs. In the context of an elderly patient, the consideration of apathetic hyperthyroidism becomes crucial when presented with generalized fatigue, lethargy, or reduced effort tolerance. Due to its nonspecific presentation, this condition is being overlooked in primary care settings.

What is new in this case report compared to the previous literature?

- This case highlights the importance of a high index of suspicion of apathetic hyperthyroidism in elderly patients who are presented with unexplained weight loss, reduced effort tolerance, and difficulty falling asleep without thyrotoxicosis features.
- Delayed recognition of apathetic hyperthyroidism will lead to unnecessary management and may cause significant morbidity and mortality. Thus, it should not be missed in clinical settings as it is an easily diagnosed and treatable condition.

What is the implication to patients?

- A delay in establishing the diagnosis of apathetic hyperthyroidism can lead to severe complications for patients due to the progression of the disease and can lead to death.

Acknowledgment

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Conflict of interest

None to declare.

Patients' consent for the use of images and content for publication

The patient had provided verbal consent to the case for publication. Following the patient's demise, verbal consent was also obtained from his wife.

Authors' contribution

AZAR: Drafting the manuscript. MCM: Editing and review of manuscript. NHAAH: Editing manuscript.

Table 1. Initial laboratory investigations at the clinic

Parameter	Result	Reference Range
Haemoglobin	10.7	13.0 – 18.0 g/dL
White Blood Cell	7.2	4.0 – 11.0 109/L
Platelets	200	150– 400 109/L
Creatinine	40	71 -115 umol/L
Urea	3.5	2.50 – 6.40 mmol/L
Albumin	32	34 – 50 g/L
Total Protein	67	64 – 85 g/L
Total Bilirubin	13.4	< 22 umol/L
Alanine Transaminase	23	16 – 63 U/L
Aspartate Transaminase	21	< 34 U/L
Fasting Blood Sugar	5.3	3.9 – 6.0 mmol/L
Urine FEME	All negative	
Sputum AFB direct smear	negative	
ECG	Sinus rhythm	
Viral Screening	All negative	

Table 2. Laboratory investigations during hospital admission.

Parameter	Result	Reference Range
FT4	55.63	7.86 – 14.41 pmol/L
TSH	<0.005	0.380 – 5.330 mIU/L
Urea	3.3	2.8 -7.2 mmol/L
Creatinine	47	59 -104 umol/L
Total white cells	14.4	4.08 – 11.37 10^9/L
Platelets	121	142 – 350 10^9/L
Hemoglobin	12.4	11.8 – 16.9 g/L
C-Reactive protein	1.02	< 0.5 mg/dL
Procalcitonin	< 0.1	0.0 – 0.5 ng/mL
Total Bilirubin	18	5 – 21 umol/L
Alkaline phosphatase	178	43 – 115 U/L
Alanine transaminase	24	< 50 U/L
ECG	Sinus tachycardia	

Table 3. Point Scale for the diagnosis of thyroid storm[a]

Criteria	Points	Criteria	Points
Temperature °F (°C)		**Gastrointestinal–hepatic dysfunction**	
99.0–99.9 (37.2 – 37.7)	5	Absent	0
100.0–100.9 (37.8 – 38.2)	10	Moderate (diarrhea, abdominal pain, nausea/vomiting)	10
101.0–101.9 (38.3 – 38.8)	15	Severe (jaundice)	20
102.0–102.9 (38.9 – 39.2)	20		
103.0–103.9 (39.3 – 39.9)	25	**Central nervous system disturbance**	
≥ 104.0 (≥ 40.0)	30	Absent	0
		Mild (agitation)	10
Tachycardia (beats per minute)		Moderate (delirium, psychosis, extreme lethargy)	20
100–109	5	Severe (seizure, coma)	30
110–119	10		
120–129	15	**Precipitating event**	
130–139	20	Yes	10
≥ 140	25	No	0
Atrial Fibrillation		**Congestive Heart Failure**	
Absent	0	Absent	0
Present	10	Mild	5
		Moderate	10
		Severe	20
Total	**> 45**	**Thyroid Storm**	
		Impending Storm	
	<25	**Storm Unlikely**	

[a]Source: Burch and Wartofsky [12].

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