

中文題目：個案報告-無痛性亞急性甲狀腺炎併甲狀腺風暴

英文題目：Painless subacute thyroiditis presenting as fever of unknown origin and thyroid storm

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### Case Report

A 52-year-old man without systemic disease in the past presented with 1 week of intermittent high-grade fever, night sweats, intermittent abdominal discomfort with poor appetite. Additionally, he had experienced cough with purulent sputum, runny nose, sore throat, change of character with easy anger and involuntary body weight loss (from 83 kg to 74 kg) within 3 months.

On examination at emergency room, he was febrile at 39.1°C, with tachycardia at 122 beats/minute and respiratory rate of 21 breaths/minute. He didn't have anterior neck pain or thyroid goitre; further physical examination was normal. Further, he denied history of thyroid disorders. Laboratory investigation revealed white cell count of 11,590/uL with neutrophil predominance (73%) and elevated serum C-reactive protein of 9.61 mg/dL.

Persistent fever remained during hospitalisation despite broad-spectrum antibiotics administration for 1 week under initial impression of sepsis with unknown origin. All cultures demonstrated negative findings. Thyroid function test demonstrated free T4 elevation (3.87 ng/dL, normal range 0.89–1.78) and thyroid-stimulating hormone suppression (<0.03 UIU/mL, normal range 0.25–5.0). Tests for antinuclear antibody, anti-microsomal antibody and anti-thyroglobulin antibody were negative. Thyroid ultrasonography did not show increased tissue vascularity. Extensive workup for the aetiology of fever of unknown origin (FUO) (such as tumour markers, atypical infection and cardioechogram, etc.) revealed unremarkable findings. Gallium-67 (Ga-67) scan revealed gradually increased tracer uptake over the bilateral lobes of the thyroid (more prominent at the right lobe; (Figure 1), suggesting the diagnosis of subacute thyroiditis (SAT).

We used the published criteria of thyrotoxic crisis by Burch et al. (Table 1). The patient scored 55 points [20 points for temperature (39.1°C), 15 points for tachycardia (122 beats/minute), 10 points for agitation mood and 10 points for abdominal pain], which was highly suggestive of thyroid storm (4). Initially, we prescribed the anti-thyroid drug (ATD) propylthiouracil (100 mg PO Q6H), propranolol (10 mg PO QID) and non-steroidal anti-inflammatory drug. His fever subsided gradually after above medication; the thyroid functions recovered to normal 1 month following ATD therapy discontinuation after the diagnosis of SAT.

### Discussion

Thyroid storm or thyrotoxic crisis is a rare clinical manifestation of SAT and often misdiagnosed initially. To date, only three cases have been published in the literature (5-7), and Sherman et al

present the first one but lack detail patient's clinical course. All these cases had presented with the most common symptoms (77%) of SAT—fever and neck pain. Our present case was the first one with initial presentation of thyroid crisis among patients with SAT with clinical features of FUO and atypical manifestation (with painless thyroid). Unlike previous reported cases of SAT that had presented with thyrotoxic crisis (a 29-year-old woman and a 33-year-old man), the present patient was older and quickly responded to medication even without steroid administration. Nevertheless, these patients had used beta-blocker as the initial basic medication (6, 7). However, beta-blocker should be used with caution in thyroid storm complicated with arrhythmia and relative hypotension and cardiomegaly in chest radiography because of the impaired chronotropy and inotropy of the heart. It may lead to rapid development of cardiovascular collapse (8).

The clinical course of SAT is often preceded by 2–8 weeks of upper respiratory tract infection followed by clinical presentation of neck pain and signs/symptoms of thyrotoxicosis. The thyroid function in SAT is often normalised after 7 weeks, followed by hypothyroidism (approximately 6 months). Rarely, SAT should be considered one of the differential diagnoses of FUO, although patients did not manifest the typical tender goitre compared with other SAT cases with thyroid toxicity. In case of such atypical manifestations of SAT, Ga-67 scan is a useful diagnostic tool to differentiate the aetiology of FUO. Increased diffuse thyroid gallium uptake can be observed in several clinical occasions, such as thyroid neoplasm, sarcoidosis and subacute or chronic thyroiditis (9). Further, findings from thyroid sonography, which shows an increased flow in patient with Graves' disease compared with those with SAT, also helps to establish the clinical diagnosis of SAT (10). Therefore, Ga-67 scan and thyroid sonography help in the differential diagnosis of SAT, particularly when typical manifestations are absent (11)

## References

1. Cunha BA, Chak A, Strollo S. Fever of unknown origin (FUO): de Quervain's subacute thyroiditis with highly elevated ferritin levels mimicking temporal arteritis (TA). *Heart & lung : the journal of critical care.* 2010;39(1):73-7.
2. Ono Y, Ono S, Yasunaga H, Matsui H, Fushimi K, Tanaka Y. Factors Associated With Mortality of Thyroid Storm: Analysis Using a National Inpatient Database in Japan. *Medicine (Baltimore).* 2016;95(7):e2848.
3. Harwood-Nuss AL, Martel TJ. An unusual cause of abdominal pain in a young woman. *Annals of emergency medicine.* 1991;20(5):574-82.
4. Burch HB, Wartofsky L. Life-threatening thyrotoxicosis. Thyroid storm. *Endocrinology and metabolism clinics of North America.* 1993;22(2):263-77.
5. Sherman SI, Simonson L, Ladenson PW. Clinical and socioeconomic predispositions to complicated thyrotoxicosis: A predictable and preventable syndrome? *The American journal of medicine.* 1996;101(2):192-8.
6. Swinburne JL, Kreisman SH. A rare case of subacute thyroiditis causing thyroid storm. *Thyroid : official journal of the American Thyroid Association.* 2007;17(1):73-6.
7. Salih AM, Kakamad FH, Rawezh QS, Masrur SA, Shvan HM, Hawbash MR, et al. Subacute thyroiditis causing thyrotoxic crisis; a case report with literature review. *Int J Surg Case Rep.*

2017;33:112-4.

8. Ngo SY, Chew HC. When the storm passes unnoticed--a case series of thyroid storm. Resuscitation. 2007;73(3):485-90.

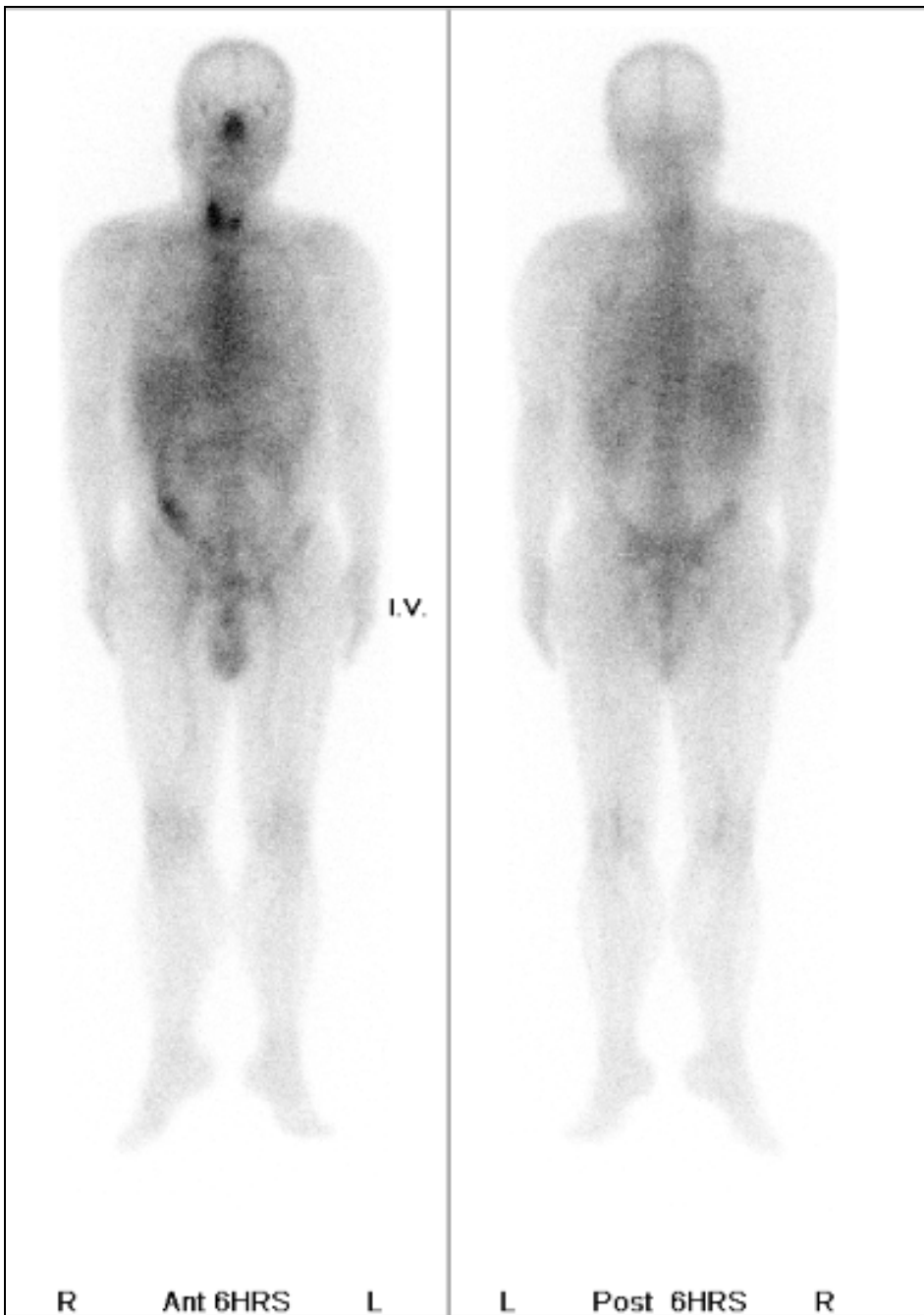
9. Stadalnik RC, Moreno AJ, Brown JM, Spicer MJ, Yedinak MA, Brown TJ. Thyroid localization of Ga-67 citrate. Seminars in Nuclear Medicine. 1985;15(2):224-5.

10. Hiromatsu Y IM, Miyake I, Soejima E, Yamashita K, Koike N, Nonaka K Color Doppler ultrasonography in patients with subacute thyroiditis. Thyroid. 1999;12:1189.

11. Antonelli A, Fazzi P, Fallahi P, Ferrari SM, Grosso M, Boni G, et al. Thyroid uptake of 67Ga-citrate is associated with thyroid autoimmunity and hypothyroidism in patients with sarcoidosis. European journal of nuclear medicine and molecular imaging. 2009;36(1):137-43.

Table 1 Burch-Wartofsky Point Scale

Thermoregulatory dysfunction															
°F	99-99.9	100 - 100.9	101 - 101.9	102 - 102.9	103 - 103.9	≥104.0									
°C	37.2-37.7	37.8 - 38.2	38.3 - 38.8	38.9 - 39.4	39.4 - 39.9	>40.0									
Score	+5	+10	+15	+20	+25	+30									
Cardiovascular dysfunction															
Heart rate	99 - 109	110 - 119	120 - 129	130 - 139	≥140	<b>Atrial fibrillation</b>									
Score	+5	+10	+15	+20	+25	+10									
Central nervous system effects															
Severity	<b>Mild</b>		<b>Moderate</b>			<b>Severe</b>									
Symptoms	Agitation		Delirium	Psychosis	lethargy	Seizure	Coma								
Score	+10		+20			+30									
Gastrointestinal-hepatic dysfunction															
Severity	<b>Moderate</b>				<b>Severe</b>										
Symptoms	Diarrhea	Abdominal pain	Nausea/vomiting		Unexplained jaundice										
Score	+10				+20										
Heart failure															
Severity	<b>Mild</b>		<b>Moderate</b>		<b>Severe</b>										
Symptoms	Pedal edema		Bibasilar rales		Pulmonary edema										
Score	+5		+10		+15										
Precipitant history			<table border="1"> <thead> <tr> <th colspan="3">Total Score for possibility of thyroid storm</th> </tr> </thead> <tbody> <tr> <td>≥ 45</td> <td>25-44</td> <td>&lt;25</td> </tr> <tr> <td>highly suggestive</td> <td>supports the diagnosis</td> <td>unlikely</td> </tr> </tbody> </table>				Total Score for possibility of thyroid storm			≥ 45	25-44	<25	highly suggestive	supports the diagnosis	unlikely
Total Score for possibility of thyroid storm															
≥ 45	25-44	<25													
highly suggestive	supports the diagnosis	unlikely													
	Negative	Positive													
Score	0	+10													



**Legend Fig.1 :** This Gallium-67 scan revealed diffuse increased uptake over the bilateral lobes of thyroid, more prominent at right lobe (black arrow).