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CASE REPORT

Acute suppurative thyroiditis in infected thyroid cyst in an adult patient under hemodialysis

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Key Clinical Message

Acute suppurative thyroiditis (AST) accompanied by an abscess is a rare clinical case. Hemodialysis patients are at risk for infections. Sepsis mortality was from 100 to 300 times higher for chronic dialysis patients than that for the general public. Thus, special care should be taken against infection in patients under hemodialysis.

Keywords

Acute suppurative thyroiditis, arteriosclerosis obliterance, hemodialysis.

Introduction

Acute suppurative thyroiditis (AST) accompanied by an abscess is a rare clinical case. Possible reasons for the infrequency of AST include the gland's abundant blood supply and lymphatic drainage and the antimicrobial action of iodine [1]. AST is found primarily in children. According to Miyauchi et al., the most common mechanism for thyroid infection is the transmission of infective organisms via a pyriform sinus fistula [2]. Mainstream management of AST is antimicrobial therapy, directed against the likely bacterial pathogens. Here, we report a case of AST in an adult patient under hemodialysis.

Case Presentation

A 65-year-old Japanese man was admitted complaining of painful swelling in the neck and with high fever. He has type 2 diabetes mellitus with 3-year history. He had been under hemodialysis for 3 years because of renal sclerosis. Stent placement in left superficial femoral artery for arteriosclerosis obliterans (ASO) had been performed 45 days before this episode in our hospital.

On examination, his body temperature rose to 38.3°C. His height, body weight, and body mass index values were 156 cm, 53.3 kg, and 21.9 kg/m^2, respectively. A swollen mass was palpable on his left neck with erythematous change, hot feeling, and tenderness. Laboratory data revealed white cell count: 12,500 (4000–8000)/μL, C-reactive protein (CRP): 26.0 (0.3–0.6) mg/dL, blood urea nitrogen (BUN): 34 (9–21) mg/dL, serum creatinine (Cr): 6.89 (0.2–0.9) mg/dL, free T4: 1.69 (0.9–1.8) ng/dL, thyroid-stimulating hormone (TSH): 0.52 (0.34–3.5) μIU/mL, HbA1c: 5.7 (NGSP: <6.5)%, and postprandial blood glucose: 123 (<200) mg/dL. Neck ultrasonography revealed a well-circumscribed large cystic mass with debris (∅56 × 51 × 32 mm) in left thyroid gland (Fig. 1A and B). Computed tomography also revealed a low-density lesion in left lobe of thyroid gland (Fig. 1C). Thus, he was diagnosed as suffering from acute suppurative thyroiditis (AST) in infected thyroid cyst. Intravenous administration of meropenem 1 g/day was started.

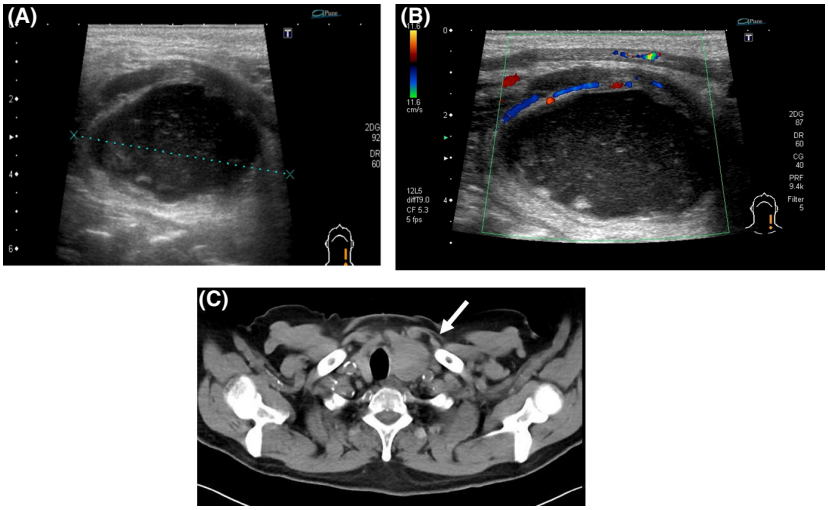
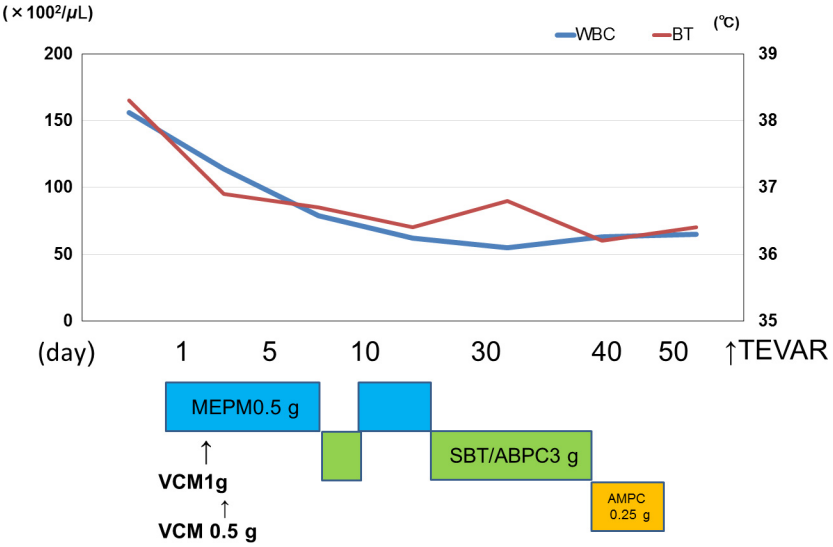


Figure 1. (A, B) Well-circumscribed large cystic mass with debris in left thyroid gland in neck at ultrasonography. (C) An abscess in the left lobe of thyroid gland in neck CT (arrow).

On the fourth hospital day, fine-needle drainage was performed and 16 mL of sample was aspirated. The aspirated pus from thyroid cyst and blood were sent for microbial culture and sensitivity test. The microbial culture revealed infection of *Staphylococcus aureus* (MSSA). The pathogenesis of bacteremia was explored. Vegetation was not found at the aortic valve on echocardiography. Parental antibiotics were administered for 37 days. He responded



	Day 1	Day 8	Day 14	Day 28
Free T4 (ng/dL) (0.9–1.8)	1.69	1.48	1.17	1.14
TSH(μIU/mL) (0.34–3.5)	0.52	0.23	0.94	3.73
Tg (ng/mL) (5–30)	8265	4282	1249	490.9

Figure 2. Summary of the clinical course. MEPM, Meropenem; VCM, Vancomycin; SBT/ABPC, Sulbactam/ampicillin; AMPC, Amoxicillin; TEVAR, Thoracic endovascular aneurysm repair.

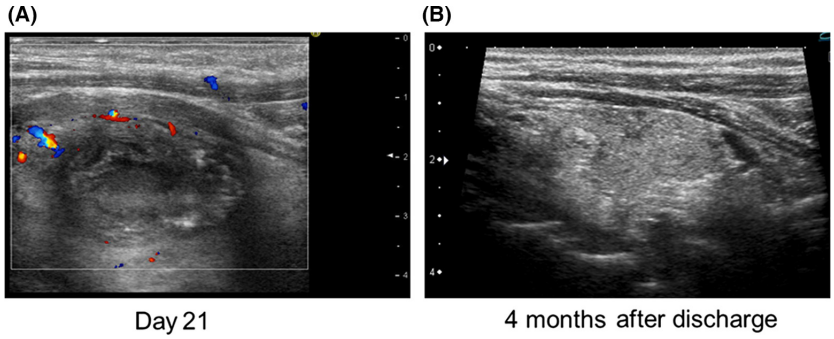


Figure 3. (A) Cystic area in the left lobe decreased in volume after drainage and antibiotics. (B) Thyroid gland was almost cured with heterogenous scarred upper middle of left lobe.

to the treatment very well. We ceased an enteral antibiotic on the 55th hospital day (Fig. 2). Second computer tomography revealed incidental aortic dissection (Stanford type B). Thoracic endovascular aneurysm repair (TEVAR) surgery was performed for aortic dissection on the 60th hospital day. Fourteen days after TEVAR, he was discharged (Fig. 2). Four months after discharge, neck ultrasonography showed resolution of the supportive thyroiditis (Fig. 3).

Discussion

Acute suppurative thyroiditis (AST) is a rare infectious disease of the thyroid gland. Onset of AST is generally sudden, and the clinical picture progresses very rapidly. Analysis of 1309 thyroid operations performed during twenty-two years revealed 117 instances of thyroiditis, but only six of these were suppurative [3]. Only 8% of cases occur in adulthood [4]. Pyriform sinus fistulae related to third and fourth branchial pouch anomalies were one of the causes of AST [4]. In the present case, there were two atypical aspects: (i) the onset at middle age and (ii) pyriform sinus fistula was not found.

The thyroid gland is relatively resistant to bacterial infection. In the present case, no invasive infectious sign on surrounding tissue of the thyroid was revealed by neck ultrasonography. Two possible precipitants may be susceptible to infection in hemodialysis and stent placement for ASO. Some recognized causes of AST are neoplastic thyroid nodule, subacute thyroiditis, Hashimoto thyroiditis, and penetration of the thyroid gland by foreign bodies such as fish bones and trauma [5–7]. Underlying diseases including tuberculosis [8], diabetes mellitus [9], and human immunodeficiency virus infection [10] appear to increase the risk for developing of thyroid abscess. Although diabetes is recognized to lead to poor immune response, in this case, the glycemic control (as represented by HbA1c) was very good. To our knowledge, there was no report on hemodialysis patients with AST. Hemodialysis patients are at risk for infections [11]. According to the dialysis patient death registry and the reports on sepsis-related mortality compared to that of the general population, sepsis mortality was from 100 to 300 times higher for chronic dialysis patients than that for the general public [12]. Wang et al., hypothesized that this association includes increased susceptibility to infection, the presence of comorbidities such as diabetes, and repetitive exposure to pathogens during hemodialysis [13]. Thirty-two cases met the diagnostic criteria for primary endovascular stent infections (PEVSIs). *Staphylococcus aureus* was the cause of 79.3% of these cases. 9.4% of stent location was superficial femoral artery [14]. This case raises awareness of infective complication of endovascular surgery in an immunocompromised individual.

Conflict of Interest

None declared.

Authorship

HI and HY: were responsible for database search and writing of the article. MH, NK, YA, HU, KT, and TH: were responsible for correction of the article and supervision.

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