CLINICAL VIGNETTE

Subacute Thyroiditis Following Group A *Streptococcus* Pharyngitis

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Introduction

Subacute thyroiditis (SAT) is an acute, self-limited, inflammatory disease of the thyroid gland that is also known as granulomatous or DeQuervain's thyroiditis. The overall incidence of SAT is 4.9 per 100,000, and may be declining. SAT occurs most commonly in the 5th decade of life and is 3.6 times more likely to affect women. SAT is thought to be caused by a viral infection or postviral inflammatory process.[1] It presents as a sudden onset of pain in one or both thyroid lobes that can radiate to the jaw, and is often preceded by an upper respiratory tract infection. Associated symptoms include fever, dysphagia, diaphoresis, tremor, weight loss, and myalgias. Untreated, symptoms of SAT can last for months. Subsequent hypothyroidism is seen in nearly half of all cases, most frequently occurring within the first 6-12 months after presentation.[2] Although rare, SAT should be considered in the workup of fever of unknown origin, even in the absence of typical thyroid-related symptoms.[3]

Case Report

A 40-year-old woman presented to Urgent Care with intermittent right otalgia and neck pain for two weeks. Her past medical history was significant for a small, stable prolactinoma, migraines, and hepatitis B. On physical exam, she was found to have a mildly erythematous right tympanic membrane with three small tender ipsilateral lymph nodes adjacent to the trachea, and a normal-appearing oropharynx. A diagnosis of otitis media was made and the patient was started on amoxicillin-clavulanate. She returned after five days noting no improvement in her presenting symptoms. Additionally, she had developed sore throat, myalgias, malaise, and headaches. Physical exam showed pharyngeal erythema without lesions or exudates, and right-sided tender lymphadenopathy. A rapid strep test was positive. She was advised to finish her course of antibiotics and to return if her symptoms persisted.

Two days after completing antibiotic therapy the patient returned with a worsening sore throat, associated dysphagia and neck pain. All other previous symptoms had resolved. Review of symptoms was negative except for irritability and anxiety over the preceding two weeks, fatigue and cold intolerance for the past day. Physical exam revealed a symmetrically enlarged thyroid gland with diffuse tenderness over both lobes. Thyroid stimulating hormone was low with 0.09mcIU/mL (reference range 0.3-4.7mcIU/mL). Free T4 was elevated with 1.7ng/dL (reference range 0.8 – 1.6 ng/dL) and thyroid peroxidase antibody was positive with 21.5 IU/mL (reference range <20 IU/mL). Levels of thyroid stimulating immunoglobulin, thyroid binding inhibitory immunoglobulin, and thyroglobulin antibody were all within normal limits. A diagnosis of subacute thyroiditis was made and treatment with ibuprofen initiated. A subsequent thyroid ultrasound showed a heterogeneous thyroid gland with ill-defined hypoechoic regions throughout the parenchyma and associated mild hyperemia without discrete nodules, consistent with thyroiditis. Within three weeks the patient had repeat thyroid function tests showing further mild worsening of hyperthyroidism with low TSH of 0.02mcIU/mL and elevated FT4 of 2ng/dL. Free T3 was normal with 361pg/dL (reference range 222-383 pg/dL). The patient now had more symptoms of fatigue, palpitations and tremors. Ibuprofen was continued. Two weeks later she reported feeling well and without any symptoms. Neck tenderness resolved and there was no visible or palpable goiter. Her thyroid functions tests were all completely normal with TSH of 2.3mcIU/mL and FT4 of 1.2ng/dL. Three months after this episode of thyroiditis the patient remains in remission and well.

Discussion

This case demonstrates a typical clinical presentation of subacute thyroiditis with mild hyperthyroidism that followed strep throat. As expected, thyroiditis resolved without any treatment other than NSAIDS in less than 2 months. The finding on ultrasound of the neck questioned the diagnosis of subacute thyroiditis given the slightly increased blood flow on color Doppler. This is typically seen in Graves' disease. However, clinically and serologically this was a case of subacute thyroiditis. We will monitor the patient in future for any signs of recurrent hyperthyroidism or Graves' disease. Assuming the diagnosis of subacute thyroiditis is correct, the appearance of the thyroid on ultrasound should return to normal.

Interestingly, this episode of thyroiditis followed bacterial infection of the throat with streptococcus. Typically, viral infection or a post-viral inflammatory process is thought to

precede the development of subacute thyroiditis.[1,4,5] Several studies have examined the role of bacterial infections in development of subacute thyroiditis and found associations with enterobacterial, streptococcal, and staphylococcal infections in a small number of patients.[6] Rare cases of subacute thyroiditis following other bacterial head and neck infections have also been reported.[7]

The diagnosis of subacute thyroiditis should be suspected in cases of fever of unknown origin as well as prolonged infection of the throat that may present as pharyngeal rather than thyroid and anterior neck tenderness.[8] Symptoms of mild hyperthyroidism are often non-specific, with fatigue, chills and palpitations most frequently reported and can be mixed with initial presentation of preceding infectious disease. Occasionally subacute thyroiditis can be complicated by cardiac arrhythmias, and is important to consider in cases of infection with non-specific symptoms that are prolonged or worsening.

REFERENCES

1. **Desailloud R, Hober D.** Viruses and thyroiditis: an update. *Virol J*. 2009 Jan 12;6:5. doi: 10.1186/1743-422X-6-5. Review. PubMed PMID: 19138419; PubMed Central PMCID: PMC2654877.
2. **Fatourechi V, Aniszewski JP, Fatourechi GZ, Atkinson EJ, Jacobsen SJ.** Clinical features and outcome of subacute thyroiditis in an incidence cohort: Olmsted County, Minnesota, study. *J Clin Endocrinol Metab*. 2003 May;88(5):2100-5. PubMed PMID: 12727961.
3. **Bahowairath FA, Woodhouse N, Hussain S, Busaidi MA.** Lesson of the month 1: Subacute thyroiditis: a rare cause of fever of unknown origin. *Clin Med (Lond).* 2017 Feb;17(1):86-87. doi: 10.7861/clinmedicine.17-1-86. PubMed PMID: 28148588.
4. **Dimos G, Pappas G, Akritidis N.** Subacute thyroiditis in the course of novel H1N1 influenza infection. *Endocrine*. 2010 Jun;37(3):440-1. doi: 10.1007/s12020-010-9327-3. Epub 2010 Mar 30. PubMed PMID: 20960165.
5. **Tas A, Beyazit Y, Olmez S, Celik H, Aktas S**. Can subacute thyroiditis be associated with acute hepatitis B virus infection? *Wien Klin Wochenschr*. 2012 May;124(9-10):348-9. doi: 10.1007/s00508-012-0161-x. Epub 2012 Apr 14. PubMed PMID: 22527824.
6. **Valtonen VV, Ruutu P, Varis K, Ranki M, Malkamäki M, Mäkelä PH.** Serological evidence for the role of bacterial infections in the pathogenesis of thyroid diseases. *Acta Med Scand*. 1986;219(1):105-11. PubMed PMID: 3754083.
7. **Collazos J, Gener B, de Miguel J.** Bacterial sinusitis associated with subacute, granulomatous thyroiditis. *J Infect*. 1997 Mar;34(2):158-9. PubMed PMID: 9138145.
8. **Cunha BA, Berbari N.** Subacute thyroiditis (de Quervain's) due to influenza A: presenting as fever of unknown origin (FUO). *Heart Lung*. 2013 Jan-Feb;42(1):77-8. doi: 10.1016/j.hrtlng.2012.05.005. Epub 2012 Jul 17. PubMed PMID: 22819125.

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