



# Is the thyroid to blame?

Your patient says his neck hurts. Could his pain indicate a thyroid problem?

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## PRACTICE RECOMMENDATION

□ *Treat the rare case of acute suppurative thyroiditis as a medical emergency, with attention to airway protection, intravenous antibiotics, and surgical drainage. (C)*

□ *Order a sedimentation rate if you suspect subacute thyroiditis. It is almost always elevated in patients with this disease. (C)*

□ *Treat subacute thyroiditis with prednisone 40 mg daily in patients refractory to treatment with nonsteroidal anti-inflammatory drugs. (C)*

### Strength of recommendation (SOR)

- (A)** Good-quality patient-oriented evidence
- (B)** Inconsistent or limited-quality patient-oriented evidence
- (C)** Consensus, usual practice, opinion, disease-oriented evidence, case series

**CASE** ▶ Sam J. is a 56-year-old man with a 2-day history of severe pain in the front of his neck. He aches all over and says he had “a bad cold” a week ago, but no fever, chills, cough, or headache. He hasn’t had a toothache or difficulty swallowing, but he does complain of a sore throat and muscle aches. His temperature is 100.7°F. He has no respiratory distress or stridor. There are no tonsillar exudates. The pharynx is not red or inflamed.

When you palpate his thyroid gland, you find diffuse tenderness. What could be causing his pain?

**T**he patient with a painful thyroid is uncommon in clinical practice. In most cases, the culprit is a viral infection, radiation, or a traumatic injury to the gland. Bacterial, fungal, parasitic, or mycobacterial infections also occur, but these are rare, making up only 0.1% to 0.7% of all thyroid disease.<sup>1</sup> Some thyroid infections can be devastating, necessitating quick interventions including airway protection, intravenous antibiotics, and surgical drainage in certain situations.

Subacute thyroiditis (ST), the most common source of thyroid pain, is less severe, but can be disabling if not recognized and appropriately treated.<sup>2</sup> Occasionally, thyroid cysts can rupture, mimicking a presentation of ST.

This article will focus on how to evaluate the painful thyroid, so as to differentiate among the various conditions that can produce this uncommon presentation.

## Classifying thyroiditis: Pain or no pain

Thyroiditis can be classified in several ways, but the simplest classification is in terms of pain. Conditions that can cause painless thyroiditis include Hashimoto’s disease, postpartum thyroiditis, subacute lymphocytic thyroiditis, Reidel’s thyroiditis, and thyroiditis induced by drugs such as amiodarone, interleukin-2, lithium, and interferon-alfa.<sup>3</sup> Conditions that can cause painful thyroiditis include acute suppurative thyroiditis (AST), radiation-induced thyroiditis, trauma, ST, and ruptured cysts.<sup>1</sup>

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**>**  
**Patients with acute suppurative thyroiditis are acutely ill. Stridor and tracheal obstruction may occur—requiring intubation or tracheotomy.**

### **Acute suppurative thyroiditis**

AST is a rare condition most commonly caused by bacterial, mycobacterial, fungal, or parasitic infection. The thyroid is remarkably resistant to infection because the gland is encapsulated, rich in iodide content, and has an abundant blood supply and lymphatic drainage.<sup>1,2</sup> AST usually occurs in patients with underlying thyroid disease, such as thyroid cancer, Hashimoto's thyroiditis, multinodular goiter, congenital thyroid abnormalities such as pyriform sinus fistulas in children, and in patients who are immunocompromised.<sup>1,2</sup>

Patients with AST are acutely ill and will complain of fever, dysphagia, and severe anterior neck pain. Stridor and tracheal obstruction may occur, requiring intubation or tracheotomy. Thyroid hormone levels are sometimes increased secondary to the release of preformed hormone from the intensely inflamed gland. Computed tomography (CT) or magnetic resonance imaging (MRI) thyroid scans can identify abscesses and guide biopsies that clinch the diagnosis.

Management consists of airway support, broad-spectrum intravenous antibiotics until gram stains and cultures return (with particular attention to coverage against staphylococcal, streptococcal, and anaerobic organisms), and surgical drainage of abscesses.

### **Thyroiditis caused by radiation or trauma**

One percent of patients develop thyroiditis after receiving radioactive iodine ablation for hyperthyroidism (Graves' disease).<sup>4</sup> This condition usually occurs 5 to 10 days after the treatment. Radiation triggers thyroid gland destruction, causing transient additional release of thyroid hormone. Similar damage occurs after external beam radiation for lymphomas and head and neck cancers. In such cases, use nonsteroidal anti-inflammatory drugs (NSAIDs) and prednisone to reduce inflammation and beta-blockers to control hyperthyroid symptoms.

Trauma to the thyroid—from motor vehicle accidents, falls, or physical assaults—can cause pain, tenderness, and abnormalities in thyroid hormone levels. Effects are usually self-limited, and management centers on airway protection and prevention of infection.

### **Subacute thyroiditis**

The cause of ST is not clear. However, it typically follows an upper respiratory infection. Many viruses have been implicated in the disease, including Coxsackie, echo, adeno, and influenza viruses.<sup>5</sup> It occurs more frequently during summer months, coinciding with the peak incidence of enterovirus.<sup>2</sup> ST is 4 times more common in women than men, and the median age for occurrence is 45.<sup>6</sup>

Patients with ST usually seek care for such symptoms as fever, myalgias, and malaise, which suggest a viral infection.<sup>2,7-9</sup> Neck pain is significant and may radiate to the jaw or ear.<sup>9</sup> Patients may have pain on swallowing and a sore throat. It's possible to confuse ST with severe pharyngitis or even epiglottitis if you fail to palpate the thyroid gland. When you examine the thyroid, the gland is exquisitely tender with ST. Patients with ST appear less ill than those with AST.

In 50% of ST patients, thyroid-stimulating hormone (TSH) is suppressed, and thyroid hormone levels are elevated.<sup>4</sup> Patients with hyperthyroidism exhibit the usual signs and symptoms associated with high levels of the hormone: tremor, palpitations, heat intolerance, and diarrhea. After a few weeks, thyroid hormone levels normalize and then drop to below normal in the 4 to 6 months that follow. Levels return to normal in 95% of patients after 6 to 12 months. ST recurs in only 2% of patients.<sup>4</sup>

Sedimentation rates are almost always elevated in ST, reflecting the significant inflammation associated with the disease. Cytotoxic T lymphocytes damage thyroid follicles, causing release of preformed thyroid hormone, in turn suppressing TSH.<sup>4</sup> Radioactive iodine scans show low uptake because TSH is needed for the uptake of iodine.<sup>10</sup>

Treatment of ST should focus on reducing inflammation and pain. NSAIDs may be sufficient, but patients with moderate to severe symptoms may require prednisone 40 mg daily, tapered over 4 to 6 weeks.<sup>2</sup> If the patient is hyperthyroid, you'll need to control symptoms with beta-blockers.

### **Ruptured thyroid cyst: An ST look-alike**

The clinical presentation of a ruptured cyst closely mimics that of ST: thyroid pain, his-

tory of a recent cold, sore throat, aches, and pains. Laboratory and nuclear medicine evaluations, however, reveal significant differences:

- TSH is *not* suppressed;
- ESR is *not* elevated;
- Radioactive iodine uptake is normal.

Palpation may reveal a thyroid nodule. You can confirm the diagnosis by ultrasound and a needle aspiration.

**CASE ▶ The right diagnosis for Sam**

Sam's initial clinical presentation suggested ST, and he was started on prednisone 40 mg daily to control his pain. But when laboratory and nuclear medicine evaluations became avail-

able the next day, the ST diagnosis didn't hold up: TSH, ESR, and radioactive iodine uptake were all normal.

When Sam came in for a follow-up visit 3 days later, his thyroid pain was gone and he was feeling much better. Palpation of his thyroid revealed a slightly tender nodule that went undetected in the initial exam. Subsequent thyroid ultrasound showed a 2x2 cm nodule in the right lobe. A fine needle aspiration revealed a colloid cyst. The cyst had ruptured, causing acute pain from hemorrhage and inflammation. **JFP**

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**▶ Sedimentation rates are almost always elevated in subacute thyroiditis, reflecting the significant inflammation associated with the disease.**