

Differential Diagnosis of Painful Thyroid Disorders

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SUMMARY: It is not very uncommon to have patients with a painful swelling in the neck, most probably due to a disease of the thyroid gland in the surgical outpatient. The differential diagnosis of this swelling might pose a serious problem to a less experienced clinician. We present a systematic approach to differential diagnosis of painful thyroid disorder.

INTRODUCTION:

Patients with thyroid inflammation, autoimmune disease and infections are occasionally encountered in clinical practice. Despite the relatively uncommon prevalence of these disorders, painful thyroid disorders comprise a significant component of the spectrum of the thyroid disease¹. The pain may be confined to the thyroid region or referred to the ears, throat, the jaws or laterally in the neck. Stoffer and Loomus (1987) proposed a three-step diagnostic approach that can help to determine whether neck pain is related to a thyroid condition. Thyroid pain is almost always short-lived (less than 3 months); patients with thyroid-related neck pain usually point to the thyroid gland as the site of the most intense discomfort and patients with a painful thyroid always have abnormal findings on thyroid palpation². A systematic approach to such patients, including history, physical examination, laboratory evaluation, radionuclide or ultrasonographic imaging and fine needle aspiration biopsy will allow the appropriate diagnosis to be made in most of the cases. The majority of painful thyroid conditions is benign and can be managed with reassurance and medication².

The painful thyroid diseases can be broadly divided into three groups:

1. Painful thyroid in essentially painful thyroid disorders:

These disorders develop rapidly and most often transient phase of thyrotoxicosis is associated with them. These include subacute thyroiditis, acute (suppurative) thyroiditis, hemorrhage into a thyroid nodule and radiation thyroiditis. Subacute thyroiditis (de Quervain's thyroiditis or granulomatous thyroiditis) is the major cause of pain in the thyroid. The pain may involve the whole gland, one lobe or part of one lobe. If the pain is not bilateral initially, it will usually spread to the other side in days to weeks. On examination, the thyroid is extremely tender and is mild to moderately enlarged. Usually the enlargement is diffuse but it may be unilateral or nodular and is firm to hard in consistency³. Subacute thyroiditis is not believed to be an autoimmune disease and a viral etiology is strongly suspected⁴. It is often preceded by an upper respiratory tract infection and sometimes associated with an immediate prodromal phase characterized by muscular aches and pains, malaise and fatigue⁵. In its early stage, increased

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serum T_4 , T_3 & a low TSH level, fever and high ESR are almost always present. Thyroid antibodies are either absent or present only in low titers. Due to suppressed TSH and damage to the follicular cells, iodine transport is impaired resulting in low radioiodine and pertechnetate uptake^{3,5}. Thyroid scans generally show very patchy or no uptake; however, in localized disease there can be visualization of the uninvolved area if the serum TSH is not too low. Fine-needle biopsy should not be performed to establish the diagnosis of subacute thyroiditis. This is easily diagnosed by the presence of a painful tender thyroid, high ESR and poor tracer uptake on imaging. For treatment, corticosteroids are employed and the pain and swelling resolve within 72 hours while a favorable response to prednisone is not specific for subacute thyroiditis³.

Thyroid pain in acute/infectious thyroiditis (suppurative thyroiditis), an exceedingly rare condition, is usually due to bacterial infection of the thyroid. The symptoms are fever, leukocytosis, mild hypothyroidism and painless enlargement of a tender, red and enlarged thyroid usually localized to one area⁴. The radioiodine uptake is almost always normal except decreased uptake in the involved area. Initially, acute thyroiditis may be difficult to distinguish from subacute thyroiditis but fine-needle aspiration biopsy would provide differential diagnosis³. Antibiotics are the treatment of choice in this condition and symptoms usually resolve once the infection resolves. The sudden development of pain, tenderness and a localized thyroid mass is indicative of hemorrhage into a thyroid nodule. The localization of the symptoms to the region of nodule and lack of systematic manifestations of inflammatory disease are characteristic features of this process that may or may not be accompanied by transient thyrotoxicosis. Thyroid radionuclide imaging will show a variable appearance depending upon the extent of the bleeding⁶. Again, fine-needle aspiration biopsy should be diagnostic for malignancy and hemorrhage. The pain and swelling may subside spontaneously or

require that the nodule be aspirated.

Radiation thyroiditis is a rare complication of I^{131} therapy for hyperthyroidism or external beam radiation therapy for certain cancers. It is a painful entity that develops 1-2 weeks after therapy and then subsides spontaneously.

2. Painful thyroid in otherwise painless thyroid diseases:

Patients with usually painless thyroid disorders like Grave's disease, Hashimoto's thyroiditis, postpartum thyroiditis and thyroid carcinoma occasionally have painful variants. A painful variant of Hashimoto's thyroiditis, otherwise a painless disorder, is reported in a number of studies.⁹⁻¹¹ This variant is also initially indistinguishable from subacute thyroiditis but WBC and ESR are lower than in subacute thyroiditis^{9,11}. In painful Hashimoto's thyroiditis, thyroid gland may be small or fibrosed. The significant radioiodine uptake & persistent elevation of antithyroid antibody titer are the differentiating factors in the diagnosis of this disorder. Corticosteroid therapy is unsuccessful in treating these patients, while L-thyroxine and aspirin is successful more often⁹. In selected cases, surgical treatment may become necessary for effective and permanent control of pain.^{9,10}

Similarly a painful variant of postpartum autoimmune thyroiditis has been described as a case report,¹² which was clinically and biochemically indistinguishable from subacute thyroiditis. In this case, fine needle aspiration cytology showed multinucleated giant cells diagnostic of subacute thyroiditis.

Painful Graves' disease has normal or elevated radioiodine uptake.^{7,8}

Malignant neoplasms of the thyroid can be painful, presumably because of their rapid growth.^{10,11} The low radioiodine uptake and thyroid scan appearance will depend upon the extent of neoplastic involvement in the gland. Hamburger reported on 30 cases of thyroid lymphoma, of which four were

painful.¹³ Recently Chen et al (2006) reported a case of secondary infection and ischemic necrosis after fine needle aspiration for a painful papillary thyroid carcinoma.¹⁴

3. Painful thyroid in systemic diseases:

The thyroid gland may be rarely but progressively involved in certain already diagnosed systemic diseases. Examples are amyloidosis¹⁵, sarcoidosis¹⁶ and lupus erythematosus.¹⁷ In such cases radioiodine uptake is low. Similarly, in painful amiodorone associated hyperthyroidism, the radioiodine uptake is low¹⁸, but this diagnosis is evident from the history.

CONCLUSION:

Although rare, association of pain with thyroid disorders needs thorough understanding of the pathophysiology of the thyroid disease coupled with a systematic approach to reach the correct diagnosis, upon which will be based the appropriate intervention and treatment.

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You know you are an anaesthetist when.....

- You wake up at 6am on a weekend although you don't have any work to do.
- When you classify people you see according to ASA classification.
- You feel there is something wrong if you don't have an exam coming up.
- Can't relax
- Keep looking to veins on peoples hands even at a bus station.
- When you are the only one in operating room who doesn't wear mask.
- Watch scrubs and laugh at yourself.
- You keep on asking for stuff that doesn't get done.
- You have no privacy.
- You always wonder why you're over worked and still under paid.
- You find yourself always carrying a pen (marker) even if you're on a night out.
- When you forget to have a hair cut.
- Are expected to be in two places at the same time.
- Your finger has gone places you never thought possible.
- Don't understand what people mean when they talk about the "hospital smell".
- If you can't remember what you ate the day before! But still manage to remember the blood results of every single patient you have.
- You are always thinking about the next job.
- You think green is a cool color to wear!!
- You wash your hands *before* you use the bathroom.
- You check the caller ID on your day off to see if anyone from the hospital is trying to call and ask you to work.
- You've sworn to have "Not for Resus" tattooed on your chest.
- Discussing bodily fluids over a gourmet meal seems perfectly normal to you.
- You think that caffeine should be available in IV form.
- You've ever suctioned out a trach while finishing a mouthful of food.
- You can only tell time by the 24 hr clock.
- You can intubate your friends at parties.
- You don't get excited about blood unless it's your own.
- You can sleep soundly at the hospital cafeteria table in your dinner break and not be embarrassed when you wake up.
- You hate to get dressed in "real clothes" because scrubs are what you live in and "Why can't they make jeans that comfortable".
- You believe that saying 'It can't get any worse' causes it to get worse just to show you it can.
- You know the phone numbers of every late night food delivery place in town by heart.
- You avoid unhealthy looking shoppers in the mall for fear that they'll drop near you and you'll have to do CPR on your day off.

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