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de Quervain's thyroiditis: A review of experience with surgery

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Abstract

Background—de Quervain's thyroiditis is an inflammatory condition of the thyroid mostly treated medically, rarely requiring surgical treatment. We intend to review the surgical experience with de Quervain's thyroiditis at a tertiary cancer center over a period of 22 years.

Methods—A retrospective review of medical records from 1992 to 2014 at a tertiary cancer center was performed and all patients with a histo-pathological diagnosis of de Quervain's thyroiditis were included.

Results—Ten patients with a histopathological diagnosis of de quervains thyroiditis were included in the study. One patient in the study presented with dysphagia due to the goiter. The remaining patients presented with thyroid nodules. None presented with typical symptoms of the

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disease. Seven of the ten patients had been evaluated for a goiter at an outside facility underwent fine needle aspiration cytology. Of the seven patients, one patient was suspected to have medullary carcinoma of the thyroid, two had follicular neoplasia, with the others had indeterminate nodules. Eight of the ten patients underwent surgery for suspected malignancy, with eight receiving a total thyroidectomy and two patients getting a thyroid lobectomy with isthmusectomy.. Two patients had an abnormally hard gland to palpate during surgery with the others not having any suspicious findings. Seven of the ten of the patients had lymph node sampling from level 6 and 7 and all were benign on final pathology. The mean duration of post operative follow up was 15 months. There was no morbidity associated with surgery in any of these patients with eight of the ten patients requiring thyroid hormone replacement. None of the patients needed further neck surgery for thyroid disease.

Conclusion—de Quervain's thyroiditis is an inflammatory condition of the thyroid that is rarely treated surgically. However when presentation is atypical and the FNAC is inconclusive or is suspicious for a malignancy, patients receive surgery putting them at a risk for morbidity. Good clinical assessment with combined use of ultrasound with FNAC especially read by an experienced cyto-pathologist has the potential to reduce unnecessary operative intervention.

Keywords

de Quervains thyroiditis; subacute thyroiditis; thyroidectomy; hypothyroidism; thyroid cancer

Introduction

Subacute granulomatous thyroiditis/de Quervain's thyroiditis is a painful inflammatory condition of the thyroid thought to be of viral origin. It is characterized by pain and tenderness in the neck, low grade fever, elevated erythrocyte sedimentation rate and mild thyrotoxic manifestations with suppressed thyroid stimulating hormone progressing to a hypothyroid state as the condition resolves on its own. Diagnosis is based on clinical examination with laboratory tests indicating a transient hyperthyroid state with a raised erythrocyte sedimentation rate and reduced I¹³¹ uptake. The condition rarely requires histopathological confirmation. Clinical presentation may not be typical, with patients often presenting in an euthyroid state with a thyroid nodule resulting in difficulty in diagnosis. Prior to the widespread use of fine needle aspiration cytology (FNAC), many patients were subjected to surgery. FNAC and improvements in imaging have largely reduced unnecessary thyroidectomies. However when the cytology is inconclusive or shows features suggestive of a follicular lesion, patients are offered diagnostic surgery. Experience in the surgical management of de Quervain's thyroiditis has been limited with few studies from high volume centers. Even though ours is a referral tertiary cancer care center, we do see a large number of patients with an atypical diagnosis on FNAC. We intend to review our experience with de Quervain's thyroiditis and will start with a case report.

Case report

A 58-year-old lady presented to the office after being referred by her primary care physician to our head and surgery clinic with bilateral thyroid nodules. She did not report neck pain or fever but felt that the nodules were increasing in size. She had undergone FNAC at an

outside hospital, which was reported as a follicular neoplasm (Bethesda category IV) on the right and Hurthle cell lesion (Bethesda category III) on the left. The FNAC was reviewed at our institute, and the diagnosis was revised as benign (Bethesda category II), consistent with bilateral lymphocytic thyroiditis by the cytopathologist. On ultrasound, both nodules were irregular with the one on the right measuring 2.4 cms and the one on the left measuring 1.5 cms. The background parenchyma appeared heterogenous bilaterally suggestive of thyroiditis. There was no cervical lymphadenopathy. In spite of the revised benign FNAC diagnosis, the patient elected to undergo a total thyroidectomy with lymph node sampling. The patient was counseled that surgery was probably not necessary. However she elected to undergo surgery as the initial FNAC report had suggested a follicular neoplasm. The final pathology after total thyroidectomy was subacute granulomatous thyroiditis (i.e. de Quervain's thyroiditis).

Methods

Following the institutional review board approval, a retrospective review of our institutional thyroid database was performed to identify patients with a confirmed pathologic diagnosis of de Quervain's thyroiditis managed by the Head and Neck surgery service at Memorial Sloan Kettering Cancer center between 1992 and 2014. Ten patients with sufficient data and follow up were identified. The details collected from the medical records included symptomatology, preoperative ultrasound, FNAC results, the indication for surgery, extent of surgery, lymph node sampling, difficulty encountered during dissection and complications.

Results

After searching our pathology database, ten patients with a histopathological diagnosis of granulomatous thyroiditis or de Quervains thyroiditis (Figure 1) were included in the study. In terms of symptomatology, one patient in the study presented with dysphagia due to the goiter. The remaining patients presented with thyroid nodules. The cytologic diagnoses rendered by the outside institute and/or by MKSCC were listed in Table 1. Eight of the ten patients had been evaluated for a goiter at an outside facility and had undergone FNAC, which were reviewed by the cytopathologists at MSKCC. Of the eight patients who were referred, one patient was diagnosed as "suspicious for malignancy (medullary carcinoma), Bethesda category V), in part due to the presence of spindle cells in the cytologic sample. It is not uncommon to find spindle cells in de Quervain's thyroiditis which may mimic medullary thyroid cancer. However, the serum calcitonin was normal in this particular patient, and a diagnosis of medullary carcinoma of the thyroid can be excluded clinically if serum calcitonin is normal. Among the remaining seven patients, the initial cytologic diagnoses from an outside institute were: follicular neoplasia (Bethesda category IV, n = 2), atypical (Bethesda category III, n = 3), and benign (Bethesda category II, n = 1). A significant number of the cases were downgraded after expert cytological review at MSKCC. The reviewed diagnoses were: atypical (n = 3), benign (n = 3) and unsatisfactory for evaluation (Bethesda category I, n = 2). Of the two patients who were seen only at MSKCC, none had a FNAC suggesting follicular neoplasm. Eight of the ten patients underwent surgery for suspected malignancy, with eight receiving a total thyroidectomy and two patients getting a thyroid lobectomy with isthmusectomy. Two patients had an abnormally

hard gland to palpate during surgery, while the remaining patients did not have any suspicious findings. Difficulty in mobilizing the gland was appreciated in one patient, which was probably due to previous surgery for Zenker's diverticulum. Seven of ten of the patients had lymph node sampling from level 6 and all were benign on final pathology. The mean duration of post-operative follow up was 15 months. There was no morbidity associated with surgery in any of these patients. Eight of the ten patients required thyroid hormone replacement. None of the patients needed further neck surgery for thyroid disease.

Discussion

De Quervain's thyroiditis is a self-limiting inflammation of the thyroid that usually responds to medical treatment with NSAIDs and steroids. Surgery is rarely required. Several studies over the years have suggested that it is of viral origin [1, 2]. Diagnosis is usually based on clinical criteria with patient presenting with neck pain, symptoms of mild hyperthyroidism and an elevated erythrocyte sediment rate (ESR). Thyroid function tests vary depending on the phase of the disease [3]. Most patients in our study were euthyroid on presentation. The symptoms of initial hyperthyroidism are due to T-cell mediated cytotoxicity [4]. Ultrasound (US) usually shows heterogeneous hypoechoic areas with no increase in vascularity on a Doppler US [5, 6]. Another paper describes 'lava flow' due to heterogeneous hypoechoic nodules as a distinct sonographic feature of subacute thyroiditis [7]. The entire lobe or the entire gland may have a heterogeneous appearance as opposed to focal changes which is a new finding [8]. The findings of the hypoechoic areas may mimic nodules that are neoplastic [9]. Overall the positive predictive value of sonography in diagnosing de Quervain's thyroiditis is around 79.4% [8]. In our patient cohort, 3 of the 10 had some sonographic features to suggest a subacute thyroiditis. The other 7 had suspicious nodules prompting FNAC. Cytological exam in de Quervain's thyroiditis shows non-caseating epithelioid granulomas along with disrupted follicles, interfollicular fibrosis and interstitial cellular inflammatory infiltration. The non-caseating granuloma contains epithelioid histiocytes, multinucleated giant cells and lymphocytes. The histiocytes and giant cells are positive for CD68, while negative for thyroglobulin and cytokeratins [4]. If non granulomatous areas are present, they are usually infiltrated by T lymphocytes, monocytes and histiocytes. Interfollicular cellular infiltration with follicular disruption is seen in the early stage of the disease. The follicles are surrounded by T lymphocytes. Some T cells express T-cell intercellular antigen-1 (TIA-1), which is thought to be a unique immunohistochemical feature of de Quervain's thyroiditis as opposed to other thyroiditis [4]. Prior to widespread use of FNAC, most patients underwent neck exploration when thyroid malignancy was suspected [10]. However, in routine clinical practice, FNAC is not routinely performed when thyroiditis is clinically suspected. FNAC verifies the diagnosis when the clinical presentation is atypical. Combining it with ultrasound definitely increases the diagnostic accuracy [6, 11, 12]. Alternatively when suspicious nodules are found on imaging, clinicians get a FNAC even though patients may have presented with typical symptoms & signs to suggest thyroiditis. Making an accurate cytopathological diagnosis can be challenging. Quite often an alarming diagnosis of malignancy or features suggestive of malignancy are made on cytopathology. An expert review may change the diagnosis as demonstrated in our study. An initial false positive cytologic diagnosis of a neoplasm, invariably sets the patient on a path

to surgery. Total thyroidectomy performed by an experienced surgeon has low morbidity. However certain complications may be of major concern.[13][14]. Interfollicular fibrosis can be seen in the affected gland with this condition, and its not clear if that could make gland mobilization difficult. In our series, we experienced difficulty with one patient. The risk of neuropraxia with surgery remains, as seen in the series from Mayo clinic in the last decade [10]. Lymph node sampling and the results thereof have been rarely reported for this condition. Preoperative imaging has shown lymph node enlargement in up to 60% of patient with de Quervain's thyroiditis[8]. In our study, all patients underwent lymph node sampling from level 6 lymph nodes with all being benign. Only 2 patients out of 10 had enlargement of the level 6 lymph node(s) on preoperative ultrasound imaging.

Conclusion

De Quervain's thyroiditis largely remains an entity requiring medical management. Our experience has shown that most of the patients undergo surgery when a malignancy is suspected. A good clinical assessment with FNAC, ultrasound imaging and nuclear medicine uptake studies is still the best way to diagnose the condition. A reinterpretation of the FNAC specimen when the diagnosis of neoplasm cannot be made with confidence could prevent unnecessary surgery. A hemithyroidectomy with isthmusectomy should be offered to patients as a diagnostic evaluation especially when there is a suspicious nodule in one lobe.

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Figure 1. Histological findings of subacute granulomatous thyroiditis (hematoxylin and eosin stain)

(A) Non-caseating granulomatous inflammation with multinucleated giant cells (arrow) in association with fibrosis (*) and chronic inflammatory infiltrate can be seen in patients with De Quervain's thyroiditis. In certain cases the fibrosis can be extensive presenting as a solid nodule clinically. (B) Collections of epithelioid histiocytes and multinucleated giant cells (arrows) destroying the follicle and engulfing colloid material.

Table 1

Cytologic diagnosis rendered by outside institutes and Memorial Sloan Kettering Cancer Center (MSKCC)

Patients	FNAC diagnosis - MSKCC (Bethesda Category)	FNAC diagnosis - Outside Institute (Bethesda category)
1	Benign (II)	
2	Benign (II)	
3	Benign (II)	Suspicious for follicular neoplasm (IV)
4	Unsatisfactory (I)	Atypical (III)
5	Atypical (III)	Suspicious for follicular neoplasm (IV)
6	Unsatisfactory (I)	Benign (II)
7	Atypical (III)	Suspicious for malignancy: medullary carcinoma (VI)
8	Atypical (III)	Benign (II)
9	Benign (II)	Atypical (III)
10	Benign (II)	Atypical (III)