

## Research Article

# Clinical and cytomorphological study of DeQuervains thyroiditis

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### Abstract

In 1904, deQuervain described an inflammatory process of the thyroid gland which was characterized by the presence of discrete granulomata. This nonspecific inflammation is of viral origin and commonly resolves spontaneously in the course of 2 or 3 months. Subacute granulomatous thyroiditis (SGT) is usually diagnosed clinically; the cytologic literature on this condition is therefore rare. SGT requires no specific treatment other than symptomatic management. Hence the important objective in the cytological diagnosis of this disease is differentiating it from other conditions clinically mimicking this disease to avoid unnecessary treatment and surgery. In this study, 23 cases were evaluated and FNA was performed using a 23 gauge needle with a syringe holder. The slides were stained with PAP stain (Methanol fixed) and Leishman stain (Air dried) and studied by 2 pathologists. The cytological diagnosis of SGT was made. All the 23 cases showed classical cytological features of SGT. The procedure was simple and a quick diagnosis could be made within a span of 4 hours in all the cases. The diagnosis was correlating clinically in all the 23 cases. 19/23 (83%) cases presented with diffuse thyroid enlargement. 4/23 (17%) cases had unilateral thyroid enlargement. There was Painful thyroid enlargement in 22/23 (96%) cases. Fever in 16/23 (70%) cases. The duration of the symptoms ranged from 10 days to 2 months. Male: Female ratio was 1:5. 22/23 cases (96%) were hyperthyroid. 1/23 (4 %) were euthyroid. ESR was > 50mm/hr in 16/23 (70%) cases. The cytopathologic confirmation of the diagnosis was very useful for both patient assurance and proper management.

**Keywords:** Cytolopathologic diagnosis, Subacute granulomatous thyroiditis, Dequervains thyroiditis

## 1. Introduction

The first documented case of de Quervain's thyroiditis can be dated back to 1904, when DeQuervain<sup>1</sup> described an inflammatory process of the thyroid gland which was histologically characterized by the presence of discrete granulomata. Later Singer<sup>4</sup> classified inflammatory diseases of the thyroid into three broad categories: acute, subacute and chronic thyroiditis. Subacute disease includes granulomatous or De Quervain's thyroiditis and lymphocytic thyroiditis or silent thyroiditis. In the chronic group there is chronic lymphocytic (Hashimoto's thyroiditis) and invasive fibrous (Riedel's) thyroiditis.<sup>4</sup>

De Quervain's thyroiditis/subacute granulomatous thyroiditis (SGT) /subacute thyroiditis are a painful condition characterized by inflammatory destruction of the thyroid parenchyma with subsequent leakage of the colloid and its constituents into the circulation. An inflammatory response follows the insult to the thyroid and is initially composed of polymorphonuclear leukocytes and later with the progression of the disease histiocytes, lymphocytes and plasma cells become the major components of the inflammatory response. The follicular epithelial cells are replaced by a rim of histiocytes and giant cells followed by fibrosis. Later there is regeneration of the follicles followed by complete histologic recovery.<sup>5,6</sup>

Subacute granulomatous thyroiditis (SGT) is a disease of adults, predominantly women, with a female: male ratio ranging between 2:1 and 6:1.<sup>5</sup> The true incidence of this disease is not known as it is often unrecognized and confused clinically with other forms of thyroiditis. The current evidence supports that SGT represents a stereotypical thyroidal inflammatory response to a variety of viruses.<sup>7</sup> This nonspecific inflammation commonly resolves spontaneously within 2- 3 months. It most frequently occurs in the middle-aged individuals following a respiratory infection and is manifested by fever, asthenia, myalgia, and painful thyroid swelling and features of hyperthyroidism. The fever and other systemic manifestations may point towards an infectious origin but there is no leucocytosis, and a complete recovery is the rule even without treatment.<sup>7,8</sup> Raised levels of complement-fixing antibodies to different viruses have been demonstrated in the patients with SGT.<sup>9</sup> Individuals with human leukocyte antigen HLA-BW35 have an increased susceptibility for the development of subacute thyroiditis.<sup>10</sup> Studies have shown that autoimmunity is not a factor in the pathogenesis of this disease.<sup>9</sup> SGT is usually diagnosed clinically and therefore the cytological literature on this condition is rare.<sup>3</sup> SGT requires no specific treatment but there are other thyroid conditions which present with similar clinical manifestations that must be ruled out like acute thyroiditis and Grave's disease, both of which require different therapeutic modalities. This diagnostic task is solved by means of fine-needle aspiration (FNA).<sup>11</sup>

## 2. Materials and Methods

The important objective in the cytological diagnosis of SGT is differentiating it from other conditions clinically mimicking this disease like acute thyroiditis and Grave's disease. In this study, a total number of 23 cases in the periods between June 2012 to November 2013 were evaluated. A written consent was obtained from all the 23 patients after explaining the FNAC procedure and the nature of the present study. A detailed history and clinical examination findings of all the cases was recorded. Thyroid function tests were done in all the cases. The FNA of the thyroid was performed using a 23 gauge needle and 10 ml syringe with a syringe holder. The slides were stained with PAP stain (Methanol fixed) and Leishman stain (Air dried) and studied by 2 pathologists using Olympus microscope model number CH20iBIMF. A minimum of 3 PAP stained and 3 Leishman stained slides were evaluated in all the cases. The procedure was simple and a quick diagnosis could be made within a span of about 4 hours.

## 3. Results

23 cases of de Quervain's thyroiditis were evaluated to study the clinical and cytomorphological findings in this condition. All the 23 patients in the study had presented with thyroid enlargement. 19/23 (83%) of the cases had bilateral diffuse thyroid enlargement and 4/23 (17%) cases had unilateral enlargement. 22/23 patients (96%) presented with moderate to severe degree of pain in the thyroid as shown in Table 1.3. Only one patient presented with

painless thyroid enlargement. Fever of moderate severity was another common symptom on presentation seen in 16/23 cases (70%). The duration of the symptoms at the time presentation ranged from 10 days to 1 month as in Table 1.2. The age of the patients ranged from 16 years to 65 years with a peak incidence between 36 – 45 years (16/23 cases, 70%) as shown in Table 1.1. The male to female ratio was 1:5.22/23 cases (96%) were revealed to have hyperthyroidism on evaluation of thyroid function tests. However only 19/23 cases (83%) had symptoms of hyperthyroidism like intolerance to heat, palpitation and breathlessness. Raised ESR was observed in all the 23 patients. Values between 20 – 50 mm/hour were seen in 7/23(30%) cases and 50 -70 mm/hour in 16/23 (70%) cases. 18/23 cases were available for follow up. 17/18 cases showed complete recovery ( both clinical manifestations and thyroid function tests) within 2 months. Only one patient showed clinical recovery but persistent elevation of T3, T4 levels and decreased TSH at 2 months follow up.

**Table 1.1 showing age distribution of the 23 cases**

Age Range	Number of Cases	Percentage
16 - 25 years	1	4%
26 - 35 years	3	13%
36 – 45 years	16	70%
46 – 55 years	2	9%
56 – 65 years	1	4%

**Table 1.3 – Duration of clinical symptoms at the time of presentation**

Duration of clinical symptoms at the time of presentation	Number of cases	Percentage
1- 2 weeks	3	13%
2-3 weeks	16	70%
3-4 weeks	4	17%

**Table 1.2 showing clinical details of the 23 cases**

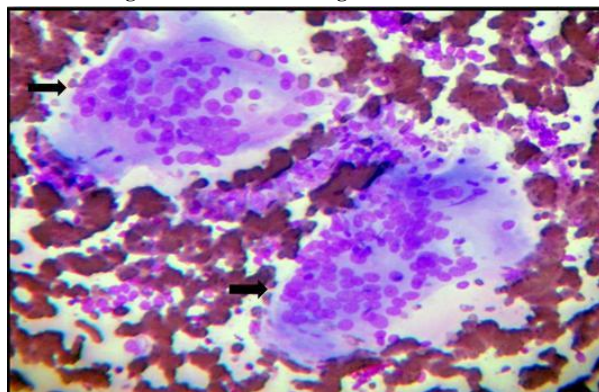
Feature	Number of Cases	Percentage
Thyroid enlargement	23	100%
Unilateral thyroid enlargement	4	17%
Bilateral thyroid enlargement	19	83%
Painful thyroid swelling	22	96%
Fever	16	70%
Clinical features of hyperthyroidism	19	83%
Raised T3, T4, & Decreased TSH	22	96%
Raised ESR	23	100%
Males	3	13%
Females	20	87%

All the 23 cases showed classical cytological features of de Quervain’s thyroiditis. The most common findings seen were multinucleate giant cells and epithelioid granulomas which were present in all the 23 cases (100%) as shown in Table 1.4. The next most common finding was degenerative changes in the follicular epithelial cells seen in 19/23 cases (83%). A dirty background with cellular debris was observed in 21/23 cases (91%). Colloid was scanty in 06/23 cases (26 %) and completely absent in 17/23 cases (74%).

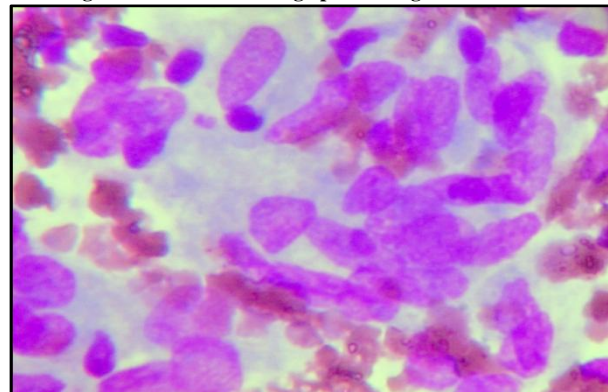
**Table 1.4 showing the cytomorphological findings in 23 cases of SGT**

Cytological Feature	Number of Cases	Percentage
Multinucleate giant cells	23	100%
Epithelioid granuloma	23	100%
Degenerated follicular cells	19	83%
Neutrophils	14	61%
Dirty background	21	91%
Scanty Colloid	06	26%
Absent colloid	17	74%

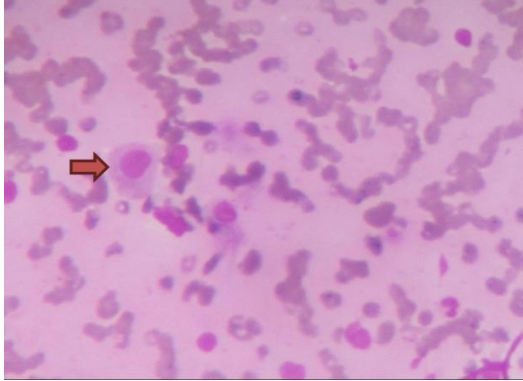
**Figure 1 : Picture showing multinucleate Giant Cells**



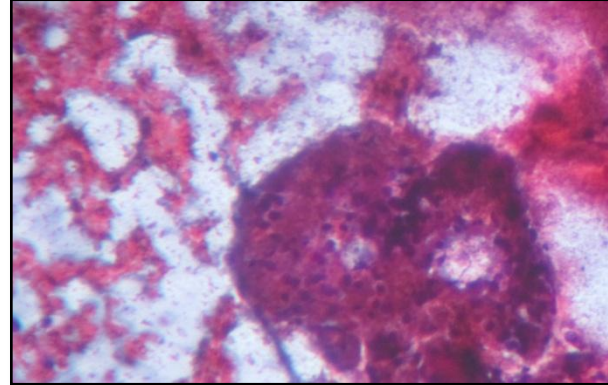
**Figure 2 : Picture showing epithelioid granuloma**



**Figure 3: Picture showing degenerative changes in follicular epithelial cells (arrow) with inflammatory cells in the background.**



**Figure 4: Picture showing degenerative changes in the follicular epithelial cells in a dirty background of cellular debris.**



#### 4. Discussion

De Quervain's thyroiditis (sub-acute granulomatous thyroiditis) is a spontaneously remitting condition probably due to viral infection in genetically predisposed individuals.<sup>10</sup> The viruses implicated are Mumps, measles, adenovirus, Epstein-Barr virus, Coxsackie and influenza.<sup>9,12,13</sup>

Typically, it presents in adults following an upper respiratory infection with fever and diffuse tender enlargement of the thyroid.<sup>2</sup> Patients usually present with chills, fever, fatigue and a painful tender thyroid swelling that may be unilateral or bilateral similar to the cases in this study. There is a female predominance from the second to the fifth decades. The usual time course of the illness is a few months. The disease can cause initial mild hyperthyroidism but this is followed by hypothyroidism, which is usually transient. Sometimes there can be asymmetric involvement of the gland which may raise the question of neoplasia and the cases come to cytological attention. There is an initial infiltration of the follicles by mixed inflammatory cells composed of neutrophils and few lymphocytes and macrophages. This appears to result in damage and the release of thyroglobulin to which there is a foreign-body granulomatous reaction. Later there is follicular regeneration and interfollicular fibrosis.<sup>6,14</sup>

FNA of the thyroid is painful due to the tender nature of the swelling.<sup>2</sup> The hallmark of the disease are the giant cells and these are characteristically very large, containing up to 200 nuclei but they may be few in number or are absent in some cases. The typical cytological findings of SGT are of numerous multinucleate giant cells together with mixed inflammatory cells composed of epithelioid cells forming granulomas, neutrophils and lymphocytes.<sup>11,15,16</sup> The follicular cells may show degenerative features and contain dark-blue (golden in PAP-stained smears) cytoplasmic 'paravacuolar' granules representing lipofuscin or lysosomal debris. These granules are not a specific feature of this condition and may be seen in involutonal follicular cells of nodular goiter, in Grave's disease and occasionally in papillary carcinomas and follicular neoplasms. Degenerating follicular cells are seen in a dirty background of cell debris and colloid. Ingested colloid can occasionally be seen within the multinucleate histiocytes. The presence of apparent necrosis and degenerative atypia in follicular cells may lead to an inappropriate suspicion of malignancy.<sup>16,17</sup> Granulomatous changes may also arise in the thyroid as a histiocytic response to hemorrhage, as a reaction to spilled colloid adjacent to a neoplasm following clinical examination (palpation thyroiditis) or with mycobacterial infections.<sup>18,22</sup> Giant cells are not very specific for this condition; they can be observed in other forms of thyroiditis (Hashimoto's thyroiditis, Graves's disease, and palpation thyroiditis) and carcinomas (papillary carcinoma and anaplastic carcinoma).<sup>2,22</sup> Very rarely, the thyroid may be the site of mycobacterial infection, sarcoidosis or other infectious granulomatous processes. Osteoclast-like giant cells may occur as a reactive population in anaplastic carcinoma of the thyroid.<sup>22,23</sup>

Silent thyrotoxic thyroiditis (painless thyroiditis, subacute lymphocytic thyroiditis)<sup>22</sup> usually occurring in women as a sporadic or post-partum condition (postpartum thyroiditis), presents with a small, diffuse, painless goiter. The disease may go through hyperthyroid, euthyroid, hypothyroid and recovery phases similar to SGT. Smears show scattered lymphoid cells and giant cells in occasional cases. Unlike SGT, there is no pain or any evidence of preceding viral infection and granulomas are uncommon.

In conclusion, diagnosis of SGT requires an integrated approach combining clinical, laboratory and cytological findings. SGT does not require a specific treatment other than symptomatic management and assurance. Therefore cytopathologic confirmation of the diagnosis is extremely useful for both assuring the patient and proper management in addition to ruling out other thyroid diseases clinically is mimicking SGT.

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