



CLINICAL CHARACTERISTICS AND OUTCOME OF SUBACUTE THYROIDITIS

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ABSTRACT **Introduction :** Subacute thyroiditis (SAT) is an inflammatory, usually self-limiting condition of the thyroid presenting with pain over the thyroid. The course of the disease varies from few weeks to months usually followed by complete recovery or occasionally permanent hypothyroidism.

Aim of the study: To study the clinical presentation, hormonal parameters and outcome of patients with SAT.

Methods: Retrospective analysis of patients diagnosed to have SAT at an Endocrine clinic.

Results : A total of 30 patients were diagnosed to have SAT with a mean age of 43.2 years and female: male ratio of 11:4. Pain was the main symptom followed by fatigue, fever and thyrotoxic symptoms. Majority of patients needed steroid for relief. Recurrence was seen in one patient while permanent hypothyroidism was seen in three patients.

Conclusion: Though commonly described as a self-limiting disease, SAT usually requires steroids for relief. Recurrence and permanent hypothyroidism are rare sequelae.

KEYWORDS : Subacute thyroiditis, steroids, pain, recurrences, hypothyroidism.

INTRODUCTION:

Subacute thyroiditis or granulomatous thyroiditis is thought to be a post viral inflammatory condition of the thyroid usually presenting with pain over the anterior aspect of the neck, radiating to the jaw and ear and sometimes associated with fever and symptoms of thyrotoxicosis. Palpation of the thyroid reveals a tender, nodular gland involving one or both lobes. The condition is diagnosed on the basis of the typical clinical findings associated with a raised erythrocyte sedimentation rate (ESR), high serum triiodothyronine (T3) and thyroxine (T4) and a suppressed thyroid stimulating hormone (TSH). Pain, tenderness and enlargement of the thyroid may sometimes be absent in which case a radioactive iodine uptake (RAIU) or technetium (Tc-99m) uptake are required for diagnosis where a typically low or absent uptake is seen distinguishing it from Graves' disease. The course of the disease lasts from few weeks to months. Usually described as a self-limiting disease with no residual deficit in 90% of cases, SAT may rarely have frequent exacerbations over many months and hypothyroidism may be a final result¹. Treatment in mild cases may need only nonsteroidal anti-inflammatory drugs (NSAIDs) but in more severe cases steroid therapy with prednisolone is needed.

Aim of the study: To study the clinical presentation, hormonal parameters, time to recovery and sequelae of patients presenting with SAT to an endocrine clinic in Guwahati, Assam.

METHODS:

This was a retrospective analysis of patients diagnosed to have SAT on the basis of clinical presentation of pain in the anterior aspect of the neck with or without fever, symptoms of thyrotoxicosis, fatigue or weight loss along with a palpable, nodular and tender thyroid gland. Investigations aiding in the diagnosis were a raised erythrocyte sedimentation rate (ESR) > 30mm at the end of 1st hour, a suppressed serum thyroid stimulating hormone (TSH) ≤ 0.2miu/l, and a normal or raised serum T3 and T4. A technetium (Tc-99m) scan was done in subjects where pain or a palpable thyroid gland was absent. A low or absent uptake associated with a raised ESR and suppressed TSH were taken to be indicative of SAT. Subjects with a history of neck irradiation, on medications known to interfere with thyroid function and women in the postpartum period were excluded from the study. Patients with acute suppurative thyroiditis were also excluded from the analysis. Serum levels of T3, T4 and TSH were measured in all subjects by electrochemiluminescence assay (Roche COBAS e411 analyzer). Normal range for T3, T4 and TSH were 1.2-3.1 nmol/L, 58.1-154.8 nmol/L and 0.27-4.2 mIU/L respectively. Intra assay coefficient of variation for T3, T4 and TSH being 4.3- 6.5%, 5.3-5.8 % and 5.6 - 6.9 % respectively.

Patients in mild cases received NSAIDs. However in more severe cases or if there was no response to NSAIDs patients received

prednisolone in a dose of 20-40 mg/day with tapering of the dose depending on the patient's response. The duration of treatment and time to normalization of TSH levels were noted. Recurrences were defined as recurrence of symptoms after complete normalization of clinical and hormonal parameters. The occurrence of permanent hypothyroidism indicated by a persistently raised TSH was also noted.

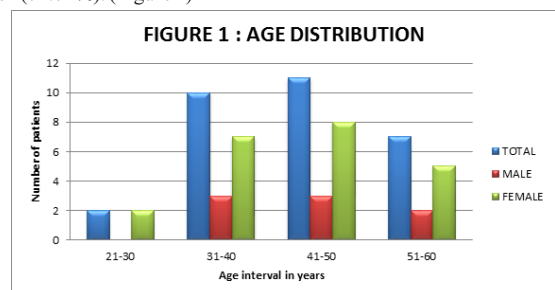
RESULTS:

A total of 30 subjects were diagnosed with subacute thyroiditis during the period of 15 months from September 2018 to December 2019. The baseline characteristics of the subjects are shown in Table 1.

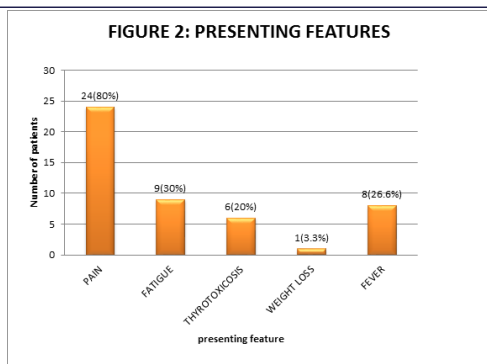
Table 1 Baseline Characteristics

1. Mean Age (years)	43.2 ± 8.40
2. Sex Ratio (F:M)	11:4
3. Mean duration of symptoms (weeks)	1.9 ± 0.86
4. Mean duration of steroid therapy (weeks)	6.23 ± 4.13
5. Mean duration to normalization of thyroid functions (weeks)	6.62 ± 2.69
6. Mean ESR (mm /hr)	69.63 ± 21.9
7. Mean T3 (nmol/l)	3.25 ± 0.81
8. Mean T4 (nmol/l)	158.67 ± 12.18
9. Mean TSH (m IU/l)	0.085 ± 0.079
10. Mean T3/T4 Ratio (ng/dl/mcg/dl)	17.16

Mean age of subjects was 43.2 ± 8.4 years with a range of 25-58 years. Out of 30 subjects, 22 (73%) were females and remaining 8 (27%) were males. The maximum number of patients (70%) were middle aged with age range of 30-50 years, with clear predominance of female sex (72.72%). (Figure 1)

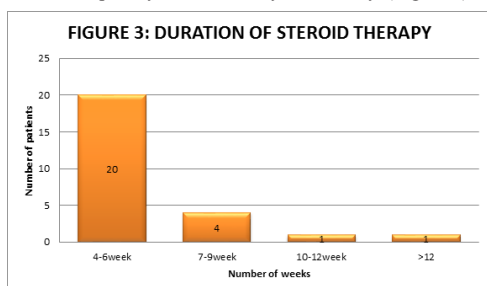


Subjects presented to the health care facility with symptoms from 3 days to 4 weeks, with mean presentation duration of 1.9 ± 0.86 weeks. Pain in the anterior neck was most common presenting symptom (n=24, 80%) followed by fatigue (n=9, 30%) and fever (n=8, 26.6%). Six subjects had symptoms of thyrotoxicosis (20%) and one subject had history of weight loss (3.3%). (Figure 2)

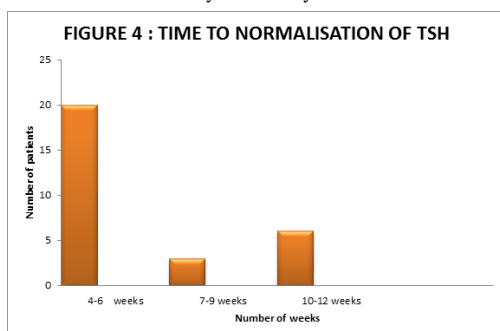


Mean ESR was 69.63 ± 21.9 mm/hr at presentation. Mean T3 was 3.25 ± 0.81 nmol/l (211.56 ng/dl), T4 was 158.67 ± 12.18 nmol/l (12.32 mcg/dl) and TSH was 0.0847 ± 0.079 m IU/l. (Table 1) Mean T3/T4 ratio was 17.16. Out of thirty, twelve (40%) subjects were having elevated T3 and T4, six (20%) subjects had isolated elevation of T4 only and one (3.3%) had isolated elevation of T3.

26 (86.6%) cases needed steroid therapy with mean duration of treatment of 6.23 ± 4.13 weeks. One patient aged 55 years was treated with prednisolone for 24 weeks. In spite of relief of symptoms, TSH remained suppressed and she again had recurrence of pain after a month and subsequently underwent thyroidectomy. (Figure 3)



Mean time duration to normalization of thyroid functions was 6.62 ± 2.69 weeks. In one patient thyroid function did not return to normal (Figure 4). On follow-up study, 3 patients (10%) developed permanent hypothyroidism and one had recurrent thyroiditis for which she underwent total thyroidectomy.



DISCUSSION:

The present study of 30 patients with SAT showed a mean age of presentation of 43.2 ± 8.4 yrs. This is consistent with several previous studies which have shown middle age to be affected more in both the sexes². We however did not note any seasonal differences. In a study from the Olmsted county of Minnesota, there was a trend towards more cases in fall and spring³. A female preponderance was seen in our study which has also been consistently reported in previous studies^{2,3,4} as is seen with most thyroid disorders. Pain was the most common presentation and was absent in only 6 (20%) patients. Tenderness in one or both lobes was present in 86.6% of cases in our study. In a study from Nepal of 122 patients with SAT, pain and swelling of the gland was reported in all patients⁴. Fever was seen in 26.6% of cases in our study which is in accordance with a large study of 852 patients of SAT from Japan where fever was seen in 28.2%⁵. In the same study symptoms of thyrotoxicosis were seen in more than 60% of patients. However in our study thyrotoxic symptoms were present in only 20% of patients concurring with 25% having symptoms of thyrotoxicosis in

the initial presentation in the study from Nepal⁴. A palpable gland with nodularity was seen in 26 patients (86.6%). In a study of 23 cases of SAT, 83% had diffuse thyroid enlargement and 17% had unilateral thyroid enlargement⁶.

The mean ESR in our study was 69.63 ± 21.9 mm/hr. A high ESR is one of the main diagnostic criteria for SAT. Apart from ESR a high neutrophil lymphocyte ratio and a high platelet lymphocyte ratio have been reported in SAT which however did not have any influence on recurrence or permanent hypothyroidism⁷. In our study the mean serum T3 was 3.25 ± 0.81 nmol/l, mean serum T4 was 158.67 ± 12.18 nmol/l and mean T3/T4 ratio was 17.16 (in ng/dl/ μ g/dl). A T3/T4 ratio of <16 has been suggested to be indicative of thyroiditis⁸. In another study of 468 patients with Graves' disease and 40 patients with SAT, the FT3/FT4 ratio was 4.62 ± 2 in patients with Graves versus 2.73 ± 0.5 in cases of SAT.

In the present study 26 patients (86.6%) needed prednisolone for relief of symptoms. The mean duration of steroid therapy was 6.23 ± 4.13 weeks. In the study of 122 patients from Nepal who were given prednisolone in a dose of 20mg/day tapered over 4 weeks, only 4 patients had persistent pain of low intensity needing continuation of therapy for another 4 weeks. However in our study 2 patients needed therapy for more than 10 weeks probably indicating a more severe inflammatory condition. Normalization of TSH with relief of symptoms occurred in the majority of our patients at 4-6 weeks. However persistent TSH elevation with permanent hypothyroidism was seen in 3 patients (10%). Various studies have reported rates of permanent hypothyroidism ranging from 15% after 28 years of follow up³ to 20%². Recurrent episodes of thyroiditis over a course of one year seen in one of our patients requiring thyroidectomy is a rare occurrence. Recurrences have been reported in 4% patients after 6-21 years in the Olmsted cohort³ and in 1.6% of patients in the Japanese cohort study⁵ where the presence of anti-thyroid antibodies was not correlated with the recurrent episodes.

CONCLUSION:

Though commonly described as a self-limiting disease, subacute thyroiditis is a cause of severe distress to patients commonly requiring steroid therapy for relief. Recurrences and permanent hypothyroidism though relatively less common must be kept in mind on long term follow up of patients.

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