

## Sub Acute Thyroiditis in a Case of West Nile Virus (WNV) Infection

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### Abstract

Sub Acute Thyroiditis is believed to be a viral associated non-immunological disease. A viral etiology has been suspected as the etiological cause of this disease, even though there is only one histological proof. We would like to describe a 70 years old woman who was admitted for investigation of Fever of Unknown Origin (FUO). She had a known goiter without any functional abnormality and after a long work-up we found that the only possible cause for her FUO is an acute infection with West Nile Virus.

### Case Report

A 70 years' old woman was admitted with a history of 6 months' fever, usually at night, accompanied with chills. She did not have weight loss or night sweats, no itching after shower, and did not have any change in bowel movement. During hospitalization she also had septic fever (more than 38°C every 3-4 days) accompanied with pain and sensitivity in the anterior side of the throat (thyroid area) which was also sensitive to palpation. On physical examination she was without any signs of distress, did not have pallor or icterus and was lying flat in bed. She had a large bilateral goiter, without any murmur on the thyroid gland. Her heart sounds were normal with only mild soft 2/6 mitral regurgitant murmur, and her lung breath sounds were normal with a normal alveolar breathing. No hepato-splenomegaly or lower extremities' pitting edema. The electrocardiogram, chest X rays and urine analysis were all normal. Hemoglobin 9.7 gr% (she was known to have iron deficiency anemia), normal TIBC, normal WBCs and PLTs counts, normal vitamin B12 and folic acid levels. Biochemistry was normal with normal kidney and liver function tests. Anti nuclear antibodies were negative, and anti ds DNA, C-ANCA and P-ANCA were all negative. Free T4 level was normal (1.62 ng/dL), but TSH was low (0.146  $\mu$ IU/ml). She had a high sedimentation rate (>80 mm 1 hour) and C Reactive Protein (CRP) was very high (>100 mg/l). Blood and urine cultures (more than 6 that were taken during fever of more than 38°C) were all negative. PCR to toxoplasma, Chlamydia psittaci and serological tests to Q fever, Rickettsia, Brucella, Cytomegalovirus (CMV), Epstein Barr virus (EBV) were all negative (IgG and IgM) as well as a negative ASLO and Rheumatic Factor. An ultra sound of the thyroid gland demonstrated 2 thyroid lobes both were enlarged, with a non uniform consistency with two (0.5 cm) hypoechoogenic nodules. A chest and abdomen computed tomography were without any pathology

(except for an enlarged multi-nodular Goiter (Figure 1). The thyroid gland was swollen with a heterogenic consistency with small "sparing" areas without any cervical lymphadenopathy (Figure 1).

Bone marrow aspiration and biopsy were normal with negative bone marrow cultures. During hospitalization she was treated with NSAID (Ibuprofen) with no relief in pain or in fever. After a few days we got 2 important laboratory results—Thyroid Peroxidase (TPO) was within normal limits and a high IgM level of West Nile Virus with a negative IgG level for WNV.

Combining together the normal TPO levels, the high CRP and the high WNV IgM level we decided that the diagnosis is most probably sub acute thyroiditis and she was treated with systemic corticosteroids with an immediate relief and disappearance of the febrile events.

### Discussion

Sub-acute thyroiditis has been associated with several viral infections, including mumps, Coxsackie, and adenoviruse [1]. All attempts (except one) to culture viruses in a thyroid tissue have failed [1,2]. Sub-acute thyroiditis has been associated with infectious mononucleosis [3] but without any histological evidence [4]. There are no reports that describe WNV as the etiological factor for sub acute thyroiditis, and we are presenting the first case report that shows an association between WNV and thyroiditis. As for the diagnosis of sub acute thyroiditis and to differentiate it from auto immune thyroiditis –there is epidemiological evidence that patients with sub acute thyroiditis have higher serum CRP levels compared with patients with autoimmune thyroiditis [5].

Our patient had very high CRP level, normal TPO level and high IgM antibodies against WNV. Our patient responded to corticosteroids and she is now 3 months following treatment with no complaints of tenderness in the thyroid area or systemic fever at night.

We believe that since our area is an endemic area for WNV—it could be that she was infected by this virus and developed symptoms and



**Figure 1:** Both lobes of the thyroid gland are swollen, heterogeneous texture without defined lesion. Blurring margins of the gland.

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signs of sub acute thyroiditis. This is the first case report that describes sub acute thyroiditis due to WNV infection.

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