Annals of Thyroid Research

Open Access

Austin Publishing Group

Case Report

Antithyroid Arthritis Syndrome: One Case Report

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Received: August 18, 2020; **Accepted:** September 03, 2020; **Published:** September 10, 2020

Abstract

Antithyroid arthritis syndrome is a rare adverse effect with a series of symptoms of fever, arthralgia, myalgia and arthritis. We report a case of a patient with hyperthyroidism, who presented with Antithyroid arthritis syndrome after being treated with methiamazole and describe the diagnosis, treatments, follow-up of the case. Our aim is to increase awareness of this uncommon but life-threatening adverse effect when diagnosing patients who develop arthritis after being treated with Antithyroid in clinical practice.

Keywords: Methiamazole; Hyperthyroidism; Antithyroid arthritis syndrome

Introduction

Hyperthyroidism is a common disease in the world, antithyroid drugs like methiamazole and propylthiouracil are commonly used .One of the rare side effects of class of this medications is Antithyroid arthritis syndrome which has been reported in the case described below

Case Report

A man aged 30 years presented to our hospital with a 4-day history of arthralgia. One month prior, he was diagnosed with hyperthyroidism and was started on methiamazole 10mg twice a day along with propranolol 10mg three times per day. This treatments partially alleviated his symptoms until 4 days prior to the aforementioned presentation.

On arriving at our department, he disclosed sharp, constant pain in his hands, shoulders, ankle that worsened with touch and movement.4 days prior, he was discontinued methiamazole and the pain slightly relieved. He reported that he had no fever, oral ulceration and photosensitivity. Family history was significant for systemic lupus erythematosus in his aunt, rheumatoid arthritis in his uncle, there was no family history of thyroid disease. The physical examination reveled the body temperature of 36.5, pulse of 108 beats per minute. Thyroid and its eye signs examinations revealed unremarkable. He exhibited hands tremor. Cardiopulmonary examination was abnormal only for sinus tachycardia. Musculoskeletal examination demonstrated swelling and tenderness, redness and warmth in multiple joints, including hands, shoulders and right ankle. No joint deformities remain. The laboratory results showed Thyroid-Stimulating Hormone (TSH) 0 (90.38-5.33) mIU/L, Free T4 (FT4) 25.42 (7.64-16.03) pmol/L, and Free T3 (FT3) 6.86 (3.09-7.42) pmol/L. Erythrocyte Sedimentation Rate (ESR) was 33mm/h. No abnormality was found in hemanalysis and urinalysis. The patient's biochemical profiles revealed a normal liver function and renal function. Immune system examinations demonstrated positive results for anticardiolipin antibody and Anti-Nuclear Antibody (ANA) with a titre of <1:320. Anti-Neutrophil Cytoplasmic Antibody (ANCA) and antidouble-stranded DNA antibody negative. With full knowledge of his condition and risks, the patient and his families decided to take medicine. He was started on prednisone 28mg oral tablets, once a day and propylthiouracil 50mg twice a day. During his hospital stay, he showed clinical improvement and discharged.

One month after hospitalization, the patient was seen in outpatient endocrine clinical, the laboratory results showed TSH 0.025uIU/mL (0.34-5.6), FT4 8.62pmol/L(7.9-14.4) and FT3 4.61pmol/L (3.8-6.0). ESR was 2mm/h (0-15), C Creative Protein (CRP) 4.43mg/L(0-8), ANA negative. We reduced the dosage of prednisone gradually, every 3 weeks by 4mg. Outpatient follow-up for 3 months, the patient did not appear joint pain, and ANA continued negative.

Discussion

The management of hyperthyroidism including antithyroid drugs, radioactive iodine and surgery therapy. The main antithyroid drugs are thionamides, such as propylthiouracil, methiamazole and carbimazole. carbimazole is not an active substance, it has to be decarboxylated to methiamazole in the liver. The side effects are rashes, toxic liver diseases, vasculitis, agranulocytosis and antithyroid arthritis syndrome, antithyroid arthritis syndrome is a rare adverse effect [1]. A review noted that adverse effects of methiamazole was lower than propylthiouracil significantly [2]. As for Cooper, side effects of methiamazole are dose-dependent, but there is no relationship for propylthiouracil [3].

According to literatures, we summarize the antithyroid arthritis syndrome as (1) a patient was diagnosed hyperthyroidism; (2) who developed arthritis after treating with antithyroid drugs; (3) who noted the typical symptom of migratory muti-joint pain, (4) occurred within 2-3 months secondary to the use of antithyroid drugs; (5) the symptoms resolved shortly or relieved after discontinuing drug; (6) No joint deformities remain; (7) No past history of arthritis [4-6]. Given that the present case developed arthritis 1 month after the patient started receiving methiamazole, we diagnosed Antithyroid arthritis syndrome. Owning to concern for his family history and the results of ANA, anticardiolipin antibody at the early time, systemic lupus erythematosus can not be completely excluded. He was symptom free while on propylthiouracil and tapering doses of prednisone, and his reexamination revealed negative results of antibody, including ANA, ANCA, anticardiolipin antibody. we excluded the diagnosis of drug-induced lupus.

Little is known regarding the mechanism of this syndrome, although some researchers insisted that the pyrimidine group in antithyroid drugs destroys the structure of DNA, and the mercaptan

Citation: Qing L and Qiping S. Antithyroid Arthritis Syndrome: One Case Report. Annals Thyroid Res. 2020; 6(2): 270-271.

group serves as hapten and induces auto-antibody production, triggering an abnormal immune function [7-9]. Other researchers claimed that the copper affects glutathione metabolism and induces the release of interleukins when binds to antithyroid drugs, which can cause synovial inflammation [10].

The first step of this syndrome is discontinuing antithyroid drugs, due to the cross activity between different drugs was up to 50% [11-13]. In order to moderate the symptoms, non-steroidal anti-inflammatory drugscan be used [7,9]. It is advisable to consider alternative treatment like radioactive iodine and thyroidectomy. Our patient was discontinued methiamazole and switched to propylthiouracil, fortunately, he can tolerant propylthiouracil and have no further side effects.

Conclusion

The present case highlights the importance of recognizing antithyroid arthritis syndrome as a side effect of antihtyroid medicines. It is essential for clinicians to be aware of this condition. Once the diagnosis is made, it requires discontinuing the drug which can result the symptom immediately. Under the premise of close observation, propylthiouracil can be considered.

Acknowledgment

I would like to give my sincere gratitude to my teacher Dr.Shi, my tutor who gave me great help and guidance.

Funding

Youth Fund Project of National Nature Science Foundation of China (NO.31500742;2015A030313312).

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