

## Graves' disease associated with rheumatoid arthritis

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Dear Editor,

Graves' disease (GD) is an autoimmune endocrine disease characterized by hyperthyroidism, exophthalmia, and myxedema, in the presence of autoantibodies against thyrotropin stimulating hormone receptor (TRAb) [1].

Some autoimmune diseases are associated with GD, such as vitiligo, diabetes mellitus type 1, and Hashimoto disease [2]. Regarding this latter autoimmune thyroid disease, the literature series varies from 0.5 to 27% [3]. On the other hand, there are a few previous cases of GD associated with rheumatoid arthritis. The frequency of this rare association varies from 0.6 to 0.84% in the United States to 1.0 to 1.6% in European countries [4,5]. Analysis of these cases shows that only 101 cases were described with this rare association of GD and RA [3]. Herein, we add a new case of this unique autoimmune association.

A 34 years old male patient previously healthy was diagnosed with GD in 2018. He had anxiety, tachycardia, sweating, weight loss, and exophthalmia. He received methimazole 20mg/day and propranolol 40mg/day. After 6 months of GD diagnosis, he started polyarthritis of his hands (all metacarpophalangeal and proximal interphalangeal wrists) associated with morning stiffness and reduced daily activities. He was treated with prednisone 20mg/day and hydroxychloroquine 400mg/day. He came to our private clinic; we confirmed the polyarthritis. Laboratory tests showed TSH of 0.09 mcg/mL [reference

value (rv): 0.48-4.5 mcg/mL], free T4 1.31 ng/dL (rv: 0.89-1.76 ng/dL), positive TRAb, C-reactive protein of 48mg/L [rv: < 3 mg/L], and positive rheumatoid factor 32 IU/mL (nv: < 14IU/mL). Anti-CCP was negative. 25-OH vitamin D was 22.4 ng/mL (rv: > 30ng/mL). Antinuclear antibodies were positive with a titer of 1/1280, positive anti-Ro/SS-A, and anti-La/SS-B. Anti-dsDNA, anti-Sm, were negative, and complement levels were within the normal range. He denied xerostomia and xerophthalmia; Schirmer and Rose Bengal were negative. We initiated methotrexate 15mg/week plus folic acid 5mg/week, reduced prednisone to 10mg/day, and vitamin D3 50,000IU/week was added. He evolved with RA improvement, reduced polyarthritis (Figure 1) and CRP to 5mg/L, and normalization of vitamin D.

It is the first case of a patient with GD who developed RA described in the literature. In this regard, genetic and environmental factors are responsible for the onset of two autoimmune diseases. In fact, genes like HLA or PTPN22 are linked to these two autoimmune diseases [6]. Regarding environmental factors, smoking and low levels of vitamin D were identified. Our group demonstrated hypovitaminosis D in a large cohort of several autoimmune diseases, in which we found mean vitamin D levels of  $11.0 \pm 5.8$  ng/mL in patients with autoimmune thyroid diseases and  $9.3 \pm 4.4$  in patients with rheumatoid arthritis [7].

Conflicts of interest

None

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**Figure 1.** Hand arthritis showing evident edema of the 2<sup>nd</sup> and 3<sup>rd</sup> bilateral metacarpophalangeal, left wrist, and 2<sup>nd</sup> right and 3<sup>rd</sup> left proximal interphalangeal arthritis.

