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Case Report

Concurrent Graves' Ophthalmopathy and Sjögren's Syndrome: A Case Report

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ABSTRACT

Graves' ophthalmopathy (GO) is the most common extrathyroidal manifestation of Graves' disease, while Sjögren's syndrome (SS) is a systemic autoimmune disease characterized by exocrine gland dysfunction. Although both conditions share autoimmune mechanisms, their coexistence remains underrecognized. We report a case of a woman presenting with progressive bilateral proptosis, ocular discomfort, xerophthalmia, and xerostomia. Ophthalmologic examination revealed bilateral proptosis with preserved visual acuity and normal intraocular pressure. Thyroid function tests demonstrated suppressed thyroid-stimulating hormone (TSH) and elevated free thyroxine (FT4), while orbital imaging showed bilateral extraocular muscle enlargement and exophthalmos, supporting the diagnosis of Graves' ophthalmopathy. In addition, severe dry eye symptoms, reduced Schirmer test values, and xerostomia raised suspicion of coexisting Sjögren's syndrome overlap. The patient demonstrated gradual clinical improvement following multidisciplinary management and systemic therapy. This case highlights the diagnostic challenge posed by overlapping ocular manifestations, particularly dual-mechanism dry eye resulting from both exposure-related and aqueous-deficient mechanisms. Early recognition of autoimmune overlap conditions is essential to optimize diagnosis, multidisciplinary management, and long-term outcomes.

Introduction

Graves' disease (GD) is the most common cause of hyperthyroidism in iodine-replete populations, with a reported prevalence of approximately 2% in women and 0.5% in men[(1)]. Graves' ophthalmopathy (GO), also known as thyroid eye disease, is the major extrathyroidal manifestation of GD.

In the meta-analysis by Chin et al., which included 57 studies and 26,804 patients, the pooled prevalence of GO among patients with GD was 40%, with regional estimates of 38% in Europe, 44% in Asia, and 35% in Southeast Asia(2). Clinically, GO commonly presents with proptosis, eyelid retraction, diplopia, and ocular surface symptoms, including dry-eye-related manifestations[3,4].Primary Sjögren's syndrome (SS), in contrast, is a chronic systemic autoimmune disease characterized by lymphocytic infiltration of the lacrimal and salivary glands, resulting in xerophthalmia and xerostomia. In the systematic review by Qin et al., the pooled prevalence of primary SS was 60.82 per 100,000 inhabitants overall and 43.03 per 100,000 in population-based studies, with a female-to-male prevalence ratio of 10.72[5].

The association between autoimmune thyroid disease and Sjögren's syndrome has increasingly been recognized as part of a broader polyautoimmune spectrum[6]. Previous studies have demonstrated a significantly increased prevalence of thyroid disease in patients with SS, while patients with Graves' disease, particularly those with GO, appear to have a higher risk of developing concomitant autoimmune disorders, including SS[7–9]. In a nationwide retrospective cohort study, Sohn et al. reported that patients with GO had a significantly higher risk of incident SS compared with patients with Graves' disease without ophthalmopathy (adjusted hazard ratio 1.89, 95% CI 1.30–2.74)[9]. Although the coexistence of GO and SS is biologically plausible, reports specifically describing concurrent presentation of both conditions remain limited.

This overlapping condition is clinically important because ocular surface disease is highly prevalent in GO and may substantially mimic or coexist with the aqueous-deficient dry eye observed in SS[3]. Consequently, distinguishing exposure-related dry eye secondary to proptosis from autoimmune lacrimal gland dysfunction may be diagnostically challenging, potentially leading to delayed recognition of overlapping autoimmune disease and suboptimal management.

Therefore, this case report aims to describe the clinical presentation, diagnostic evaluation, and multidisciplinary management of coexisting Graves' ophthalmopathy and Sjögren's syndrome, with particular emphasis on overlapping ocular surface manifestations and the concept of dual-mechanism dry eye.

Case Illustration

A woman presented to the ophthalmology clinic on September 30, 2025, with a chief complaint of gradually progressive bilateral eye protrusion accompanied by excessive tearing and ocular discomfort. The patient reported that both eyes had become increasingly prominent over the past one year, associated with intermittent redness, itching, and a burning sensation. She also described a feeling of heaviness in both eyes and visual fatigue, particularly during prolonged reading. Occasional dizziness after visual strain was noted. In addition, the patient complained of dryness of the eyes and mouth, suggestive of systemic involvement. There was no history of ocular trauma. The patient had no prior history of corrective lens use and had not undergone any ophthalmologic procedure before presentation.

Ophthalmologica Indonesiana
Vol. 52 No. 2 2026, 98-106

On initial general physical examination, the patient was in good general condition with stable vital signs. Blood pressure was 127/72 mmHg, pulse rate 93 beats per minute, respiratory rate 20 breaths per minute, and body temperature 36°C. Body mass index was 23.88 kg/m², indicating normal nutritional status. No other significant systemic abnormalities were identified.

Initial ophthalmological evaluation revealed best-corrected visual acuity of 6/9 in both eyes. Bilateral proptosis was observed clinically. Intraocular pressure measured 18–19 mmHg. Anterior segment examination showed clear cornea, deep and quiet anterior chamber, and normal conjunctiva. Pupils were round, centrally located, with a diameter of approximately 3 mm and normal light reflexes. Fundus examination revealed clear media, well-defined optic disc margins with a cup-to-disc ratio of 0.3, normal macular reflex, and retinal vessels with an arteriovenous ratio of approximately 2/3. Extraocular movements were full without restriction.

Subsequent follow-up examinations on October 31, 2025, and December 31, 2025, demonstrated persistent proptosis with relatively stable visual acuity (6/9 OU) and intraocular pressure ranging between 16–17 mmHg. Tear function testing revealed reduced Schirmer values (4 mm in the right eye and 3 mm in the left eye), consistent with significant aqueous tear deficiency. These findings, combined with systemic complaints of xerostomia, raised suspicion of an underlying autoimmune overlap syndrome.

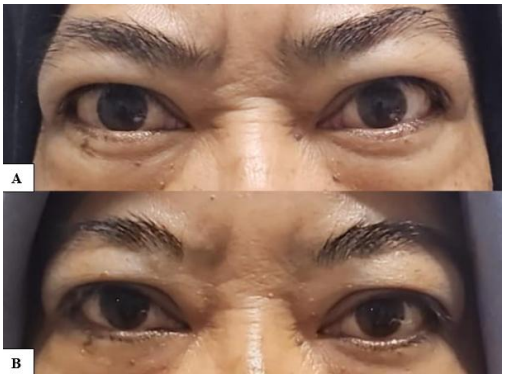

Figure 1. Serial clinical photographs of facial involvement following repeated methylprednisolone injections.
A. Clinical appearance following dexamethasone injection at week 1, showing early treatment response.
B. Clinical appearance following dexamethasone injection at week 12, demonstrating sustained and improved response over time.

The patient was managed with a multidisciplinary approach, including ocular lubrication therapy and systemic evaluation for autoimmune disease. During follow-up on February 6, 2026, and February 24, 2026, gradual clinical improvement was noted. The patient reported reduced ocular discomfort, decreased tearing, and less visual fatigue. On examination, the degree of proptosis appeared reduced clinically, with improvement in eyelid tension and ocular surface condition. Visual acuity improved to 6/9 in the right eye and 6/7.5 in theleft eye, and intraocular pressure remained within normal limits (20–21 mmHg). The anterior segment remained quiet, and no new abnormalities were observed.

At the most recent follow-up on March 17, 2026, the patient showed further symptomatic relief, particularly in terms of ocular dryness and discomfort. Clinically,

proptosis was less prominent compared to initial presentation, and the ocular surface appeared more stable. Tear deficiency persisted but was better controlled with therapy. Further laboratory and imaging investigations were performed to support the clinical diagnosis and to evaluate systemic involvement.

Hematological examination revealed a hemoglobin level of 13.3 g/dL, hematocrit 40.4%, and leukocyte count of 15.2 ×10³/µL, indicating mild leukocytosis. Differential count showed neutrophil predominance. Platelet count was within normal limits. Liver and renal function tests were unremarkable, with AST 15 U/L, ALT 24 U/L, blood urea nitrogen 9 mg/dL, and creatinine 0.63 mg/dL. Random blood glucose was 94 mg/dL. Lipid profile demonstrated mildly elevated triglycerides (217 mg/dL), while total cholesterol and LDL levels remained within acceptable limits. Electrolyte levels were within normal range.

Thyroid function tests showed a suppressed thyroid-stimulating hormone (TSH) level of 0.03 µIU/mL with elevated free thyroxine (FT4) of 1.74 ng/dL, consistent with hyperthyroidism. On subsequent follow-up evaluation approximately one month later, thyroid function showed improvement with TSH rising to 0.38 µIU/mL and FT4 decreasing to 1.16 ng/dL, indicating a response to therapy.

Ultrasonographic examination of the thyroid performed on November 7, 2025, demonstrated features consistent with Graves' disease accompanied by multiple complex cystic lesions. A repeat evaluation on February 24, 2026, confirmed persistent findings of Graves' disease with increased vascularity (peak systolic velocity 12–15 cm/s), supporting ongoing autoimmune thyroid activity.

Orbital imaging using non-contrast MSCT scan performed on October 31, 2025, revealed bilateral exophthalmos with anterior displacement of the globes measuring approximately 2.4 cm from the interzygomatic line. There was thickening of the extraocular muscles, particularly the superior and lateral rectus muscles, consistent with thyroid-associated orbitopathy. The optic nerves appeared within normal limits. No retrobulbar mass was identified. Additional findings included bilateral inferior turbinate hypertrophy and deviation of the nasal septum. The thyroid gland appeared enlarged with multiple hypodense nodular lesions, suggestive of multinodular goiter.

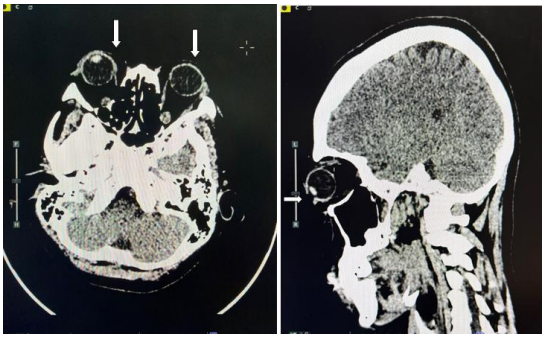

Figure 3. Computed tomography (CT) scan findings of the head and orbit.
CT imaging revealed bilateral exophthalmos consistent with Graves' ophthalmopathy.
Arrows demonstrate symmetric thickening of the extraocular muscles.

Follow-up orbital imaging demonstrated relative stability of extraocular muscle hypertrophy without evidence of progression. Clinically, these radiological findings correlated with gradual improvement

Ophthalmologica Indonesiana
Vol. 52 No. 2 2026, 98-106

in proptosis observed during follow-up examinations. Overall, the combination of suppressed TSH, elevated FT4, ultrasonographic features of Graves' disease, and orbital imaging demonstrating bilateral exophthalmos with extraocular muscle enlargement strongly supported the diagnosis of Graves' ophthalmopathy. In conjunction with chronic xerophthalmia, xerostomia, and markedly reduced Schirmer test values (4 mm OD and 3 mm OS), these findings raised strong suspicion for a coexisting Sjögren's syndrome overlap and dual-mechanism dry eye. ANA test were found positive in laboratory examination and strongly suggested an autoimmunity such as Sjögren's syndrome. However, Anti-SSA/Ro Antibodies were not obtained. Definitive classification according to the 2016 ACR/EULAR criteria could not be fully established because specific serologic autoantibody testing and salivary gland biopsy were not available at the time of evaluation.

Table 1. Chronological Timeline of Clinical Course

Date	Clinical Events and Findings
September 30, 2025	Initial presentation with bilateral proptosis, ocular discomfort, xerophthalmia, and xerostomia
October 31, 2025	Orbital MSCT demonstrated bilateral exophthalmos and extraocular muscle enlargement consistent with Graves' ophthalmopathy
November 7, 2025	Thyroid ultrasonography supported Graves' disease
December 31, 2025	Schirmer test showed reduced tear production (4 mm OD, 3 mm OS), raising suspicion of autoimmune sicca overlap
February 2026	Gradual improvement in proptosis and ocular discomfort following multidisciplinary management
March 17, 2026	Further symptomatic relief with improved ocular surface condition and thyroid function

Discussion

The coexistence of Graves' ophthalmopathy (GO) and Sjögren-related autoimmune sicca manifestations represents an important example of polyautoimmunity. Previous studies have demonstrated that autoimmune thyroid disease frequently coexists with systemic autoimmune disorders, including Sjögren's syndrome, supporting a shared immunological background rather than a coincidental occurrence[10]. In the present case, chronic xerophthalmia, xerostomia, and markedly reduced Schirmer test values in the setting of Graves' ophthalmopathy raised strong suspicion for an overlapping autoimmune sicca process.

From a pathophysiological standpoint, both GO and Sjögren-related autoimmune disease involve dysregulated immune responses characterized by chronic inflammation, autoantibody production, and B-cell activation[11,12]. Graves' ophthalmopathy is primarily associated with autoimmune activation against the thyroid-stimulating hormone receptor (TSHR), leading to orbital fibroblast activation and extraocular

muscle enlargement, whereas Sjögren syndrome is characterized by lymphocytic infiltration of the lacrimal and salivary glands, resulting in impaired tear production and sicca manifestations[11,12].

Clinically, this overlap presents a significant diagnostic challenge, particularly in the evaluation of dry eye symptoms. Ocular surface disease in Graves' ophthalmopathy is commonly associated with exposure-related evaporative dry eye caused by proptosis, eyelid retraction, and incomplete blinking. In contrast, Sjögren syndrome primarily causes aqueous-deficient dry eye secondary to autoimmune lacrimal gland dysfunction. In the present case, persistent xerophthalmia, xerostomia, and markedly reduced Schirmer test values supported the presence of dual-mechanism dry eye, emphasizing the importance of considering overlapping autoimmune sicca manifestations in patients with Graves' ophthalmopathy who present with disproportionate ocular surface symptoms[12].

Unlike many previously reported cases, the present report highlights the coexistence of Graves' ophthalmopathy with objective tear deficiency and persistent sicca symptoms, emphasizing the clinical challenge of recognizing dual-mechanism dry eye in an autoimmune overlap setting. Furthermore, this case provides a relatively comprehensive diagnostic evaluation integrating clinical, laboratory, and radiological findings. Thyroid function tests demonstrated suppressed TSH and elevated FT4 levels consistent with hyperthyroidism, while orbital imaging revealed bilateral exophthalmos with extraocular muscle enlargement, which are characteristic features of Graves' ophthalmopathy[13]. Serial follow-up examinations also demonstrated gradual improvement in proptosis and ocular discomfort following therapy, highlighting the importance of systemic disease control in the management of orbital manifestations[14].

From a diagnostic perspective, differentiating exposure-related dry eye associated with Graves' ophthalmopathy from aqueous-deficient dry eye related to Sjögren syndrome may be clinically challenging. In the present case, persistent sicca symptoms accompanied by markedly reduced Schirmer test values suggested tear deficiency beyond exposure-related ocular surface disease alone. ANA Test were also found positive strongly suggested an autoimmunity. However, definitive classification according to the 2016 ACR/EULAR criteria could not be fully established because serologic specific autoantibody testing and salivary gland biopsy were unavailable at the time of evaluation[15].

Management of patients with overlapping Graves' ophthalmopathy and Sjögren-related sicca manifestations requires a multidisciplinary approach involving ophthalmology, endocrinology, and rheumatology. Treatment should address both exposure-related ocular surface disease and aqueous tear deficiency through ocular lubrication, systemic disease control, and monitoring for autoimmune progression. In our patient, improvement in thyroid function was accompanied by gradual reduction in proptosis and ocular discomfort during follow-up[16]. Patients with persistent dry eye symptoms despite adequate control of thyroid eye disease may benefit from further evaluation for autoimmune sicca manifestations and individualized ocular surface management.

The temporal relationship between Graves' ophthalmopathy and Sjögren-related manifestations remains incompletely understood. In the present case, concurrent ocular and sicca symptoms may reflect shared autoimmune activation within a broader polyautoimmune spectrum. This case also highlights the importance of considering Sjögren-related autoimmune sicca overlap in patients with Graves' ophthalmopathy who present with persistent or disproportionate dry eye symptoms, particularly when accompanied by xerostomia and objective tear deficiency. Early recognition of overlapping autoimmune features may improve diagnostic accuracy, multidisciplinary management, and long-term ocular outcomes.

Conclusion

This case highlights a rare coexistence of Graves' ophthalmopathy and Sjögren's syndrome, representing a clinically significant form of polyautoimmunity. The overlapping ocular manifestations, particularly dry eye symptoms, pose a diagnostic challenge due to the coexistence of both exposure-related and aqueous-deficient mechanisms. Comprehensive evaluation integrating clinical findings, laboratory results, and imaging is essential to establish an accurate diagnosis. The favorable clinical course observed in this case, including improvement in proptosis and ocular surface symptoms, underscores the importance of timely and appropriate management. Furthermore, this case emphasizes the need for a multidisciplinary approach involving ophthalmology, endocrinology, and rheumatology to optimize patient outcomes. Clinicians should maintain a high index of suspicion for concomitant autoimmune conditions in patients with Graves' disease who present with persistent or disproportionate dry eye symptoms, as early recognition may significantly impact diagnostic accuracy and therapeutic strategies.

Declarations

Statement on the Use of Artificial Intelligence

Artificial Intelligence was used to assist in drafting and refining the declarations section. Any additional use of artificial intelligence in preparing the manuscript should be disclosed separately.

Author contribution statement

Banu Aji Dibyasakti contributed to the conceptualization of the case report, data collection and analysis, manuscript preparation and revision, and final approval of the manuscript. Nikolaus Erik Darmawan contributed to data collection and analysis and manuscript preparation. Safirah Khairuna contributed to data collection and analysis and manuscript preparation.

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Conflict of interest

The authors declare no financial or non-financial conflicts of interest related to this case report or its publication.

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