OXFORD

Oxford Medical Case Reports, 2023, **1**, 38–40
https://doi.org/10.1093/omcr/omac155
Case Report

A rare case of scleritis and multiple rheumatoid pulmonary nodules associated with seronegative rheumatoid arthritis

Fumikazu Sato [1], Takahiro Yamano[1], Yoshimi Manbo[2], Kimikazu Sakaguchi[2], Kaori Yamaguchi[1] and Taito Miyake[1,*]

[1]Department of Nephrology and Rheumatology, Koseiren Takaoka Hospital, Takaoka, Toyama, Japan
[2]Department of Ophthalmology, Koseiren Takaoka Hospital, Takaoka, Toyama, Japan

*Correspondence address. Department of Nephrology and Rheumatology, Koseiren Takaoka Hospital, Takaoka, Toyama 933-8555, Japan. Tel: 81-766-21-3930; Fax: 81-766-24-9509; E-mail: taito06090713@yahoo.co.jp

Abstract

Seronegative rheumatoid arthritis (RA) is less likely to have extra-articular manifestations than seropositive RA. An 80-year-old man with polyarthritis was diagnosed with seronegative RA in which rheumatoid factors and anti-cyclic citrullinated peptides were not detected. He had multiple pulmonary nodules that diminished in size following treatment for RA, leading to the diagnosis of pulmonary rheumatoid nodules. During his treatment course, he developed scleritis, which could have resulted in blindness. As oral steroids did not improve his condition, topical steroid injections were administered, and his symptoms gradually improved. Here, we present a case of seronegative RA with an unusual combination of extra-articular manifestations: rheumatoid pulmonary nodules and scleritis.

INTRODUCTION

Seronegative rheumatoid arthritis (RA) has a generally good prognosis with few extra-articular symptoms, such as rheumatoid nodules and scleritis [1]. RA patients with scleritis and rheumatoid nodules are more likely to be positive for rheumatoid factor (RF) and anti-cyclic citrullinated peptide (CCP) antibodies than those with seronegative RA [2, 3]. Here, we report a case of scleritis and multiple rheumatoid pulmonary nodules associated with seronegative RA.

CASE REPORT

An 80-year-old man was diagnosed with wrist and knee pain 2 years ago and was treated by a family care physician. Before 1 year, computed tomography (CT) revealed multiple pulmonary nodules, and the patient underwent transbronchial lung biopsy (TBLB), which showed no evidence of tuberculosis, fungus, bacterial infection, vasculitis or malignancy. After 1 year, he was referred to our department following new onset of fever and finger joint pain.

He had symmetric polyarthritis with active synovitis affecting both the metacarpophalangeal and proximal interphalangeal joints (> 12 joints). Laboratory findings were negative for RF and anti-CCP antibodies, but serum C-reactive protein levels were elevated. The patient fulfilled the classification criteria of the 2010 American College of Rheumatology/European League Against Rheumatism and was diagnosed with seronegative RA. We performed TBLB for pulmonary nodules again; however, it did not reveal any findings suggesting malignancy and infection. The pulmonary nodules diminished after the treatment with prednisolone (PSL) 15 mg/day and methotrexate 12 mg/week for seronegative RA (Fig. 1). Therefore, we speculated that these were rheumatoid nodules.

The patient complained of pain in both eyes associated with redness 2 months post-treatment. The patient had conjunctival injection (Fig. 2), and optical coherence tomography showed retinal edema and diffuse thickening of the choroid (Fig. 3). Furthermore, extravascular leakage was observed by fundus fluorescein angiography (Fig. 4). Consequently, the patient was diagnosed with RA-associated scleritis complicated by uveitis and retinal vasculitis. Steroid eye drops were prescribed and the oral PSL dose was increased to 40 mg; however, the retinal edema worsened. We administered sub-Tenon's triamcinolone acetonide (STTA) injection, which gradually improved his scleritis. Thereafter, the PSL dosage was tapered without relapse.

DISCUSSION

In the present case, the patient had scleritis and pulmonary rheumatoid nodules associated with a seronegative RA. Scleritis is a rare extra-articular manifestation of RA with an incidence of 2% [4]. Scleritis can be divided into anterior and posterior scleritis. Furthermore, anterior scleritis can be classified into three types; nodular, diffuse and necrotising. Our patient had diffuse anterior and posterior scleritis with uveitis and retinal edema. Scleral inflammation can involve the uvea and retina, leading to occlusion of the retinal vessels and optic edema [5]. If posterior

Received: March 25, 2022. **Revised:** October 12, 2022. **Accepted:** December 14, 2022

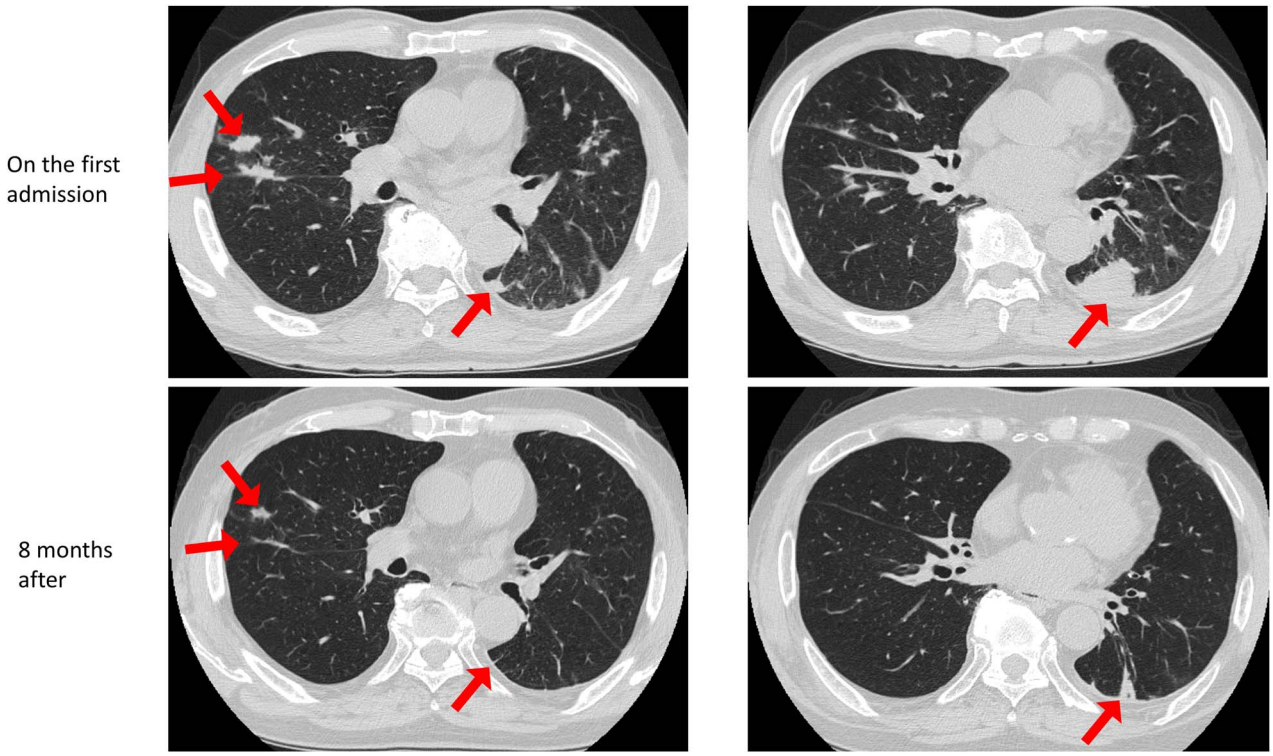

Figure 1. Chest CT showing multiple pulmonary nodules (red arrows) on the first admission (**a**). The pulmonary nodules decreased in size (**b**), 8 months after rheumatoid arthritis treatment.

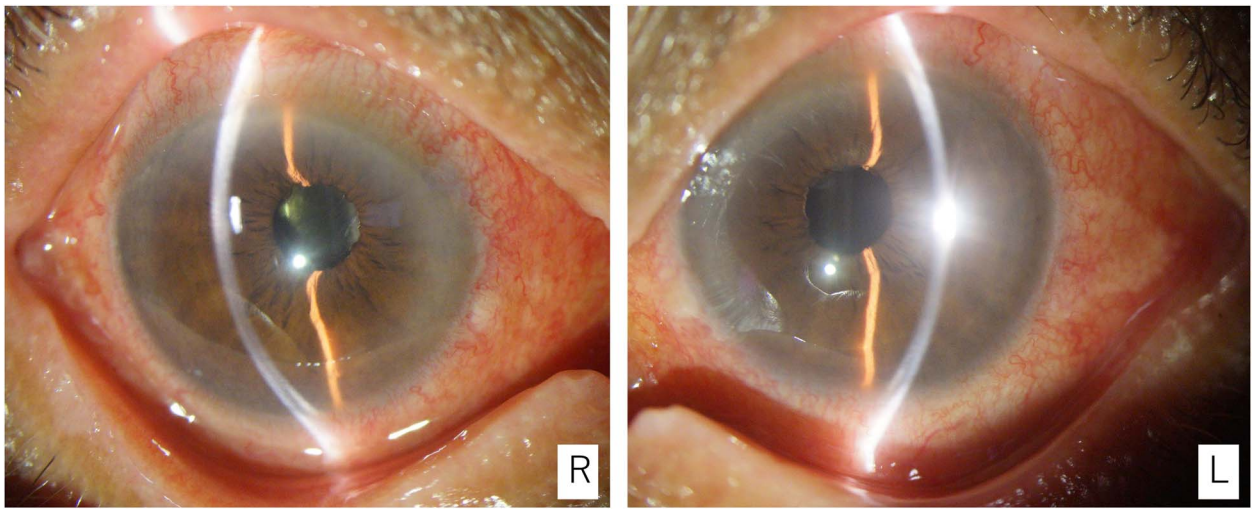

Figure 2. Slit-lamp photograph showing scleritis in his right (R) and left (L) eye.

scleritis without necrotising scleritis does not improve with systemic administration of steroids, then topical steroids (such as STTA) should be considered [6]. In our case, the posterior scleritis, which did not improve with oral steroids, was successfully treated with STTA injections.

Rheumatoid nodules are common extra-articular manifestations of RA. However, pulmonary rheumatoid nodules are unusual, occurring in less than 1% of RA cases [7]. Differentiating rheumatoid nodules from other diseases, particularly malignancies, is challenging. Koslow reported six CT features more commonly associated with pulmonary rheumatoid nodules than with malignant tumors: ≥4 nodules, peripheral location, cavitation, satellite nodules, smooth border and subpleural rind [3]. Our patient had three CT findings (≥4 nodules, peripheral location and satellite nodules), which indicated that rheumatoid nodules were more likely than malignancy. TBLB yielded no specific findings in the present case; however, we speculated that the pulmonary nodules were rheumatoid nodules based on clinical symptoms, CT findings and clinical course.

To the best of our knowledge, there have been no other case reports of seronegative RA with pulmonary rheumatoid nodules and scleritis. The relationship between seronegative RA and extra-articular manifestations has not been fully elucidated. Case reports on extra-articular manifestations of seronegative RA are

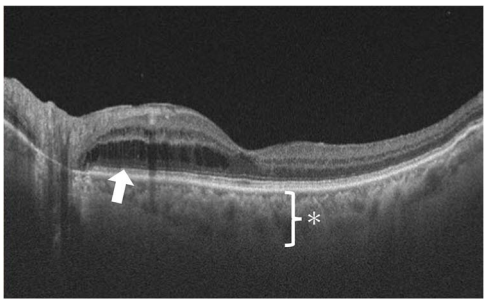

Figure 3. Retinal edema (white arrow) and diffuse thickening of the choroid (asterisk) at optical coherence tomography in his right eye.

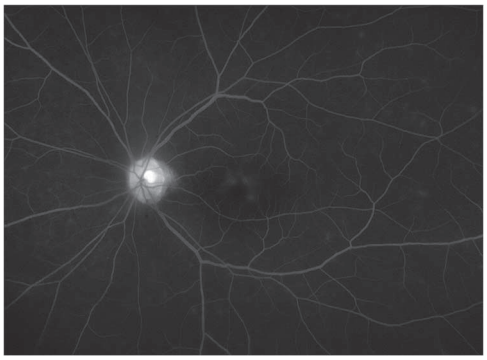

Figure 4. Fundus fluorescein angiography in the venous phase showing diffuse extravascular leakage in his right eye.

scarce, and we hope that the accumulation of cases will lead to further understanding of seronegative RA.

ACKNOWLEDGMENTS

None.

CONFLICT OF INTEREST STATEMENT

None declared.

FUNDING

None declared.

ETHICAL APPROVAL

Ethical approval was not required based on the Journal Policies.

CONSENT

The patient provided written informed consent prior to the inclusion of his data in this report.

GUARANTOR

F.S. is the guarantor for this manuscript.

REFERENCES

1. Smolen JS, Landewé RBM, Bijlsma JWJ, Burmester GR, Dougados M, Kerschbaumer A *et al.* EULAR recommendations for the management of rheumatoid arthritis with synthetic and biological disease-modifying antirheumatic drugs: 2019 update. *Ann Rheum Dis* 2020;**79**:685–99. https://doi.org/10.1136/annrheumdis-2019-216655.
2. Caimmi C, Crowson CS, Smith WM, Matteson EL, Makol A. Clinical correlates, outcomes, and predictors of inflammatory ocular disease associated with rheumatoid arthritis in the biologic era. *J Rheumatol* 2018;**45**:595–603. https://doi.org/10.3899/jrheum.170437.
3. Koslow M, Young JR, Yi ES, Baqir M, Decker PA, Johnson GB *et al.* Rheumatoid pulmonary nodules: clinical and imaging features compared with malignancy. *Eur Radiol* 2019;**29**:1684–92. https://doi.org/10.1007/s00330-018-5755-x.
4. Promelle V, Goeb V, Gueudry J. Clinical medicine rheumatoid arthritis associated episcleritis and scleritis: an update on treatment perspectives. *J Clin Med* 2021;**10**:2118. https://doi.org/10.3390/jcm10102118.
5. Dutta Majumder P, Agrawal R, McCluskey P, Biswas J. Current approach for the diagnosis and management of noninfective scleritis. *Asia Pac J Ophthalmol (Phila)* 2020;**10**:212–23. https://doi.org/10.1097/APO.0000000000000341.
6. Abdel-Aty A, Gupta A, del Priore L, Kombo N. Management of noninfectious scleritis. *Ther Adv Ophthalmol* 2022;**14**:1–12. https://doi.org/10.1177/25158414211070879.
7. Tilstra JS, Lienesch DW. Rheumatoid nodules. *Dermatol Clin* 2015;**33**:361–71. https://doi.org/10.1016/j.det.2015.03.004.