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A case of primary Sjögren's syndrome complicated with inflammatory myopathy and interstitial lung disease

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Running Head: pSS complicated with inflammatory myopathy and ILD

Introduction

Sjögren's syndrome (SS) is a chronic inflammatory disorder which primarily involves the lacrimal and salivary glands. Skeletal muscle involvement in primary SS (pSS) is a relatively rare complication, and its precise clinical and pathological spectrum remains obscure.

Secondary Sjögren's syndrome (sSS) refers to those cases that occur in association with another connective tissue disease, most commonly as a complication of rheumatoid arthritis [1]. With regard to pulmonary complications, interstitial lung disease (ILD) in sSS is clinically more severe than ILD of pSS; however, its prevalence is higher in pSS than sSS [2].

We present a case of pSS complicated with inflammatory myopathy and ILD, with clinical features resembling those of dermatomyositis (DM) / polymyositis (PM), though the case did not fulfill Bohan and Peter's criteria for DM / PM [3]. Both the inflammatory myopathy and the ILD responded well to a moderate dosage of prednisolone, which is consistent with pSS-related extraglandular organ involvement.

Case report

A 63-year-old Japanese female, who had been diagnosed with diabetes 2 years earlier, complained of dry mouth without muscle weakness or myalgia. Laboratory tests showed positive anti-nuclear antibody (ANA) and elevation of creatine kinase (CK), while mild intestinal pneumonia was shown by chest computed tomography (CT) and high signal intensity in the bilateral muscles of the thigh was shown by femoral magnetic resonance imaging (MRI). She was admitted to our hospital for further evaluation.

Physical examination revealed that she had no skin lesions or neurological abnormalities. There was no peripheral lymphadenopathy in the cervical, axillary, or inguinal regions. Laboratory investigations revealed the following: hemoglobin 13.2g/dL, white blood cell count $5.4 \times 10^3/\mu\text{L}$ (neutrophils 59%, lymphocytes 31%, monocytes 9% and eosinophils 1%), platelet count $313 \times 10^3/\mu\text{L}$, erythrocyte sedimentation rate 20 mm/hour, C-reactive protein 0.10 mg/dl, total protein 7.6 g/dL, albumin 4.1 g/dL, total bilirubin 0.5 mg/dL, creatine kinase 1254 IU/L, aldolase 17.9IU/L, lactate dehydrogenase 462 IU/L, alkaline phosphatase 232 U/L, aspartate aminotransferase 51 IU/L, alanine aminotransferase 40 IU/L, γ GTP 84 IU/L, blood urea nitrogen 14.0 mg/dL, creatinine 0.55 mg/dL, hemoglobin A1c 5.9% and KL-6 782U/mL. Immunological studies showed the following: antinuclear antibody 1:2560 (speckled pattern), anti-dsDNA antibody 1.8 IU/mL, anti-Sm antibody 3.3 U/mL, anti-SS-A

antibody 86.2U/mL, anti-SS-B antibody 3.0 U/mL, IgG 1700 mg/dL and IgA 426 mg/dL. Anti Jo-1 antibody was negative.

There was no evidence of keratoconjunctivitis sicca; however, an apple tree-like pattern was observed by sialography, and lymphocytic infiltration was found in minor salivary glands. These findings were consistent with SS (Fig. 1A). SS was diagnosed in accordance with the American-European Consensus Group criteria [4].

A chest CT scan demonstrated ground glass opacity and a reticular shadow in the lower lung field (Figure 2A). Radiographic images of femoral MRI (Figure 2B) showed high intensity in the bilateral quadriceps of the thigh. Electromyography (EMG) revealed no evidence of obvious myogenic change. A biopsy of the left quadriceps muscle revealed fiber diameter variation, degeneration and inflammatory cell infiltration of perivascular tissue (Fig 1B). Since she did not fulfill the criteria of DM or PM proposed by Bohan and Peter [3], we diagnosed her condition as inflammatory myopathy and ILD complicated with pSS. Oral prednisolone of 30 mg/day was introduced and serum CK rapidly decreased to almost normal range within 2 weeks. ILD also improved.

Discussion

Extraglandular organ involvement occurs at varying frequency in pSS [5]. It is important to distinguish extraglandular organ involvement of pSS from that in sSS with overlap syndrome, since pSS-related extraglandular organ involvement in general shows favorable outcome in response to glucocorticoids [2].

A mild inflammatory myopathy characterized by the insidious onset of proximal muscle weakness occurs in SS. The frequency of skeletal muscle involvement ranges from 2.5 to 47 percent [6]. The inflammatory cell infiltration can be found in muscle biopsy even in asymptomatic patients [7]; however, only scattered reports involving muscle biopsies in SS have been found [8, 9]. A study involving muscle biopsies in SS [7] showed histological muscle inflammation in 26 out of 36 muscle biopsies (72%), and the inflammation was always perivascularly localized. Our present case is consistent with inflammatory myopathy in pSS since MNC infiltration was found in the perivascular area. Thus, we suggest that histological study of muscle biopsy of SS patients complicated with inflammatory myopathy is meaningful to guide an accurate clinical diagnosis. Our case did not show skeletal muscle symptoms clinically or EMG abnormality. Kraus et al. have reported two pSS patients who developed myopathy and were treated with moderate doses of PSL [9, 10]. Our case also responded well to 30 mg/day of PSL. Accordingly, inflammatory myopathy complicated with pSS may be

less severe in comparison with that in dermatomyositis (DM) or polymyositis (PM) [11].

Our present case also demonstrated ILD. ILD complicated in DM / PM is often refractory to glucocorticoids [12]; however, ILD of the present case showed favorable response to prednisolone of 30 mg / day. This clinical outcome also agrees with the report that the prognosis of ILD is less severe in pSS than in overlap syndrome [2].

In summary, we present a case of pSS complicated with inflammatory myopathy and ILD. The clinical manifestations of the present case resembled those of DM / PM, but did not meet Bohan and Peter's criteria. Furthermore, inflammatory myopathy as well as ILD responded quickly and well to a moderate dose of prednisolone, which is quite different from the outcome of DM / PM.

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Figure Legends

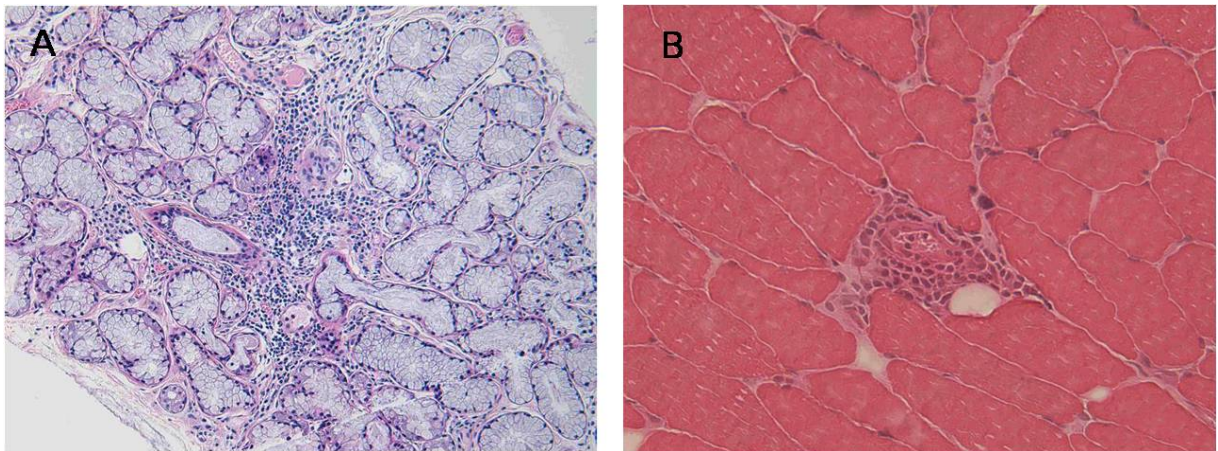


Figure 1. A. Histological examination of a minor salivary gland in the lower lip. Focal lymphocytic sialadenitis, which is compatible with the histology of Sjögren's syndrome was found (hematoxylin and eosin staining, original magnification $\times 100$). B. Histology of left quadriceps muscle. Fiber diameter variation, degeneration and inflammatory cell infiltration of the perivascular region are evident. (hematoxylin and eosin staining, original magnification $\times 400$).

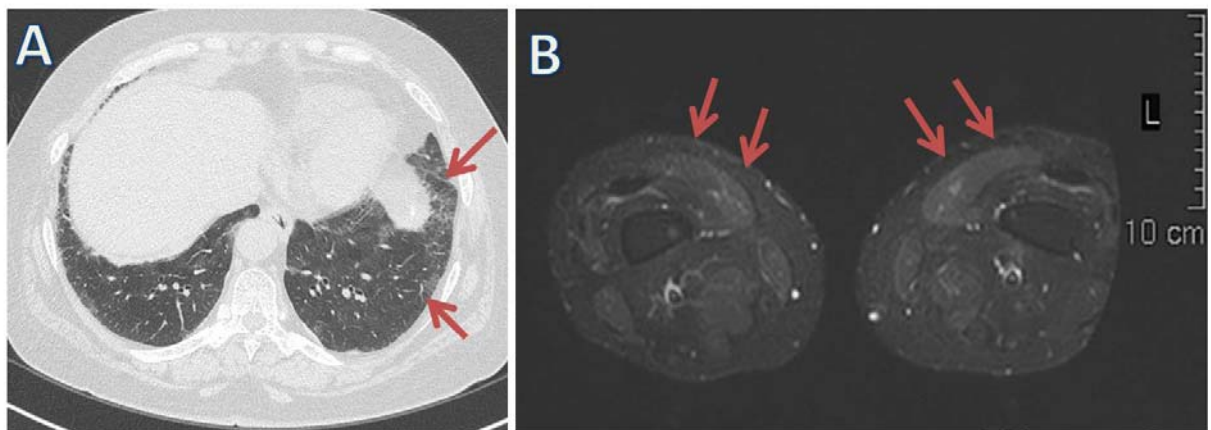


Figure 2. A. Chest CT scan showing ground glass opacity and a reticular shadow in the lower lung field (arrows). B. STIR axial magnetic resonance imaging demonstrating a high-intensity signal in the bilateral quadriceps (arrows).