A Case of Systemic Lupus Erythematosus Presenting as Aseptic Meningitis

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Background: Systemic lupus erythematosus (SLE) is an autoimmune disease affecting multiple organ systems. Although various neuropsychiatric manifestations occur in SLE, development of aseptic meningitis as an initial manifestation is rare. Case Report: A 26-year-old woman with fever, headache and vomiting was diagnosed with aseptic meningitis in cerebrospinal fluid study. Neuroimaging studies were not remarkable, and hematologic study showed mild leucopenia and thrombocytopenia. After 12 days of conservative management, high fever, leucopenia, thrombocytopenia, malar rash and cervical lymph nodes enlargement developed. She had subsequent pleural and pericardial effusions. The rheumatoid factor and anti-nuclear antibody (ANA) were positive and SLE was diagnosed based on clinical manifestations and laboratory studies. After treatments with intravenous immunoglobulin, corticosteroid, antibiotics and hydrochloroquine sulfate, her symptoms gradually improved. Conclusion: We report a rare case with aseptic meningitis as an initial manifestation of SLE.

Introduction

Systemic lupus erythematosus (SLE) is an autoimmune, inflammatory disorder affecting multiple organ systems. Although it is known as many as 14% to 80% of patients with SLE develop various neuropsychiatric manifestations including cerebrovascular disorders, seizure or psychosis,1-5 aseptic meningitis as an initial manifestation of SLE is rare.

Here we present a case with aseptic meningitis as an initial manifestation of SLE.

Case

A 26-year-old woman without significant past medical history was admitted with fever, headache and vomiting for 20 days. She had taken analgesics for a few days but there was no improvement. Physical examinations were unremarkable except mild fever (37.5℃). Neurological examination showed no focal deficit. The findings of brain magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA) were normal. The laboratory studies showed mild leucopenia [3,160/mm³ (neutrophils: 76.3%)], thrombocytopenia (99,000/μL) and elevated erythrocyte sedimentation rate (74 mm/hr). On cerebrospinal fluid (CSF) study, the opening pressure was 200 mmH₂O, and mild CSF-pleocytosis [WBC 22/mm³ (lymphocyte 94%)] with normal protein and glucose level were found. Blood and CSF tests for viral, tuberculous, fungal and bacterial agents were all negative. Through conservative management, her clinical symptoms partially improved.

On the 12th hospital day, she complained painful palpable left neck mass. Computed tomography (CT) (Fig. 1A) and ultrasonography (Fig. 1B) of neck showed multiple enlargement of bilateral cervical lymph nodes up to 18.2 × 15.8 mm of size with subcutaneous fat infiltrations. Malar rash was shown on her face, high fever developed again, leucopenia [2,390/mm³ (neutrophils: 73.6%) ] and thrombocytopenia (75,000/μL) were aggravated. After three days, severe dyspnea developed, and chest X-ray showed mild cardiomegaly and bilateral diffuse peribronchial opacities with massive pleural effusion on right lower lung field (Fig. 2A). Echocardiogram showed pericardial effusion (Fig. 2B). The rheumatoid factor and anti-nuclear antibody (ANA) were po-
sitive but anti-dsDNA Ab, anti-SM Ab and anti-Ribonucleoprotein Ab were all negative, and anti-cardiolipin Ab IgM and IgG were within normal limits.

Based on her clinical symptoms including malar rash, serositis, multi-organ involvement and hematologic manifestation including positive ANA titer, diagnosis of SLE was then made. Immediate intravenous immunoglobulin (IVIg) 0.4 g/kg and methyl prednisolone 62.5 mg were infused for 5 days. Subsequent 31.25 mg of methylprednisolone were treated for another 5 days and hydrochloroquine sulfate 400 mg was added. Intravenous ciprofloxacin 800 mg and teicoplanin 200 mg were started at 15th hospital day for the treatment of pneumonia. Fever subsided at 19th hospital day and pneumonia and pleural effusion improved gradually. Chest x-ray at 28th hospital day showed clear lung field bilaterally. She discharged with maintaining treatment of oral prednisolone 7.5 mg per day without any symptoms 32 days after admission.

Discussion

The initial clinical features and CSF findings in this case were typical of aseptic meningitis. Later symptoms could satisfy diagnostic criteria of SLE according to the ARA. Neurological manifestations of SLE include cerebrovascular disease, headache (migraine tension headache), cognitive disorders (delirium, dementia), movement disorders (chorea), depression, psychosis, seizure and aseptic meningitis. The frequency of central nervous system (CNS) involvement in SLE is various, ranging from 14 to 80% in previous literature. Aseptic meningitis as an initial manifestation in SLE is extremely rare, and there were only 10 cases in previous literature using PubMed from 1966 to 2000, to our knowledge. In one report showing 28% of patients with SLE-associated neuropsychiatric events, only 3 cases (1.2%) had aseptic meningitis, indicating that aseptic meningitis in SLE is very rare phenomenon. Another report showed that aseptic meningitis was diagnosed in only four (1.6%) out of 257 patients with CNS lupus.

The exact pathomechanism of SLE-associated aseptic meningitis still remains unclear. One possible explanation is that CNS manifestation in SLE is associated with vasculitis in some cases. Another is that most of aseptic meningitis in patients with SLE are associated with drugs for the treatment of SLE, such as nonsteroidal anti-inflammatory drugs (NSAIDs), antimicrobials (especially sulfa drugs), IVIg and OKT3 monoclonal antibodies. The pathogenic mechanism of drug-
induced aseptic meningitis is not fully understood and it is generally believed to be an immunologic hypersensitivity reaction. In our case, the possibility of triggering chemical meningitis by the use of analgesics in preclinical period of SLE could not be excluded.

Another interesting finding in our case is that our patient developed lymphadenopathy on her left neck. Through the clinical course of her illness, we initially assume that she had Kikuchi’s disease (KD), but she was diagnosed as SLE later. Although lymphadenopathy in this case is thought to be a kind of lupus lymphadenitis (LL), co-occurrence of KD could not be excluded because KD can be associated with SLE or aseptic meningitis in some cases in literature. In this situation, lymph-node biopsy may enable to distinguish KD from LL. Histologically, the presence of hematoxyphilic bodies, abundant plasma cells and true vasculitis outside the areas of necrosis also favors a diagnosis of LL, whereas the absence or paucity of neutrophils confirms the diagnosis KD. Unfortunately, we could not perform biopsy due to rapid exacerbation of her systemic symptoms.

In conclusion, this is a rare case because aseptic meningitis was presented as a first sign of SLE.

REFERENCES