Prompt efficacy of plasmapheresis in a patient with systemic lupus erythematosus and diffuse alveolar haemorrhage

Sirs,

A 13-year-old girl, was admitted in the Paediatric Department of our Institute four months after the diagnosis of systemic lupus erythematosus (SLE), in poor general condition with fever, pallor, peripheral oedema, tachycardia, dyspnea and hemoptysis. Peripheral blood oxygen saturation was 90%. Laboratory tests showed severe anaemia (Hb 6.4 g/dl), lymphopenia (900/mm^3), haematuria, proteinuria (2.01 g/24 h), elevated serum creatinine level (2.09 mg/dl), positive Coombs test, normal aptoglobin level, high titre ANA, ENA (anti Sm and U1RNP) and anti ds DNA autoantibodies, low level positive antiPL IgM antibodies with negative lupus anti-coagulant antibody (LAC), negative anti glomerular basal membrane antibodies, hypocomplementaemia, normal coagulation assay. Chest x-ray and CT scan (Fig. 1) revealed bilateral pulmonary infiltrates (alveolar pattern) without effusion or cardiomegaly.

Viral, bacterial and fungal infections were ruled out by negative blood and sputum cultures, polymerase chain reaction (PCR) and specific antibodies in serum. Renal biopsy revealed class IV lupus nephropathy. A cerebral SPECT was consistent with central nervous system (CNS) SLE involvement.

Diffuse alveolar haemorrhage (DAH) in multiorgan SLE was diagnosed.

The patient was initially treated with intravenous (i.v.) antibiotic, antiviral and antifungal therapy, pulse intravenous metilprednisolone i.v. (1 g/day for 5 days) and cyclophosphamide (1g), without significant benefit. She was then administered 3 courses of rituximab (375 mg/m^2 per week), with some clinical improvement and mild increase of Hb level (up to 6.9 g/dl). The girl was discharged on oral steroid therapy (prednisone 2 mg/kg).

After one week, she was readmitted with poor general condition, severe dyspnea, pallor, low peripheral oxygen saturation (78%); Hb level was 4 g/dl. We decided to perform blood transfusions and plasmapheresis. After three plasmapheresis, we finally obtained persistant clinical remission: definitive cessation of hemoptysis and recovery from dyspnoea and anaemia. She was discharged on daily oral prednisone therapy (2 mg/kg) and completed the 6 monthly infusions of cyclophosphamide. At the last follow-up, 19 months after first admission, the girl was asymptomatic while on daily prednisone 0.5 mg/kg and micophenolate therapy.

DAH is a rare, life threatening complication described in 1–5.4% patients with SLE (1). It presents with anaemia, dyspnea, fever and inconstant haemoptysis. Typical radiologic findings are represented by bilateral infiltrates while broncoscopy and broncoalveolar lavage reveal blood oozing from bronchi and hemosiderin-laden macrophages (1). It usually develops in young women, but rare cases of infantile onset have been described (2). In our patient DAH developed early in the course of SLE, as already described in literature (3). As observed in our patient, multiorgan involvement (renal, haematologic, CNS) has been reported as more frequent in patients with DHA (1).

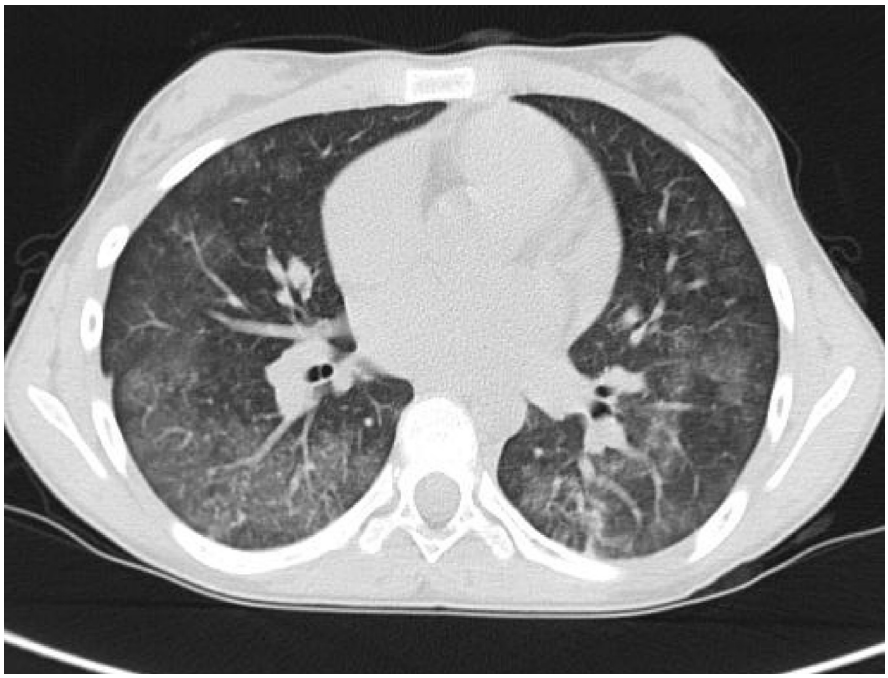

Fig. 1. CT scan of the chest shows bilateral lobular areas of ground-glass infiltration more evident in lower-lobes.

The pulmonary involvement in DHA closely resembles the pulmonary manifestations of antiphospholipid syndrome (APS) (4). Our patient presented no clinical or laboratory signs of APS. DAH is associated with high degree mortality (1, 3) (approximately 50%); several therapeutic options have been proposed in anecdotal reports: pulse of corticosteroids (1, 3, 5), cyclophosphamide (1, 3, 5), rituximab (6), mycophenolate mofetil (7) and plasmapheresis (3, 5, 8, 9). The goal of plasmapheresis is to reduce circulating immune complexes and other immunologically active components (5). A recent review reported the use of plasmapheresis in 34% of 162 patients with DHA overall (5). This retrospective assessment probably underestimates the efficacy of plasmapheresis in DAH since its utilisation is mainly limited to the most severe cases (5). Despite this, there may be a role for plasmapheresis, particularly, in life-threatening DAH (10).

In our case, combination of pulse steroids and cyclophosphamide has failed. Rituximab provided only temporary relief followed by rapid and life-threatening relapse, while plasmapheresis proved dramatic therapeutic efficacy, with clinical benefit since the first session.

DAH is a major life-threatening manifestation in children and adolescents with SLE. We suggest that plasmapheresis should be considered promptly as an effective treatment in this condition, in association with immunosuppressive treatment.

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