中文題目：抗 RNA 聚合酶 III 抗體陽性硬皮症腎危象經附加血漿置換治療：一病例報告

英文題目：Anti-RNA polymerase III antibody-positive scleroderma renal crisis treated with add-on plasma exchange: a case report

作　　者：陳怡臻[1]，陳得源[2]，藍忠亮[2]，黃建中[2]，陳怡儒[3]

服務單位：[1]中國醫藥大學附設醫院內科部，[2]中國醫藥大學附設醫院內科部風濕免疫科，[3]中國醫藥大學附設醫院內科部腎臟內科

Introduction

Scleroderma renal crisis (SRC) is an uncommon but severe complication of systemic sclerosis (SSc). Patients with SSc who have anti-RNA polymerase III antibodies are at risk of SRC. The immediate institution of angiotensin-converting enzyme (ACE) inhibitors is the standard management of SRC. Once patients are intolerant to high doses of ACE inhibitors or complicated with microangiopathic hemolytic anemia (MAHA), additive plasma exchange therapy has been shown beneficial in such critical condition. Here, we present a patient with anti-RNA polymerase III antibody-positive SRC who was treated with plasma exchange in addition to ACE inhibitors.

Case presentation

This 43-year-old previous healthy woman was hospitalized because of acute renal function deterioration with severe hypertension accidentally found for 2 weeks. Three months ago, the patient began to have puffy hands and Raynaud's phenomenon. Then rapid progression of skin tightness from distal limbs to proximal limbs, face, neck and trunk was also found. Two weeks ago, yearly health examination revealed acute renal function deterioration. She was referred to a rheumatologist for further evaluation. The physical examination showed blood pressure: 181/102mmHg; skin tightness over fingers, dorsal hands and half forearm, feet, face, neck, and trunk. Laboratory data showed thrombocytopenia, anemia, acute kidney injury, increased lactic acid dehydrogenase and reduced haptoglobin levels. Peripheral blood smear revealed schistocytes (Figure 1), and microangiopathic hemolytic anemia (MAHA) was confirmed. In addition, antinuclear antibody test revealed speckled/nucleolar pattern. Nailfold capillaroscopy showed the characteristic of early scleroderma pattern. Under the impression of diffuse cutaneous systemic sclerosis with scleroderma renal crisis, she was admitted.

After admission, laboratory data showed anti-RNA polymerase III antibodies were positive, supporting that the renal presentations were secondary to SRC. In addition, fundus examination revealed cotton-wool spots (Figure 2), which indicated

hypertensive retinopathy. We prescribed Captopril and Nifedipine for control of BP. We titrated up the dose of antihypertensive agents, but they were not sufficient to normalize blood pressure. Laboratory data showed persistent MAHA, thrombocytopenia and worsening renal function. Therefore, we arranged plasma exchange. After the treatment, the blood pressure was dramatically normalized. Laboratory data showed thrombocytopenia and hemolysis gradually subsided, and the renal function improved (Figure 3).

Discussion

Systemic sclerosis is a multisystem connective tissue disorder characterized by excessive fibrosis of the skin and internal organs, and microvascular damage. Scleroderma renal crisis is an uncommon but severe complication of systemic sclerosis. It is a condition characterized by a sudden and marked increase in systemic blood pressure and rapidly progressive oliguric renal failure. Hemolytic microangiopathy is detectable in about 50% of patients and is characterized by anemia, thrombocytopenia, increased lactic acid dehydrogenase (LDH) and reduced haptoglobin levels. Patients with anti-RNA polymerase III antibodies had a 4.6 times higher incidence of renal crisis than other patients. In addition, patients with diffuse skin involvement developed a renal crisis earlier and more frequently than patients with a limited skin involvement. The acute management of SRC involves general supportive care with careful control of BP. The early institution of ACE inhibitors is now a standard of care and is associated with a good prognosis. Captopril is the preferred ACE inhibitors in SRC especially in the early stages, owing to its short half-life which guarantees a rapid onset of action and facilitates rapid titration. The normalization of blood pressure (< 140/90mmHg) within 72 h is the treatment goal in SRC. If maximum ACE inhibitors are not sufficient to normalize blood pressure, calcium channel blockers should be added as a second line treatment. Plasma exchange has been used in SSs since the 1980s. Although the exact therapeutic mechanism of Plasma exchange in SSc has not fully understood, it is thought to remove vasoconstrictors (such as ET-1), autoantibodies and pro-inflammatory and pro-fibrotic cytokines. In a single-center retrospective chart review, the patients with SRC who were treated with Plasma exchange in addition to ACE inhibitors had improved prognosis. Once patients are intolerant to high doses of ACE inhibitors or complicated with MAHA, additive plasma exchange therapy has been shown beneficial in such critical condition.

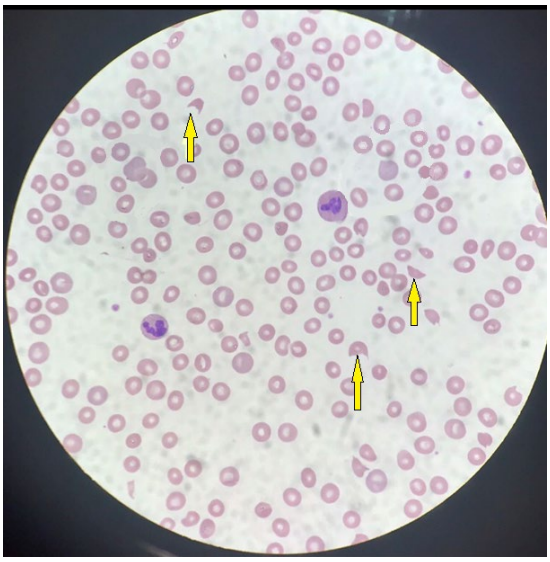

Figure 1. Peripheral blood smear revealed schistocytes (arrow)

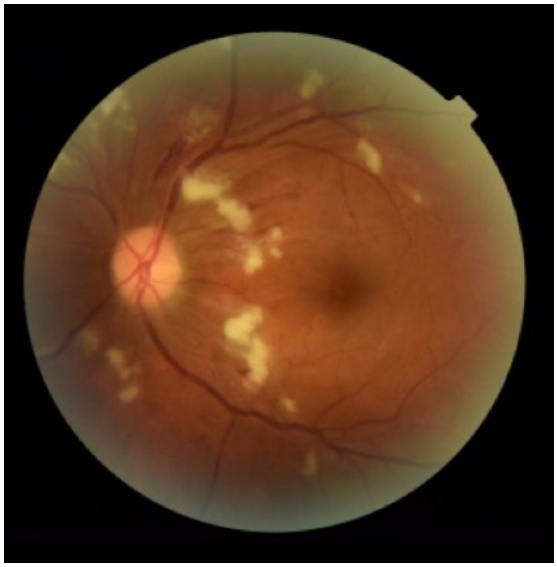

Figure 2. Fundus examination revealed cotton-wool spots

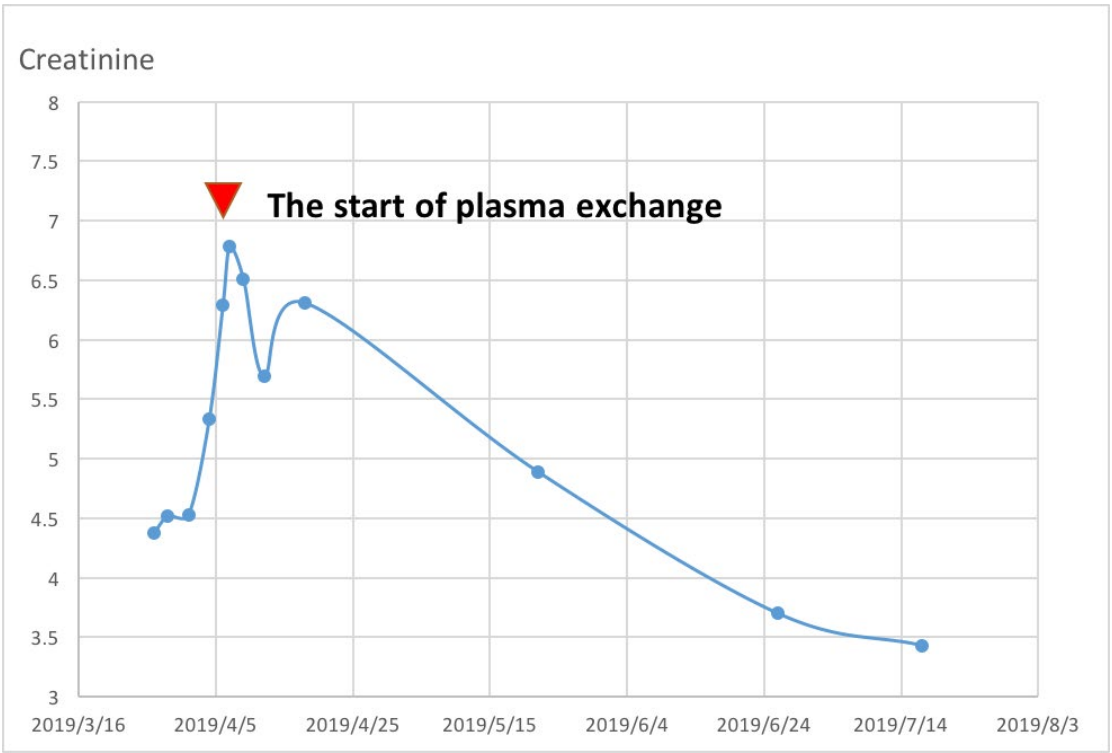

Figure 3. The level of creatinine decreased after plasma exchange.