

Churg-Strauss Syndrome: A Rare Systemic Vasculitis

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ABSTRACT

Churg-Strauss syndrome is a rare diffuse small/medium sized vessel vasculitis that is almost invariably accompanied by severe asthma. The cause is unknown, but its characteristic histological findings and association with asthma distinguish it from other vasculitides. We report here a middle aged lady who presented with sudden onset of vasculitic skin lesions in association with long standing asthma. Skin biopsy and serology revealed diagnosis of Churg-Strauss syndrome. She was successfully managed with oral prednisolone.

Key words: *Churg-Strauss syndrome. Allergic granulomatous vasculitis. Allergic granulomatosis. Prednisolone.*

INTRODUCTION

Churg-Strauss syndrome (also known as allergic granulomatosis) is a rare, non-inheritable, non-transmissible, medium-and small-vessel autoimmune vasculitis that involves mainly the blood vessels of the lungs, gastrointestinal system, and peripheral nerves, but also affects the heart, skin and kidneys. It was once considered a type of polyarteritis nodosa (PAN) due to similar morphologies. The syndrome was first described by Drs. Jacob Churg and Lotte Strauss at Mount Sinai Hospital, New York City in 1951.¹ Clinically the disease has three distinct stages; the first stage often involves the sinuses with onset of new or worsening of pre-existing allergies. The second stage involves a new-onset of acute asthma. The third and final stage involves the various organ systems and by far the most life threatening and painful. Often the person develops severe nerve pain in their legs, arms and hands. Purple marks appear on the skin and often sores are seen in the mouth or nose.²⁻⁴ Diagnostic markers include eosinophil granulocytes and granulomas in affected tissue and anti-neutrophil cytoplasmic anti-bodies (ANCA) against neutrophil granulocytes. It can be difficult to differentiate from Wegener's granulomatosis however, the latter is closely associated with c-ANCA, unlike Churg-Strauss, which shows elevations of p-ANCA.^{4,5} Treatment for Churg-Strauss syndrome includes glucocorticoids such as prednisolone and other immunosuppressive agents such as azathioprine and cyclophosphamide. In many cases the disease can be put into a clinical remission through drug therapy, but it

is usually chronic and life-long. A systematic review conducted in 2007 indicated that all patients should be treated with high-dose steroids, but that in patients with an FFS of 1 or higher cyclophosphamide pulse therapy should be commenced, with 12 pulses leading to less relapses than six. Remission can be maintained with a less toxic drug, such as azathioprine or methotrexate.^{2,6} Overall outcome is good with systemic steroids with or without immunosuppressive agents. Five years survival is 70-80%. Early mortality results from disease activity or opportunistic infections. Poor prognostic indicators include older age, pulmonary haemorrhage and severe renal disease.^{2,7}

This case report describes this rare disease in a middle-aged lady.

CASE REPORT

A 45 years old lady presented with 10 days history of shortness of breath associated with bouts of productive cough. The sputum was mucoid and was blood stained. She used to have stabbing pain over left side of chest especially during the bouts of cough. Four days back she had developed weakness over left side of her body. A day after this she developed multiple pruritic, grouped haemorrhagic vesicular rash over elbows, buttocks and ankles. She had a 6 years history of bronchial asthma. There was no history of polyarthralgia, malar rash or oral ulcers.

On examination, she was afebrile but tachypnoec. Her pulse was 88 beats/minute and blood pressure was 140/85 mmHg. Neck veins were not engorged and JVP was not raised. Chest auscultation revealed decreased air entry into the left lung and there were crackles bilaterally, more on the right side. Central nervous system examination showed decreased muscle power in left lower limb whereas the tone and reflexes were unchanged. Speech and gait were normal. Abdomen was soft and non-tender. Heart sounds were normally audible in all four areas and there were no added sounds.

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On dermatological examination there were groups of erythematous papulopurpuric lesions over elbows, buttocks and ankles (Figure 1). Laboratory investigations showed a normal haemoglobin and platelets but marked leucocytosis ($18.4 \times 10^9/L$) with eosinophilia of 25% (total eosinophil count of $4.62 \times 10^9/L$). Serum urea was 72 mg/dl and serum creatinine was 0.6 mg/dl. Urinalysis showed proteinuria and WBCs 8-10/HPF. IgE levels were raised being more than 6000 ng/ml. Troponin-T was elevated at 7.205 ng/ml. The coagulation profile was normal and antinuclear antibodies were negative. ECG findings showed ST depression and T-wave inversion in the inferior leads with poor R-wave progression. Echocardiography showed hypoechoic anteroinferior, basal and mid anteroseptal walls. Ejection fraction was 45%. There was pulmonary hypertension and mild left ventricular diastolic dysfunction. Chest radiography revealed bilateral segmental and sub-segmental consolidation, more on right than left side. There were airbronchograms involving both zones and right lower zone. Cardiac size was normal (Figure 2). Histopathology section of a skin lesion revealed small vessel

vasculitis with abundant eosinophils, fibrinoid necrosis and degranulating eosinophils (Figure 3). There was focal sub-epidermal blister formation with eosinophils and edema (Figure 4). Basophilic degeneration of the collagen with disintegration of cells was also seen. Serological examination revealed a negative ANCA. The patient was diagnosed as case of Churg-Strauss syndrome and was placed on oral Prednisolone 30 mg daily. She was discharged with the advice to review after 02 weeks.



Figure 1: A group of erythematous papulopurpuric lesions over dorsum of foot and ankle region.



Figure 2: Bilateral segmental and sub-segmental consolidation and airbronchograms involving right mid and lower zones and left mid zone.

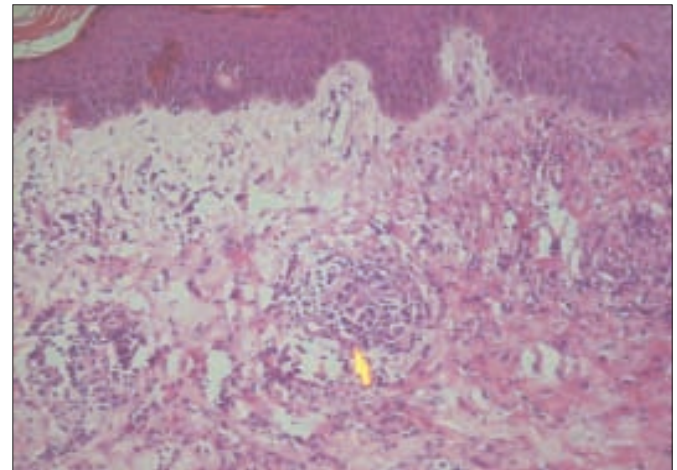


Figure 3: Small vessel vasculitis in upper and mid dermis with abundant eosinophils, fibrinoid necrosis and degranulating eosinophils.

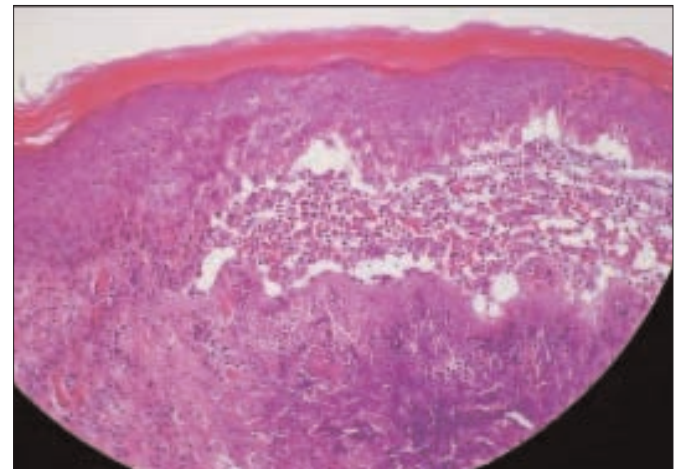


Figure 4: Focal sub-epidermal blister formation with eosinophils and edema.

After 02 weeks, there was a marked clinical recovery. Haemoptysis stopped and shortness of breath was markedly improved. Cutaneous lesions started to settle and turned brown. Her cardiac status improved and there was radiological regression of pulmonary signs. Despite significant improvement in several features, she developed left-sided foot drop which did not improve.

DISCUSSION

Churg-Strauss syndrome (CSS) is a rare necrotizing small-vessel vasculitis associated with asthma and

eosinophilia along with eosinophil-rich granulomatous inflammation of tissues and vessels. It remains a rare disease with a poorly understood pathogenesis. The presence of a marked tissue- and blood-eosinophilia, as well as secretory products of eosinophils in blood and tissues, implicates a pathogenetic role of eosinophil granulocytes. Prolonged survival of eosinophils due to inhibition of CD95-mediated apoptosis by soluble CD95 seems to contribute to eosinophilia in CSS.⁴ Adult onset allergic rhinitis and/or bronchial asthma may precede other symptoms, followed a couple of years by a vasculitic rash with neurological symptoms of mononeuritis multiplex as common presenting features. Palpable purpura, and infiltrated nodules, are the most commonly presenting cutaneous features. There may be livedo reticularis migratory erythema, Raynaud's phenomenon, aseptic pustules or vesicles may also be seen.^{3,8} The French Vasculitis Study Group has developed a five-point score ("five-factor score" or FFS) that predicts the risk of death in Churg-Strauss syndrome. These are reduced renal function (creatinine > 1.58 mg/dL or 140 µmol/l), proteinuria (> 1 g/24h), gastrointestinal haemorrhage, infarction or pancreatitis, and involvement of the central nervous system or cardiomyopathy. Presence of any of these indicates severe disease (5-year mortality 26%), and 2 or more very severe disease (mortality 46%), while absence of these indicates a milder case (mortality 11.9%).² Marked eosinophilia and increased IgE levels are most supportive for the diagnosis. Together with Wegener's granulomatosis and microscopic polyangiitis, CSS is considered as one of the vasculitides associated with antineutrophil cytoplasmic autoantibodies. However, unlike these two diseases prevalence of ANCA in Churg-Strauss syndrome is much lower (40%). Statistically the disease has been classified into ANCA positive and ANCA negative. Positive ANCA status was associated with peripheral nerve involvement whereas negative ANCA patients were seen to be having more renal and lung involvement.^{5,7}

Despite classical presentation this patient had certain unusual features worth mentioning. She presented with a typical history of late-onset asthma, followed by

sudden episode of haemoptysis and vasculitic rash. Besides prominent cardiopulmonary and neurological signs there was marked peripheral eosinophilia and a very high IgE level. However, despite the prominent eosinophilic vasculitis a frank granuloma was not observed. Large sub-epidermal blister filled with eosinophils was another uncommon sign. Residual foot drop is less expected in an ANCA-negative patient. Response to oral prednisolone was early and there was marked improvement of cardiac and pulmonary symptoms with significant regression of radiological signs. Perhaps the ANCA negativity was supportive of the moderate severity of the disease and its good early response to steroids.

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