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Case report

# Primary Pulmonary Hypertension Associated with Systemic Lupus Erythematosus

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*Summary* **A 24-year-old West Indian woman with a four-year history of systemic lupus erythematosus presented with progressive dypsnoea due to primary pulmonary hypertension. Despite showing a response to vasodilators, these failed to control the condition. Her pulmonary hypertension increased in severity, eventually resulting in her death. We believe primary pulmonary hypertension to be an unusual complication of systemic lupus erythematosus. We suggest that this diagnosis should be considered in all patients with systemic lupus erythematosus and progressive dypsnoea, as optimum benefit can only be obtained by early institution of vasodilator therapy.**

*Key words:* **Pimary Pulmonary Hypertension, SLE**

## INTRODUCTION

Primary pulmonary hypertension (PPH) is a documented but uncommon complication of systemic lupus erythematosus (SLE)(1). The aetiology is poorly understood, the response to treatment variable and the condition generally carries a poor prognosis (2). We report a case of PPH occurring with SLE and review the recent literature.

## CASE REPORT

A 24-year-old West Indian woman, known to suffer from SLE (ARA, 1982 revised criteria) presented with exertional dyspnoea. She had positive anti-nuclear antibody (titre 1:4000) and had antibodies to double stranded DNA. She also had arthralgia, anaemia, and recurrent pleuro-pericardial effusions. There was no history suggestive of Raynaud's phenomenon. Anti-phospholipid antibody was negative. She was a nonsmoker, had no significant past medical history and had intermittently been taking Microgynon 30 for four years.

On the current admission she was noted to have a tachycardia with a left parasternal heave, palpable closure of the pulmonary valve with a loud pulmonary component of the second heart sound, hepatomegaly and peripheral oedema. Blood pressure was 110/80mmHg. Investigations were consistent with pulmonary hypertension with right ventricular strain on the electrocardiogram, right ventricular and pulmonary artery dilatation on echocardiogram, and peripheral pruning of the pulmonary vessels on chest radiograph, with dilatation of the pulmonary arteries. Ventilation-perfusion lung scans were normal. Pulmonary function tests revealed a mild restrictive defect. Cardiac catheterisation confirmed pulmonary hypertension and a response to vasodilators was demonstrated using sub-lingual nifedepine 10mg and glyceryl trinitrate (Table I).

As her condition was thought to reflect active lupus she was commenced on therapy with prednisolone and cyclophosphamide. Despite continued immunosuppression her dyspnoea increased and vasodilator therapy with isosorbide mononitrate was added in combination with diltiazem. At this time, a repeat of the pulmonary function tests failed to demonstrate any change in the mild restrictive defect.

Her clinical condition deteriorated over the next 16 weeks. Pre-terminally she became hoarse and developed left ventricular failure and soon after suffered a cardiac arrest and died. A postmortem examination was not obtained.

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Table I: *Results of cardiac catheterisation*

| A. | Pressure/mmHg | $0_2$ Saturation % |
|---|---|---|
| Superior vena cava | | 56% |
| Right atrium | 10/4 | 65 |
| Right ventricle | 65/10 | 66 |
| Pulmonary artery | 65/40 | Right 67 Left 65 |
| Capillary wedge pressure | Mean 8 | |
| Left ventricle | 110/0 | 95 |
| Aorta | 110/80 | 95 |

| B. | Pre-sub-lingual nifedepine/ glyceryl trinitrate | Post-sub-lingual nifedepine/ glyceryl trinitrate |
|---|---|---|
| Cardiac output Litres/minute | 5.32 | 9.4 |
| Pulmonary vascular resistance. Paul-Wood Units | 10.7 | 6.06 |
| Pulse Beats/minute | 100 | 115 |
| Blood pressure mmHg | 110/80 | 105/80 |

A. Pressures and saturations
B. Effect of vasodilators on cardiac output and pulmonary vascular pulmonary resistance

## DISCUSSION

Primary pulmonary hypertension (PPH) is regarded as an uncommon manifestation of SLE (1). Only 15 autopsied cases had been reported by 1988 (3). PPH may also be seen in other connective tissue diseases such as systemic sclerosis (especially the CREST variety) (4) and in mixed connective tissue disease (2).

Various theories as to the pathogenesis of pulmonary hypertension (PH) in SLE have been proposed such as thrombo-embolic disease, vasoconstriction of the pulmonary arteries, immune complex vasculitis and interstitial pneumonitis (2,3). It has been noted that antibodies to the ribonucleoprotein component of extractable nuclear antigen (5) and lupus anti-coagulant (6) as well as anti-cardiolipin antibodies (7) are found in SLE association with PH, although this was negative in the case presented. PH has been documented as occurring within 18 months of starting the oral contraceptive pill in some patients with SLE (8,9). It is interesting that the present patient had been taking the contraceptive pill intermittently for four years but had stopped this one year prior to presentation with dyspnoea. Pulmonary function tests had been documented and were unchanged during her illness, suggesting that the PH was not secondary to pulmonary disease.

The assessment of the degree of pulmonary hypertension in these patients by cardiac catheterisation and documenting the response to vasodilators during the procedure is important in planning management (10,11). Limited anecdotal evidence, however, suggests that vasodilator therapy is usually of dubious benefit. The response of PPH and secondary PH to corticosteroids and cytotoxic drugs is also variable. The development of hoarseness in the terminal phase of this patient's illness may have been associated with compression of the left recurrent laryngeal nerve by a dilated pulmonary artery (12).

Several mechanisms for her left ventricular failure are possible, but aggravation of her tachycardia by vasodilator treatment and involvement by the primary auto-immune process seem likely.

PH and PPH association with SLE may have a relentlessly progressive course with a variable response to treatment (4) and a generally poor prognosis, especially if the diagnosis is reached late in the course of the disease. We suggest that the diagnosis of PH should be considered in patients with SLE and progressive dyspnoea and that causative associations should be vigorously searched for. If a diagnosis of PPH is reached, early assessment of vasodilator response should be performed e.g., with sub-lingual nifedepine and glyceryl trinitrate.

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