# Pulmonary Hypertension in SLE - A Case Report

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**Pulmonary Hypertension has been diagnosed in a young lady with Systemic Lupus Erythromatosus (SLE) using Doppler Echocardiography study. Despite the absence of active clinical and laboratory lupus signs, the course of her pulmonary Hypertension was rapidly fatal with no response to vasodilator therapy. This is the first reported case in Bahrain as shown by reviewing Salmaniya Medical Complex records of the all one hundred and ten SLE patients until the 31st of April 1998 . The case history, the incidence, pathogenesis, treatment modalities and the prognosis of that SLE complication are discussed.**

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## THE CASE

The patient is a 35-year-old female phillipino, non-smoker who presented in January 1998 with history of progressive shortness of breath and bilateral ankle oedema of 2 weeks duration.

She has been diagnosed to have SLE since January 1996 with fulfillment of the American College of Rheumatology criteria to diagnose SLE. She had polyarthritis, Raynaud's phenomenon, pericardial effusion, pleural effusion and positive serology which included antinuclear antibodies, anti double stranded DNA, ribonuclear proteins and anticardiolipin antibodies.

She used to get exertional dyspnea that waxes and wanes and she had been admitted in Manila in June 1996 with pericardial and pleural effusions that were treated medically. Two weeks prior to admission, her dyspnea had become much worse, and was preventing her from performing her simple daily activities. She also reported to have progressive ankle oedema felt as swelling of feet and tightness of shoes. She was relating her progressive shortness of breath with the more frequent Raynaud's attacks she started to have recurrently over the last weeks.

No history of fever, chest pain, palpitation, syncope, joint pains, skin rash, eye complaints, puffiness of the face or urinary symptoms. Examination revealed a dyspneic, orthopneic, apprehensive young lady with a heart rate of 72/min, blood pressure 100/70 and normal temperature. She had features of Rayaund's at both hands and feet but no skin rash, and no active arthritis.

Her jugular venous pressure was elevated with prominent V wave and positive hepatojugular reflux. She had a systolic murmur at fourth left sternal border, with a grade of 4/6, non radiating, and associated with right ventricular third heart sound and loud pulmonary component of the second heart sound. No pericardial or pleural rub was audible.

The abdomen was distended with tender hepatomegaly of 6 cm below the right coastal margin. There was bilateral pitting ankle oedema up to the level of both knees.

Her full blood count, urea, sugar, electrolyte, cardiac enzymes, C3, C4, erythrocyte sedimentation rate were all normal. Liver function tests have shown reversed albumin globulin ratio but normal enzymes and bilirubin.

Her antinuclear antibodies, ribonuclear proteins, antidouble stranded DNA and anticardiolipin antibodies were all positive.

The arterial blood gases on room air; P02:- 69 mm Hg, PCO2:- 27 mm Hg , PH : 7.509, HCO3: - 22 mm/1L and Oxygen saturation was 94.2 %.

Creatinine clearance was normal, and the 24 hours urinary protein was normal. The electrocardiogram showed sinus Rhythm with PR interval of 2 sec, right axis derivation, and incomplete right bundle branch block.

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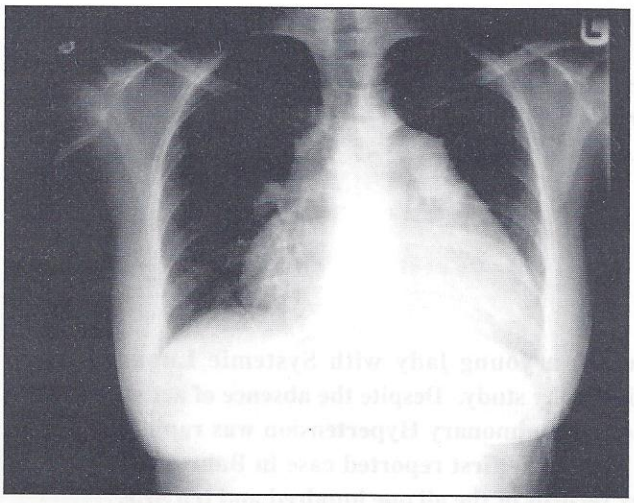
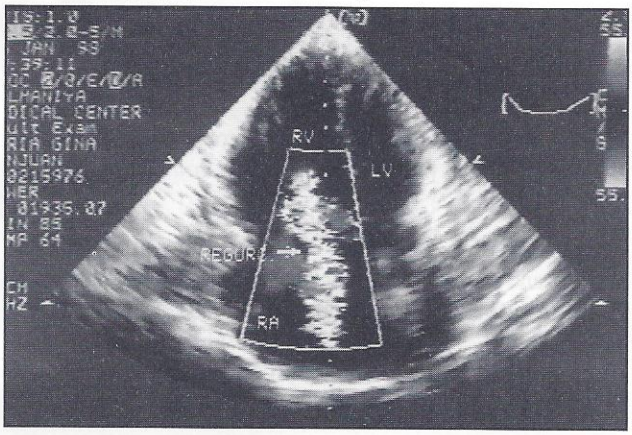
The chest roentgenogram is shown in Fig.1.



*Showing a global enlarged heart with prominent pulmonary conus, pulmonary cut-off sign and pulmonary oligaemia in the outer 2/3 of pulmonary zones.*

Echocardiography is shown in Fig. 2.




*Demonstrating features of severe pulmonary hypertension, where the pulmonary systolic artery pressure can be calculated by using the tricuspid insufficiency signal. In our patient, the pulmonary systolic pressure was 108 mm Hg ( Normal range not exceeding 25 mm Hg).*

In consultation with the cardiologist, she has been transferred to the coronary care unit (CCU) where she received vasodilator therapy in the form of intravenous nitrates and Nifidipine, with monitoring of the systemic blood pressure. The right-sided heart failure was treated by oxygen ionotropics and careful gentle diuresis.

Her condition remained critical, was progressively dyspneic with frank right heat failure and fluctuating systemic blood pressure. On the fourth day she sustained refractory cardio-respiratory arrest and died.

## DISCUSSION

Systemic lupus eythromatosus is frequently complicated by pulmonary manifestations. Pulmonary involvement is reported to occur in up to 50% of patients with SLE[1]. The commonest pleuropulmonary manifestations are interstitial pneumonitis, pleuritis with or without effusion and interstitial fibrosis.

Pulmonary hypertension was considered to be a rare complication of SLE, this might be attributed to previous reliance on relatively insensitive methods of diagnosis, such as the presence of symptoms, physical findings and radiological studies. With the use of more sensitive diagnostic techniques such as doppler echocardiography[2], the prevalence of pulmonary hypertension has been recognized to be much higher than previously reported and figures between 0.5 to 14% have been reported[1,3].

Pulmonary hypertension in SLE has been related to an increase in pulmonary vascular resistance. Several potential mechanisms have been suggested; loss of pulmonary vessels as a result of interstitial lung disease, narrowing of vessels as a result of pulmonary vasculitis, in situ pulmonary arterial thrombosis, or pulmonary emboli, and generalized vasoconstriction .

A significant attention has been directed to the role of antiphospholipid antibodies in SLE with pulmonary hypertension[2,4]. An association between antiphospholipid antibodies and pulmonary hypertension has been described in SLE patients without phlebitis or evidence of pulmonary emboli.

It has been proposed that antiphospholipid antibodies may contribute to pulmonary hypertension by leading to a hypercoaguable state and in situ pulmonary arterial thrombosis, and decreasing endothelial prostacycline formation leading to increase vasoreactivity[2].

Raynaud's phenomenon is considered to be a frequent association with pulmonary hypertension in SLE patients[1,3], and it is present in about 75 % of cases of SLE with pulmonary hypertension, compared with an overall incidence of 20 % in SLE patient's in general[2]. Raynaud's phenomenon may represent a generalized vascular response that includes a decrease in the size of pulmonary vascular bed.

A recent attention has also been paid to the role of antiendothelial cell antibodies (a ECA) and the development of pulmonary hypertension in SLE, as those antibodies have augmented the release of Interleukin 6 significantly in SLE patients with pulmonary hypertension[5]. This indicates that the disease has complicated immunopathogenesis which has to be more investigated.

The response to standard therapy is generally unpredictable and often disappointing[1,3]. In primary pulmonary hypertension not related to SLE, vasodilators, such as Prostacyclin[6], Hydralizine, Nifidipine and Nitroglycerine may be of some benefit but it is not effective if there is underlying SLE. Some may get partial improvement with immunosuppressive modalities such as Cyclophosphomide[3].

Several novel options are under trials. Nitric Oxide inhalation using its vasodilating and anti-inflammatory potentials suggest it's rational for treating acute pulmonary hypertension. Intravenous immunoglobulins, utilizing the direct anticytokine effect might be of some help as they might modulate the immunological injury to the pulmonary vascular bed in SLE patients. Whether such novel strategies will affect the long-term prognosis of these patients remains unknown[1].

The definite treatment is lung or heart lung transplantation where prolonged survival can be accomplished despite persistence low complement level[7]. This suggests and indicates that the development of pulmonary hypertension is not necessarily related to the overall lupus activity[1].

The prognosis of this complication is generally poor, in one long-term retrospective study, the interval between the onset of pulmonary hypertension and death was 1.3 years[8]. Despite this figure the natural history of pulmonary hypertension in SLE has not yet clearly defined and long-term prospective studies are needed.

The seven poor prognostic variables include New York heart association functional class three or four, presence of Raynaud's phenomenon, elevated mean right atrial pressure, elevated mean pulmonary artery pressure, decreased cardiac index, decreased diffusing capacity for CO3, and positive RNP[9]. Our patient had four of these seven variables.

## CONCLUSION

**Pulmonary Hypertension in SLE patients is a rare but fatal complication. The average survival before the era of lung transplantation was 1.3 years. With the modern diagnostic facilities one should look actively for this potentially treatable condition whenever an SLE patient presents with progressive dyspnea.**

## REFERENCE


1. Rubin LA,Guran A,Rose TH, et al. A fatal complication of lupus in pregnancy. Arthritis Rheum 1995;38:710-4.
2. Winslow TM, Ossipov MA , Fazio GP, et al. Five year follow up study of the prevalence and progression of the pulmonary hypertension in systemic lupus erythromatosus. Am Heart J 1995;129:510-5.
3. Greon H, Bootsma H , Postma DS, et al. Primary pulmonary hypertension in a patient with systemic lupus erythromatosus: partial improvement with cyclophophsmide . J Rhematol 1993;20:1055-7.
4. Mulhren D, Bresnihn B. Systemic lupus erythromatosis. Baillieres Clin Rheumatol 1993;7:31-57.
5. Yo shio T, Masuyama JI , Kohda N, et al. Association of interleukin 6 release from endothetical calls and pulmonary hypertension in SLE . J Rhematol 1997;24:489-95.
6. Mclaughin VV, Genthner DE, Panelia MM, et al. Reduction in pulmonary vascular resistance with long term and Prostacyclin ( Epoprostenol ) therapy in primary pulmonary hypertension . N Eng J Med 1998;338:273-7.
7. Levy RD, Guerraty AJ, Yacoab MH, et al. Prolonged survival heart lung transplantation in systemic lupus erythromatosis. Chest 1993;104:1903-5.
8. M.J, YT , TA, et al. Long term retrospective study of patient with connective tissue diseases accompanied by Pulmonary Hypertension. Ryumachi 1993;33:29-36.
9. Murata 1, Takenaka K, Yoshinoya S, et al. Clinical evaluation of pulmonary hypertension in systemic sclerosis and related disorder. A doppler echocardiographic study of 135 Japanese patients. Chest 1997;111:36-43.