Asthma presenting as cor pulmonale

A. M. DUNN
M.R.C.P.

L. F. HILL
M.R.C.P.

R. S. E. WILSON
M.R.C.P.

Royal Shrewsbury Hospital, Mytton Oak Road, Shrewsbury

Summary

A 29-year-old man with asthma presenting as right sided congestive cardiac failure is reported. There was rapid resolution of the heart failure with standard bronchodilator therapy and corticosteroid therapy.

KEY WORDS: asthma, cor pulmonale.

Cor pulmonale is a well recognized and common sequela of chronic airflow obstruction. It must be rare as a presenting symptom in asthma and has not to our knowledge been previously reported.

Case report

A 29-year-old male, non-smoking farmer was admitted with a 5-week history of progressive swelling of the legs. On direct questioning, he admitted to a productive cough, mild dyspnoea and wheezing since his early teens. He gave no history of chest pain or haemoptysis and denied any recent deterioration in his breathing, although his family noticed that he was frequently incapacitated by breathlessness. He was taking no medication and had visited his general practitioner only once before with 'bronchitis' at the age of 12 years.

On examination he was breathless, plethoric and cyanosed but had no finger clubbing. The pulse rate was 140/min, jugular venous pressure elevated and there was pitting oedema to his upper thighs. Bilateral expiratory rhonchi were heard and the liver was palpable 4 cm below the costal margin.

On admission the forced expiratory volume in the first second (FEV₁) was 1.0 litre and forced vital capacity (FVC) was 3.1 litre, improving to 1.6 and 3.8 litre respectively 15 min after 5 mg nebulized salbutamol. An electrocardiogram (ECG) showed right axis deviation and evidence of right ventricular hypertrophy. The chest X-ray showed cardiomegaly and hyperinflation of the lung fields.

Arterial blood gases showed pH of 7.31, Po₂ of 4.3 kPa and a PCO₂ of 6.7 kPa. Haemoglobin was 20.2 g/dl with a haematocrit of 60%. The sputum was purulent, growing *Streptococcus pneumoniae* and *Haemophilus influenzae*. Further investigations including farmers' lung and aspergillus precipitins were negative and an isotope lung scan showed no evidence of pulmonary embolus.

He was treated with continuous 24% oxygen, prednisolone, nebulized salbutamol, diuretics and an antibiotic. He was venesected 1500 ml of blood.

He rapidly improved and, on discharge 10 days later, he was oedema free and taking salbutamol 200 µg and beclomethasone dipropionate 100 µg by inhaler four times a day and a reducing regime of prednisolone.

Three weeks later, he was reviewed when he was asymptomatic, had stopped the prednisolone and his FEV₁/FVC had increased to 3.65/4.65. His haemoglobin had fallen to 16 g/dl with a haematocrit of 51%. The chest X-ray had returned to normal.

Since then his symptoms have been controlled by regular use of salbutamol and beclomethasone dipropionate by inhaler and a salbutamol spandet at night. When seen 3 months after admission he was well, at work and had a normal ECG, haemoglobin and chest X-ray.

Discussion

Cor pulmonale is common in severe chronic airflow obstruction after prolonged hypoxia. It is often accompanied by polycythaemia (Crofton and Douglas, 1975). These changes are largely irreversible.

In acute severe asthma, ECG evidence of right ventricular strain may develop which reverses with treatment (Seigler, 1977). Polycythaemia and oedema, however, are rare and almost invariably the

patient developing these changes is a known long-standing asthmatic.

Our particular interest in the young man described is that although he presented to his general practitioner at the age of 12 years with symptoms of asthma, he then failed to consult any doctor again until his presentation at the age of 29 years with frank cor pulmonale. This demonstrates the poor correlation between a patient's symptoms and physiological testing (Rubinfeld and Pain, 1976). His tolerance of severe airway obstruction was such that he noticed little disability until just before presentation. His family appeared more aware of the severity of his illness than the patient himself.

The rapidity and completeness of response to therapy may perhaps be surprising but since then we have also seen a 40-year-old lady with undiagnosed

asthma presenting with right heart failure. This again responded rapidly to treatment with salbutamol and prednisolone. We therefore suggest the diagnosis of asthma should be considered in any person presenting with congestive cardiac failure of rapid onset and with no obvious cardiac cause.

References

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