Radiology Case Reports

Volume 2, Issue 3, 2007

Pulmonary Embolism in a 3-Year-Old Boy with Nephrotic Syndrome

Ian Sinha, Gillian Klafkowski, Brendan Harrington, Philip Minchom, and Brian Judd

We present the case of a 3-year-old boy with nephrotic syndrome with mild respiratory symptoms who was shown by ventilation-perfusion scan to have pulmonary embolism. He responded well to anticoagulant therapy.

Case Report

A 3-year-old boy presented with a relapse of nephrotic syndrome. He was noted to have mild respiratory distress, in the form of persistent mild tachypnea, which worsened after 5 days. In the absence of clinical or radiological features of pulmonary edema or infection, pulmonary embolism was suspected. When checked, D-dimer was found to be raised. Ventilation/perfusion (V/Q) scan showed no perfusion to the right lung, but normal ventilation to both lungs (Fig. 1). He was treated with heparin and subsequently discharged on warfarin. Repeat scan six months later showed complete resolution.

Discussion

The clinical triad of nephrotic syndrome comprises proteinurea, hypoalbuminemia, and edema [1]. It is a prothrombotic state, mainly due to urinary antithrombotic protein loss, hypovolemia, and hypercholestremia. Thromboembolic complications occur in about 5% of cases of nephrotic syndrome.

The clinical findings of pulmonary embolism can be difficult to distinguish from those of other causes of dyspnea in nephrotic syndrome. Pneumonia is an important differential diagnosis because children with nephrotic syndrome may be immunocompromised, mainly due to hypogammaglobulinemia secondary to urinary loss, urinary loss of complement, and long-term steroid use. The differential diagnosis would also include pulmonary edema, respiratory compensation of metabolic acidosis if the child is hypovolemic or septic, and diaphragmatic compression from ascites.

A negative D-Dimer result reliably excludes pulmonary embolism. If positive, the D-dimer result is only of value in patients with strong clinical suspicion or risk factors for pulmonary embolism [2]. The most accurate imaging modality is CT pulmonary angiography, which can directly demonstrate thrombi in the pulmonary arteries and branches. V/Q scanning is sensitive but not as specific as CT pulmonary angiography [3]. Patients with pulmonary embolism generally respond well to anticoagulant therapy, but if untreated, the condition is associated with a mortality of 30%.

British Thoracic Society guidelines suggest that in the

Citation: Sinha I, Klafkowski G, Harrington B, Minchom P, Judd B. Pulmonary embolism in a 3-year-old with nephrotic syndrome. Radiology Case Reports. [Online] 2007;2:87.

Abbreviations: CT, computed tomography

Ian Sinha (Email: iansinha79@doctors.org.uk), Gillian Klafkowski, Brendan Harrington, and Philip Minchom are at Wrexham Maelor Hospital, Croesnewydd Road, Wrexham, United Kingdom.

Brian Judd is at Alder Hey Childrens Hospital, Liverpool, United Kingdom.

Published: August 13, 2007

DOI: 10.2484/rcr.v2i3.87

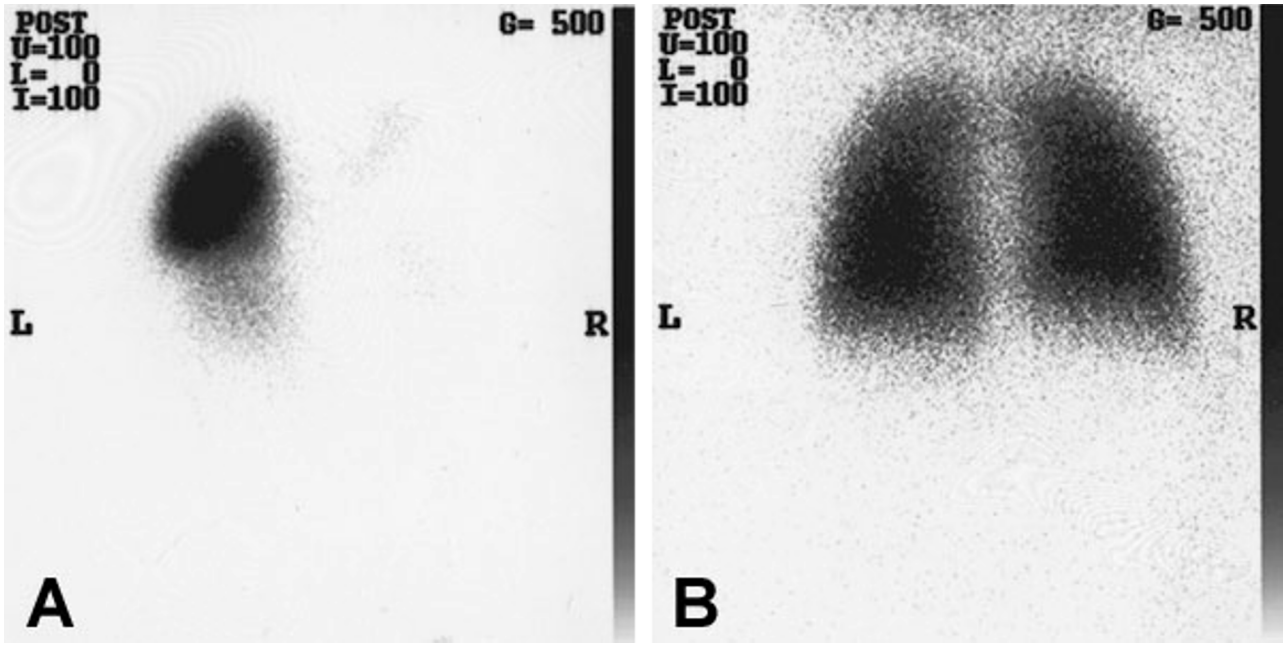

Figure 1. 3-year-old boy with pulmonary embolism. A, Perfusion scan demonstrates no significant perfusion to the right lung. B, Ventilation scan demonstrates normal ventilation to both lungs. VQ scan images are presented courtesy of the Department of Radiology at Alder Hey Childrens Hospital, Liverpool, United Kingdom.

absence of another reasonable explanation for dyspnea in a patient with nephrotic syndrome, clinicians should be highly suspicious of pulmonary embolism [4]. This case highlights how this potentially fatal condition may have a very subtle presentation.

References

1. Houston I. Nephrotic syndrome. In: Campbell AGM, McIntosh N. Forfar and Arneil's textbook of paediatrics. 4th ed. Edinburgh: Churchill Livingstone; 1994:1057-1059

2. Robinson G. Pulmonary embolism in hospital practice. British Medical Journal 2006:332:156-60 [PubMed]

3. Roy P-M, Colombet I. Review and meta-analysis of strategies for the diagnosis of suspected pulmonary embolism (2005). British Medical Journal. 2005:331: 259-267 [PubMed]

4. British Thoracic Society guidelines for the management of Pulmonary Embolism. Thorax. 2003: 58(6);470-84 [PubMed]

 DOI: 10.2484/rcr.2007.v2i3.87