CASE REPORT

Acute eosinophilic pneumonia masquerading as multiple pulmonary embolisms

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Accepted 17 September 2016

SUMMARY

A 47-year-old previously healthy man was admitted to the hospital with a 5-day history of fever, dry cough, and dyspnoea. Thoracic radiographs and CT scan showed extensive bilateral consolidation predominantly involving the central portions of the upper lung lobes, along with multiple scattered nodules. On taking a thorough history, it was found that the patient had visited a gritty 100-year-old Japanese folk house 1 week ago. An urgent bronchoscopy was performed, and the results were consistent with the findings of acute eosinophilic pneumonia (AEP). The patient's respiratory distress resolved within 10 days without treatment. Hence, even in an AEP case with atypical radiological presentations, careful history taking can lead to a rapid diagnosis.

BACKGROUND

Acute eosinophilic pneumonia (AEP) is an acute illness (duration, <5 days) characterised by fever, hypoxaemia, and diffuse alveolar or mixed alveolar-interstitial opacities on thoracic radiographs. However, eosinophilia is usually not evident at the time of presentation; therefore, AEP may be mistaken for acute lung injury, especially in patients exhibiting atypical radiological findings. The signs and symptoms of AEP have been reported in association with cigarette smoking or exposure to dust or smoke from fireworks. We present a unique case of AEP possibly caused by dust exposure.

CASE PRESENTATION

A 47-year-old previously healthy man was admitted to the hospital with a 5-day history of fever, dry cough, and dyspnoea. He had no remarkable medical history and no history of smoking or illicit drug use. One week prior to his admission to the hospital, the patient had cleaned a gritty 100-year-old Japanese folk house. The patient's vital signs revealed mild fever (temperature, 37.8°C) and hypoxaemia (percutaneous arterial oxygen saturation (SpO₂) of 87%) with ambient air; however, his physical examination showed no abnormal findings. Serum laboratory data indicated mild leucocytosis ($9.2 \times 10^3/\mu\text{L}$, 8% eosinophils) with marked elevation of the C reactive protein level (28.1 mg/dL). At admission, the thoracic radiographs and CT scan (figure 1A–C) showed extensive bilateral lung consolidation with multiple randomly scattered nodules; this appeared similar to the radiographic appearance of septic emboli, but not conclusively

excluded the possibility of hypersensitivity pneumonitis.

INVESTIGATIONS

Additional serum laboratory data showed a moderate elevation of the soluble interleukin 2 receptor level (1370 U/mL). All other measured values were normal, including myeloperoxidase antineutrophil cytoplasmic antibody, procalcitonin (0.21 ng/mL), (1–3)- β -D-glucan (<5 pg/mL), and cryptococcal antigen testing. The following day, an urgent bronchial wash was performed on the bronchus of the right middle lobe, which showed an abundance of eosinophils in the alveolar spaces (figure 2A). Transbronchial lung biopsy from the right anterior segment (S3) showed numerous eosinophils in the alveolar spaces and/or septa (figure 2B). Surprisingly, the eosinophil count gradually increased to 31.5% on day 5.

OUTCOME AND FOLLOW-UP

The patient was thus diagnosed with AEP on the basis of the bronchoscopy findings and the high serum eosinophil count. The cause was attributed to inhalation of unknown antigens as a result of exposure to dust in the Japanese folk house.¹ The pulmonary lesions and clinical symptoms spontaneously resolved after 10 days without any treatment (figure 1D–F). The peripheral blood eosinophil percentage decreased to 16% on day 12 and 8.5% on day 15. The patient was discharged at day 18, and the eosinophil count finally normalised to 4.4% on day 30.

DISCUSSION

This case showed an atypical radiological presentation of AEP, with bilateral alveolar consolidation predominantly involving the central portions of the upper lung lobes with multiple scattered pulmonary nodules. These nodules, which appeared similar to septic pulmonary emboli, but not thrombotic emboli, spared the majority of the lung cortex. This finding suggested that the nodules were more likely caused by pulmonary oedema and/or peribronchial cuffing² than by septic emboli; further, these nodules may represent an allergic reaction that spontaneously regressed. On careful radiographical examination, it appeared that extensive consolidation had spread through a transbronchial route.

Patients with AEP generally do not present with peripheral blood eosinophilia; as in this case, the eosinophilia often develops while the patient is hospitalised. Thus, obtaining a thorough history can aid in the diagnosis of this disease even in the presence of atypical radiological findings.

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To cite: Saraya T, Mikura S, Oda M, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2016-217065

Figure 1 (A) The thoracic radiograph taken at admission showed bilateral infiltration predominantly in the upper to middle lung fields, as well as the left lower lung field. (B and C) Thoracic CT scan demonstrated extensive bilateral consolidation predominantly involving the central portions of the upper lung lobes with multiple scattered pulmonary nodules. (D–F) On day 10 of hospitalisation, complete resolution of the abnormal lung lesions was observed.

Figure 2 The bronchial wash fluid showed the presence of abundant eosinophils, and the transbronchial biopsy specimens obtained from right S3 (Fig. 1C) demonstrated an accumulation of eosinophils in the alveolar space.

Learning points

- ▶ Various inhalational exposures (such as a recently acquired smoking habit or exposure to dust) should be considered as potential causes of acute eosinophilic pneumonia (AEP).
- ▶ Patients with AEP do not commonly present with peripheral blood eosinophilia; however, it may manifest later during the hospitalisation period.
- ▶ Multiple pulmonary nodules may be seen in patients with AEP, which may represent pulmonary oedema and/or peribronchial cuffing.
- ▶ AEP is a diagnosis of exclusion, which is determined after taking a thorough history of the patient.

Contributors MO, SM and HT managed the patient. TS wrote the manuscript.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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