Pulmonary Erythema Migrans?

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Key Words

Ground-glass opacity · Reversed halo sign · Cryptogenic organizing pneumonia

A 27-year-old, previously healthy woman complained of gradually worsening fatigability, sweats and a cough over a period of 4 weeks. A chest X-ray revealed multiple, bilateral ring-shaped opacities of variable sizes (5–12 cm) and areas of lung consolidation (fig. 1a). A chest CT (fig. 1b–d) revealed spherical lesions with solid consolidation or different stages of central clearance of the infiltration (a reversed halo sign). Cavitations were not present. The bronchoalveolar-lavage fluid differential cell count was: 25% alveolar macrophages, 54% lymphocytes, 16% polymorphonuclear granulocytes and 5% eosinophils. Transbronchial biopsies revealed intra-alveolar buds of granulation tissue. The diagnosis of cryptogenic organizing pneumonia was considered and therapy with prednisolone 30 mg/day was initiated. Repeat CT after 10 weeks of steroid therapy showed a near-complete resolution of these findings.

The 'reversed halo sign', 'atoll sign' or 'fairly ring sign' is defined as central ground-glass opacity surrounded by a ring or crescent-shaped area of consolidation of at least

2 mm thickness [1]. It is a relatively specific sign for cryptogenic organizing pneumonia [1, 2], but the differential diagnosis list should also include: bacterial pneumonia, lymphomatoid granulomatosis, Wegener's granulomatosis, tuberculosis, mucormycosis, paracoccidioidomycosis, sarcoidosis, cancer and pulmonary infarction. Although the pathogenesis of the 'reversed halo sign' is not yet understood, a recent tick-bite (*Ixodes ricinus*) is not a recognized risk factor. Identification of this imaging feature in correlation with clinical data, medical history and laboratory investigation results serves as a useful clue for establishing an accurate diagnosis.

References

- 1 Voloudaki AE, Bouros DE, Froudarakis ME, Datseris GE, Apostolaki EG, Gourtsoyiannis NC: Crescentic and ring-shaped opacities. CT features in two cases of bronchiolitis obliterans organizing pneumonia (BOOP). *Acta Radiol* 1996;37:889–892.
- 2 Cottin V, Cordier JF: Cryptogenic organizing pneumonia. *Semin Respir Crit Care Med* 2012;33:462–475.

Fig. 1 a A chest X-ray shows multiple, bilateral, ring-shaped opacities of varying sizes (5–12 cm) and areas of lung consolidation. **b–d** Chest CT scans show spherical lesions with solid consolidation or different stages of central clearance of the infiltration (a reversed halo sign).