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Nodular reversed halo sign

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A 59-year-old female patient presented with fever and dry cough. A chest CT scan showed a reversed halo sign (RHS) with nodular walls in the right upper lobe (Figure 1).

The RHS is a CT finding defined as a focal, round area of ground-glass attenuation surrounded by a partial or complete rim of consolidation. It was initially described as a relatively specific sign of cryptogenic organizing pneumonia. However, subsequent studies have identified the RHS in a broad spectrum of diseases, including infectious and noninfectious conditions. Several recent studies have highlighted RHS characteristics that are very useful for establishing a diagnosis. The halo can be smooth or nodular and contain ground-glass attenuation, small nodules, or normal lung parenchyma. In patients presenting with active granulomatous disease and the RHS, the ring portion or the inner area of the halo can have a nodular appearance. The ring of consolidation has a nodular appearance in most patients presenting with proven active granulomatous disease and the RHS. Histopathological examination of specimens from such patients shows granulomas within the RHS, a pattern that is not seen in patients diagnosed with organizing pneumonia. Therefore, an RHS with a nodular appearance is a useful finding because it indicates the presence of active granulomatous disease (probably resulting from infection or sarcoidosis) rather than organizing pneumonia.[1]

In patients with post-primary pulmonary tuberculosis, well-recognized CT findings include centrilobular or airspace nodules, branching linear/nodular opacities (the tree-in-bud pattern), areas of consolidation, cavitations, bronchial wall thickening, miliary nodules, tuberculomas, calcifications, parenchymal bands, interlobular septal thickening, ground-glass opacities, paracicatricial emphysema, and fibrotic changes. Clusters of small nodules have also been described as a possible manifestation of pulmonary tuberculosis on CT scans. The identification of imaging patterns suggestive of active tuberculosis has long been recognized as playing an important role in public health and appropriate patient management.

The RHS is increasingly recognized as a valuable imaging finding in several lung diseases. When used in combination with clinical evaluation, careful analysis of the morphological characteristics of the RHS can narrow the differential diagnosis. In patients with pulmonary infection, a nodular RHS indicates the presence of active granulomatous disease (particularly tuberculosis). Our patient was diagnosed with pulmonary tuberculosis, and the diagnosis was confirmed by sputum culture. In conclusion, a nodular RHS is a CT finding suggestive of pulmonary tuberculosis.

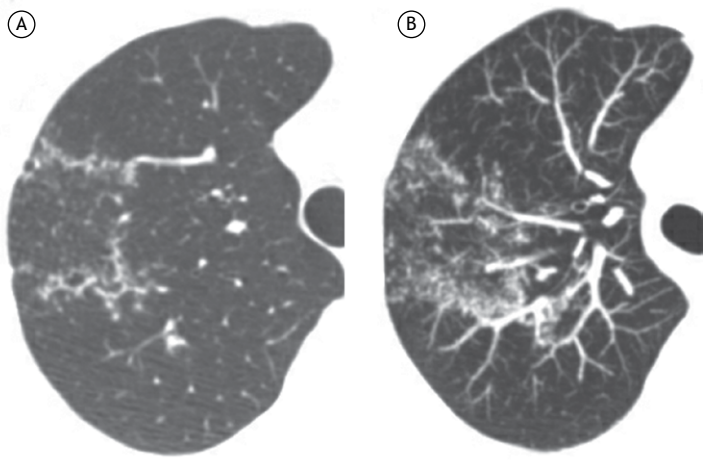

Figure 1. In A, axial CT image of the right upper lobe showing a reversed halo sign with nodular walls and nodules inside the halo. In B, reformatted axial image (maximum intensity projection) showing the nodules in greater detail.

REFERENCE

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