



Clinical, radiological and pathological findings in patients with persistent lung disease following SARS-CoV-2 infection

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Post-COVID lung disease is not a single entity, but includes different subtypes, each of them potentially requiring separate and different management <https://bit.ly/3BJDeUF>

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Abstract

Some patients experience pulmonary sequelae after SARS-CoV-2 infection, ranging from self-limited abnormalities to major lung diseases. Morphological analysis of lung tissue may help our understanding of pathogenic mechanisms and help to provide consistent personalised management. The aim of this study was to ascertain morphological and immunomolecular features of lung tissue. Transbronchial lung cryobiopsy was carried out in patients with persistent symptoms and computed tomography suggestive of residual lung disease after recovery from SARS-CoV-2 infection. 164 patients were referred for suspected pulmonary sequelae after COVID-19; 10 patients with >5% parenchymal lung disease underwent lung biopsy. The histological pattern of lung disease was not homogeneous and three different case clusters could be identified, which was mirrored by their clinical and radiological features. Cluster 1 (“chronic fibrosing”) was characterised by post-infection progression of pre-existing interstitial pneumonias. Cluster 2 (“acute/subacute injury”) was characterised by different types and grades of lung injury, ranging from organising pneumonia and fibrosing nonspecific interstitial pneumonia to diffuse alveolar damage. Cluster 3 (“vascular changes”) was characterised by diffuse vascular increase, dilatation and distortion (capillaries and venules) within otherwise normal parenchyma. Clusters 2 and 3 had immunophenotypical changes similar to those observed in early/mild COVID-19 pneumonias (abnormal expression of STAT3 in hyperplastic pneumocytes and PD-L1, IDO and STAT3 in endothelial cells). This is the first study correlating histological/immunohistochemical patterns with clinical and radiological pictures of patients with post-COVID lung disease. Different phenotypes with potentially different underlying pathogenic mechanisms have been identified.

