

## Transbronchial cryobiopsy: a new way to assess lung disease in rheumatic disorders

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Pulmonary involvement can be a serious complication of several rheumatic diseases, with high morbidity and mortality. Clinical evaluation, pulmonary function tests (PFTs) and imaging features do not always allow a definite diagnosis. Moreover, another clinical events as infection or drug toxicity can also occur and a differential diagnosis can be demanding<sup>1</sup>. For this reason, obtaining lung tissue specimens for pathological review may be crucial.

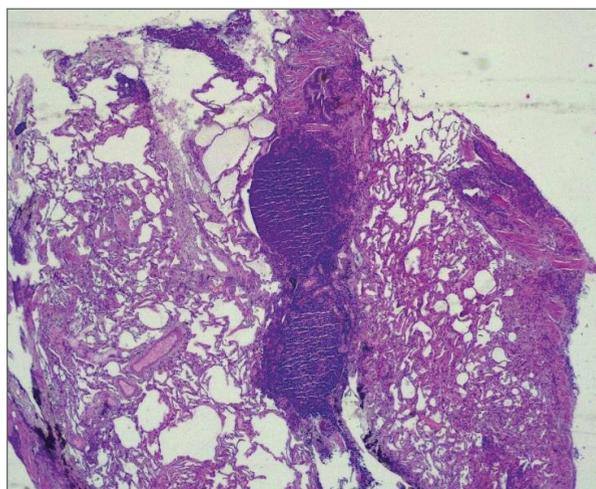
The authors present the cases of 3 patients with rheumatic disorders and suspected lung involvement, in which a definite diagnosis could only be achieved after a transbronchial lung cryobiopsy (TLCB).

Two female patients aged 55 and 64 years with rheumatoid arthritis (RA) presenting with exertional dyspnea and dry cough were evaluated in our Pulmonology Department. The first patient had a 4-year history of severe RA currently treated with etanercept and methotrexate. PFTs revealed only a diminished diffusing capacity of the lung for carbon monoxide (DLCO) and high-resolution computed tomography (HRCT) a mosaic pattern. A TLCB was then performed and histology was compatible with follicular bronchiolitis (Figure 1). In the second case, although RA lung involvement was suspected initially, the patient had a past history of exposure to avian dust and HRCT suggested the possibility of hypersensitivity pneumonitis (HP). Bronchoalveolar lavage (BAL) and computed tomography (CT) guided transthoracic biopsy were inconclusive. So, a TLCB was performed and histological specimen was compatible with HP.

Finally, a 71-year-old male, diagnosed with an idiopathic inflammatory myopathy, was also evaluated in

our Department presenting a 7-month history of progressive severe exertional dyspnea and asthenia. PFTs showed a restrictive pattern with decreased DLCO of 35%. HRCT revealed bilateral ground-glass opacities and consolidation with some traction bronchiectasis. The clinical and radiological multidisciplinary evaluation did not conclude a specific diagnosis and some hypothesis with different aetiologies have been postulated. A TLCB was undertaken and the sample analysis was compatible with a nonspecific interstitial pneumonia (NSIP), which in addition to BAL features allowed to discard other differential diagnosis suspected initially.

TLCB was performed under general anesthesia. The patient was intubated with a rigid bronchoscope and a fiberoptic bronchoscope was introduced through the bronchial tree with a flexible cryoprobe 2.4 mm directed to the selected lobe and segment under fluoroscopic guidance. The cooling agent was applied under



**FIGURE 1.** Cryobiopsy with follicular bronchiolitis features – lung parenchyma with preserved architecture and the presence of prominent peribronchiolar lymphoid follicles; minor interstitial inflammatory component

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high pressure through the cryoprobe. Major bleeding was controlled by a Fogarty balloon that was insufflated at the entrance of a segmental or lobar bronchus. No complications occurred.

TLCB is an endoscopic technique that has recently gained increased interest for the diagnosis of different lung disorders<sup>2</sup>. Previously, a surgical lung biopsy (SLB) was needed for the definite diagnosis, which is associated with significant morbidity and mortality and high costs<sup>3</sup>. Since the introduction of this new technique, studies were performed to compare diagnostic yield and safety of these two modalities<sup>4-6</sup>. TLCB seems to be a relatively non-invasive and safe procedure to collect lung tissue for identification of complex morphological patterns of different lung diseases allowing a high diagnostic accuracy<sup>2,7</sup>. Moreover, TLCB can be performed in a wider group of patients including those with several comorbidities in which a SLB would be contraindicated<sup>4</sup>. TLCB is also cost-effective as hospitalization is not needed in the majority of the cases<sup>8</sup>.

In conclusion, TLCB allowed a definite diagnosis in the three cases presented leading to prompt treatment with further positive prognostic impact.

The authors aim to raise awareness of this new technique as a valuable tool to increase the diagnostic confidence in this clinical context.

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