Bronchoscopic and surgical diagnostic procedures in ILDs

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AIMS

- Value of bronchoscopies
- Value of surgery
- Diagnostic options

SUMMARY

Interstitial lung diseases (ILDs) constitute a heterogeneous group of diseases with similar clinical, radiological, and pulmonary function profiles.

The ILD group comprises various diseases. Among those, idiopathic pulmonary fibrosis (IPF) is noteworthy due to its frequency and associated mortality. The diagnostic approach to ILDs is complex, and CT evaluation of patients is indispensable. The histopathological evaluation of samples obtained by transbronchial biopsy (TBB) can be used in patients suspected of having diseases such as sarcoidosis and hypersensitivity pneumonitis. Although the rates of morbidity and mortality are higher for surgical biopsy than for TBB, the former is the method of choice for histopathological analysis. Therefore, although surgical biopsy is the gold standard for the diagnosis of ILDs.

The most used method during bronchoscopy is a bronchoalveolar lavage. The recognition of a predominantly inflammatory cellular pattern in the BAL helps the clinician narrow the differential diagnosis of ILD, even though such patterns are nonspecific. A normal BAL differential cell profile does not exclude microscopic abnormalities in the lung tissue and therefore BAL cellular analysis alone is insufficient to diagnose the specific type of ILD, except in malignancies and some rare ILDs. However, abnormal findings may support a specific diagnosis when considered in the context of the clinical and radiographic presentations.

Transbronchial lung biopsy, the standard biopsy technique, is useful in the evaluation of selected conditions (e.g., granulomatous disorders such as sarcoidosis). An IPF pattern on HRCT makes these conditions unlikely. In cases requiring histopathology, the specificity and positive predictive value of UIP pattern identified by transbronchial biopsy has not been rigorously studied. While transbronchial biopsy specimens may show all the histologic features of UIP, the sensitivity and specificity of this approach for the diagnosis for UIP pattern is unknown. It is also unknown how many and from where transbronchial biopsies should be obtained. In the recent ATS/ERS guideline it’s stated, that transbronchial biopsy should not be used in the evaluation of IPF in the majority of patients, but may be appropriate in a minority (weak recommendation, low-quality evidence).

With cryobiopsies a new endoscopic technique is available since a couple of years. Cryoprobe has been used in the bronchoscopic management of malignant endobronchial disease since the 1970s. The cryoprobe operates using the Joule- Thomson effect, in which compressed gas (most commonly liquid nitrous oxide) undergoes adiabatic expansion and rapidly cools the probe tip to -89°C. This allows for adequate anchoring of the probe to lung parenchyma and biopsy specimen retrieval. More and more publications discussing the value of the technology.
Until now, a surgical lung biopsy is still the gold standard, when a biopsy is required. When required, the video assisted thoracoscopic surgery should be performed before the initiation of treatment. The indication for a surgical biopsy should be discussed in a multidisciplinary board. A confident clinical diagnosis of IPF can be reliably made in the presence of characteristic HRCT and clinical findings. If a surgical biopsy is performed in cases of suspected interstitial pneumonia, more than one biopsy specimen must be taken from more than one site, preferably from different lobes. Multiple multilobe lung biopsies are technically easier by video-assisted thoracoscopy (VATS) than by open lung biopsy. VATS is also associated with less early postoperative pain than open lung biopsy. It is recommended that the precise biopsy sites are based on HRCT appearances. In patients with suspected IIP, areas of intermediate abnormality or comparatively normal lung adjacent to areas of established honeycombing should be targeted with the specific aim of identifying UIP if present.

The main complication of a surgical biopsy is an activation of the underlying diseases. Therefore a minimal diffusion capacity of 40% is recommended.

REFERENCES

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EVALUATION

1. **BAL in IPF is**
   a. always diagnostic
   b. often unspecific
   c. the gold standard
   d. associated with a high complication rate

   Answer B

2. **Transbronchial lung biopsy**
   a. is in guidelines not recommended
   b. cannot establish a differential diagnosis
   c. results in a 50% pneumothorax rate
   d. needs always general anasthesia

   Answer A

3. **Cryobiopsy in IPF**
   a. is associated with a high bleeding rate
   b. provides bigger samples than the classical forceps biopsy
   c. is worldwide established
   d. is a complex technology

   Answer B

4. **Surgical biopsy in IPF**
   a. is always indicated
   b. should be performed via open surgery
   c. the location of the biopsy should be based on HRCT appearances
   d. is without complications

   Answer C