



ORIGINAL ARTICLE

## Diagnosis of sarcoidosis in the Endobronchial Ultrasound-guided Transbronchial Needle Aspiration era



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### KEYWORDS

Diagnosis;  
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aspiration;  
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### Abstract

**Background:** Sarcoidosis is a multisystemic disorder of unknown etiology. Its diagnosis is based on compatible clinical and radiological features and supported by histological demonstration of epithelioid cell noncaseating granulomas with exclusion of other causes. Endobronchial ultrasound combined with transbronchial needle aspiration (EBUS-TBNA) has been proposed as a valuable tool in obtaining suitable tissue sample.

The aim of this study was to evaluate the contribution of EBUS-TBNA to the diagnosis of stages I and II thoracic sarcoidosis in a community-based hospital.

**Methods:** A prospective study was conducted in patients with suspected stages I and II pulmonary sarcoidosis, based on clinical and radiological data, who were being followed in our Interstitial Lung Disorders Outpatient Clinic or sent from other hospitals to our Respiratory Endoscopy Unit for diagnostic procedures. All suitable and fit patients underwent EBUS-TBNA between March 2010 and June 2013.

We assessed demographic characteristics, radiological stages, cytological/histological examination and diagnostic techniques performed.

**Results:** In the period considered 39 patients underwent EBUS-TBNA for suspected stages I and II thoracic sarcoidosis and adequate samples were obtained in 38 (97.4%). Within this population, 33 (84.6%) patients had a definite diagnosis of sarcoidosis, of which 31 patients (93.9%) were confirmed to have epithelioid noncaseating granulomas by EBUS-TBNA. Four patients were submitted to surgical procedures (three to mediastinoscopy and one to open surgical lung biopsy).

Data analysis allowed to calculate a sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of 93.9%, 100%, 100%, 75.0% and 94.8%, respectively. No complications were observed.

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**PALAVRAS-CHAVE**

Diagnóstico;  
Punção aspirativa  
transbrônquica  
guiada por  
ecoendoscopia  
brônquica linear;  
Sarcoidose

**Conclusions:** EBUS-TBNA is a valuable tool in the diagnostic workup of patients with suspected stages I and II thoracic sarcoidosis providing a substantial number of pathological confirmations and with few complications. Its high diagnostic accuracy precludes the need for more invasive procedures such as surgical biopsy.

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## Diagnóstico de sarcoidose na era da Ecoendoscopia brônquica associada a Punção Aspirativa Transbrônquica

### Resumo

**Antecedentes:** A Sarcoidose é uma doença multissistêmica de etiologia desconhecida. O seu diagnóstico baseia-se em características clínicas e radiológicas compatíveis e é apoiado pela demonstração histológica de granulomas epitelióides não caseosos, com a exclusão de outras causas. A ecoendoscopia brônquica combinada com a punção aspirativa transbrônquica (EBUS-TBNA) foi proposta como uma ferramenta valiosa na obtenção de amostras de tecido adequadas.

O objectivo deste estudo foi avaliar o contributo da EBUS-TBNA para o diagnóstico de sarcoidose torácica de estágio I e II num hospital central.

**Metodologia:** Foi realizado um estudo prospectivo em doentes com suspeita de sarcoidose torácica de estágio I e II, com base em dados clínicos e radiológicos, que estavam a ser seguidos na nossa Clínica Ambulatória de Doenças Pulmonares Intersticiais, ou foram enviados de outros hospitais para a nossa Unidade de Endoscopia Respiratória, para os procedimentos de diagnóstico. Todos os doentes adequados e aptos foram submetidos a EBUS-TBNA, entre Março de 2010 e Junho de 2013.

Avaliámos as características demográficas, os estádios radiológicos, exames citológicos/histológicos e técnicas de diagnóstico usados.

**Resultados:** No período referido anteriormente, 39 doentes foram submetidos a EBUS-TBNA para a suspeita de sarcoidose torácica de estágio I e II, e foram obtidas amostras adequadas em 38 deles (97,4%). Nesta população, 33 (84,6%) doentes receberam um diagnóstico definitivo de sarcoidose, dos quais 31 doentes (93,9%) foram confirmados como tendo granulomas epitelióides não caseosos, pela EBUS-TBNA. Quatro doentes foram submetidos a procedimentos cirúrgicos (três a mediastinoscopia e outro a biópsia pulmonar cirúrgica aberta).

A análise dos dados permitiu calcular uma sensibilidade, especificidade, valor preditivo positivo, valor preditivo negativo e acuidade diagnóstica de 93,9%, 100%, 100%, 75,0% e 94,8%, respectivamente. Não foram observadas complicações.

**Conclusões:** A EBUS-TBNA é uma ferramenta valiosa na abordagem diagnóstica dos doentes com suspeita de sarcoidose torácica de estágio I e II, proporcionando um número importante de confirmações patológicas e com poucas complicações. A sua elevada acuidade diagnóstica exclui a necessidade de procedimentos mais invasivos como uma biópsia cirúrgica.

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## Introduction

Sarcoidosis is a multisystemic disorder of unknown cause. It commonly affects young and middle-aged adults and frequently presents with bilateral hilar lymphadenopathy, pulmonary infiltrates, ocular and skin lesions, but virtually all organs may be involved. The course and prognosis were found to correlate with the clinical onset and the extent of the disease. An acute onset with erythema nodosum or asymptomatic bilateral hilar lymphadenopathy usually heralds a self-limiting course whereas an insidious onset, especially with multiple extra-pulmonary manifestations, may be followed by relentless progressive fibrosis of the lungs and other organs.<sup>1</sup> The heterogeneity in prevalence, disease presentation and severity is significant among different ethnic and racial groups and in various countries. The

prevalence ranges from less than one case to 40 cases per 100,000.<sup>2</sup>

The diagnosis of sarcoidosis is based on a compatible clinical and radiological picture, histological evidence of noncaseating granulomas and exclusion of other diseases capable of producing a similar histological or clinical picture.<sup>3,4</sup>

The development of endobronchial ultrasound (EBUS), which enables real-time visualization of mediastinal and hilar structures combined with transbronchial needle aspiration (EBUS-TBNA), currently allows safe and effective functioning of mediastinal and hilar lymph nodes. EBUS-TBNA is widely recognized as being very useful in the diagnosis and staging of lung cancer. However, its importance in the diagnosis of benign pathology of the chest, including sarcoidosis, is progressively increasing.

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