



## Original Article

# Tru-Cut Needle Pleural Biopsy and Cytology as the Initial Procedure in the Evaluation of Pleural Effusion<sup>☆</sup>



Maribel Botana Rial,<sup>a</sup> Andrés Briones Gómez,<sup>b</sup> José Ramón Ferrando Gabarda,<sup>b</sup>  
 José Fernando Cifuentes Ruiz,<sup>b</sup> María Juliana Guarín Corredor,<sup>c</sup> Nuria Manchego Frach,<sup>c</sup>  
 Enrique Cases Viedma<sup>b,\*</sup>

<sup>a</sup> Unidad de Técnicas Broncopleurales, Complejo Hospitalario Universitario de Vigo, Vigo, Pontevedra, Spain

<sup>b</sup> Unidad de Técnicas Broncopleurales, Hospital Universitario y Politécnico La Fe, Valencia, Spain

<sup>c</sup> Servicio de Anatomía Patológica, Hospital Universitario y Politécnico La Fe, Valencia, Spain

## ARTICLE INFO

## Article history:

Received 12 July 2013

Accepted 18 December 2013

Available online 10 July 2014

## Keywords:

Pleural biopsy  
 Tru-cut needle  
 Diagnostic yield  
 Pleural effusion

## ABSTRACT

**Introduction and objectives:** The evaluation of pleural effusion (PE) includes various techniques, including pleural biopsy (PB). Our aim was to study the diagnostic yield of Tru-Cut needle PB (TCPB) and to define clinical/radiological situations in which TCPB might be indicated as an initial procedure.

**Methodology:** Retrospective study of TCPB in a hospital center (2010–2012). Cases of pleural lesions without effusion were excluded. Clinical and radiological variables, diagnostic yield, TCPB complications and factors associated with the diagnostic yield of the combination of TCPB and thoracentesis as initial procedure were analyzed.

**Results:** One hundred and twenty-seven (127) TCPB were reviewed: 29.1% were cases of malignant PE and in 18.9% the cause of the PE could not be determined. The diagnostic yield of TCPB for tuberculosis was 76.5% (13/17) and 54% (20/37) for malignant PE. Complications occurred in 4.7% of the cases. In 72 patients with a final definitive diagnosis, TCPB was performed at the same time as the initial thoracentesis. Diagnostic yield for the combination of TCPB/cytology as an initial technique was 43% (31/72) compared to 12.5% (9/72) for cytology only ( $P=.01$ ). The only predictive variable for the indication of TCPB as an initial technique was a PE volume  $>2/3$  ( $P=.04$ ).

**Conclusions:** TCPB is safe and provides an acceptable diagnostic yield, particularly when combined with simultaneous cytology in the evaluation of PE of various aetiologies. Radiological criteria may help guide the selection of patients who could benefit from this technique as an initial procedure combined with thoracentesis.

© 2013 SEPAR. Published by Elsevier España, S.L. All rights reserved.

## Biopsia pleural con aguja Tru-cut y citología como primer procedimiento en el estudio del derrame pleural

## RESUMEN

**Introducción y objetivos:** El estudio del derrame pleural (DP) incluye distintas técnicas, como la biopsia pleural (BP). Los objetivos han sido analizar la rentabilidad diagnóstica de la BP con aguja Tru-cut (BPTC) y determinar si existen factores clínico-radiológicos que permitan indicar la realización de la BPTC como primer procedimiento.

**Metodología:** Estudio retrospectivo de las BPTC de un centro hospitalario (2010–2012). Se excluyeron casos de lesiones pleurales sin DP. Se analizaron variables clínico-radiológicas, la rentabilidad diagnóstica, las complicaciones de la BPTC y los factores asociados con la rentabilidad diagnóstica de la combinación de la BPTC y toracentesis como primer procedimiento.

**Resultados:** Se revisaron 127 BPTC; el 29,1% fueron DP malignos y en el 18,9% no se llegó a la causa del DP. La rentabilidad diagnóstica de la BPTC para tuberculosis fue del 76,5% (13/17) y para DP malignos,

## Palabras clave:

Biopsia pleural  
 Aguja Tru-cut  
 Rentabilidad diagnóstica  
 Derrame pleural

<sup>☆</sup> Please cite this article as: Botana Rial M, Briones Gómez A, Ferrando Gabarda JR, Cifuentes Ruiz JF, Guarín Corredor MJ, Manchego Frach N, et al. Biopsia pleural con aguja Tru-cut y citología como primer procedimiento en el estudio del derrame pleural. Arch Bronconeumol. 2014;50:313–317.

\* Corresponding author.

E-mail address: cases.enr@gva.es (E. Cases Viedma).

del 54% (20/37). Hubo un 4,7% de complicaciones. En 72 pacientes con diagnóstico final conocido, la BPTC se hizo simultáneamente a la primera toracocentesis. La rentabilidad diagnóstica de la combinación de BPTC/citología como primera técnica fue del 43% (31/72) frente al 12,5% (9/72) de la citología sola ( $p=0,01$ ). La única variable predictora para la indicación de BPTC como técnica inicial fue la cuantía del DP  $> 2/3$  ( $p=0,04$ ).

**Conclusiones:** La BPTC es segura y ha demostrado una rentabilidad diagnóstica aceptable, sobre todo cuando se combina con la citología simultánea en el estudio del DP de diferentes etiologías. La aplicación de criterios radiológicos podría ayudar a seleccionar en qué pacientes podría estar indicada como primera técnica inicial junto a la toracocentesis.

© 2013 SEPAR. Publicado por Elsevier España, S.L. Todos los derechos reservados.

## Introduction

The evaluation of a patient with pleural effusion (PE) involves a series of clinical and radiological procedures and analysis of the pleural fluid (PF).<sup>1,2</sup> It is generally difficult to determine the etiology of PE with thoracocentesis alone, particularly when there is a suspicion of malignant disease, since cytology alone is diagnostic in less than 60% of cases.<sup>1,2</sup> Pleural biopsy (PB) for histological evaluation is the next procedure in the diagnostic algorithm of PE.<sup>1–3</sup> Obtaining samples of pleural tissue can be achieved by blind PB, computed tomography (CT) or ultrasound-guided closed PB or thoracoscopy.<sup>1–5</sup> Closed PB is considered the first step in a patient with suspected tuberculosis in a geographical region with a high prevalence of the disease, and thoracoscopy is the gold standard technique, being the technique of choice in the case of exudative effusion with negative cytology and suspected malignant disease.<sup>1,2</sup> Patients with transudates and exudates and those with malignant PE (MPE) present different clinical and radiological features when compared with patients with benign PE or tuberculosis PE (TBPE). Therefore, in special circumstances, depending on the pre-test clinical suspicion, closed PB could be an initial test in patients with PE.<sup>6</sup>

Various needles are available for closed PB. In 1989, McLeod et al.<sup>7</sup> first described the Tru-cut needle, a thin instrument with a sharp-edged sample notch at the distal end, for performing pleural biopsies. One of the features of the Tru-cut needle, compared to other types of needle, is its small caliber, which may reduce the risk of complications. Tru-cut needle PB (TCPB) is particularly indicated in PE with pleural thickening shown on CT and suspected malignant disease.<sup>1,8</sup> Surprisingly, few studies have been done in non-selected patients with PE alone, and those have been based on a small number of cases.<sup>7,9,10</sup>

Thoracocentesis is the first procedure in the diagnostic algorithm of PE.<sup>1,2</sup> Closed PB together with the first thoracocentesis as an initial technique could improve PB diagnostic yield before other more invasive techniques, such as thoracoscopy, are performed. The first objective of this study was to analyze the diagnostic yield of TCPB in MPE and TBPE in a consecutive non-selected series of patients with PE. A further objective was to analyze the diagnostic yield of PB plus cytology in the evaluation of PE of different etiologies, and to determine factors that might indicate the simultaneous performance of both techniques as an initial procedure in the diagnostic algorithm of PE.

## Methodology

An observational, retrospective study that included all TCPBs performed between 2010 and 2012 in the Bronchopleural Techniques Unit of the Hospital Universitario y Politécnico La Fe in Valencia, Spain. Data were retrieved from the registry of the Anatomical Pathology department and the Bronchopleural Techniques Unit. Inclusion criterion was patients with PE, irrespective of the presence of pleural thickening shown on CT. Patients with

masses or lesions in the pleural cavity without the presence of free fluid were excluded.

The diagnostic criteria used for classifying the etiology of the PE were those recommended by the Spanish Society of Pulmonology and Chest Surgery<sup>2</sup>:

- MPE: cytohistological diagnosis of malignant disease in the pleural space.
- TBPE: Positive Löwenstein culture of PF or PB and/or biopsy showing granulomas, in the absence of other pleural granulomatous diseases, or resolution of PE after completion of empirical anti-tuberculosis treatment.
- Parapneumonic PE (PPPE): presence of cough, fever, and X-ray showing pulmonary infiltrates that resolve after antibiotic treatment. Patients with frank pus were excluded from this group.
- Miscellaneous: specific diagnostic criteria for the diagnosis of other PE.
- Non-malignant PE of unknown origin: PE of unknown origin in patients with any of the following criteria: (a) non-specific pleuritis examined by thoracoscopy, thoracotomy or autopsy, and (b) absence of symptoms or recurrent PE in clinical or radiological follow-up over one year.<sup>11</sup>

### Clinical Epidemiological and Radiological Variables

The epidemiological characteristics of the patients included in the study were recorded. Symptoms analyzed included constitutional syndrome, presence of fever, chest pain or dyspnea. Symptoms were considered chronic if they had persisted for longer than one month, acute for less than 7 days, and subacute for a period between the two.

Radiological evaluation of PE included the volume observed on chest X-ray and was classified according to the following criteria: PE was massive or large when there was opacification of the whole hemithorax or up to the aortic arch (greater than two thirds), PE was small if there was opacification in the lung base with the typical meniscus sign (less than one third), and medium if opacification was between two thirds and one third of the hemithorax.

The presence or absence of pleural thickening shown on the chest CT was also recorded. Pulmonary or pleural masses, pulmonary atelectasis, lymphadenopathies or other masses in solid organs were considered suggestive of malignant disease.

### Pleural Procedures

The PB procedure was similar in all cases. Ultrasound with a convex 3.5 MHz transducer was used to select the point of entry and PBs were performed by two expert pulmonologists or supervised trainee physicians with an accumulated experience of over 200 closed PBs. The patient was placed in a sitting position with the arm on the same side as the PE rose above the contralateral shoulder. The technique was performed under sterile conditions and local anesthesia with 2% mepivacaine was applied. A Tru-cut needle (see Fig. 1) was used in all cases. Patients were not randomized in any

Download English Version:

<https://daneshyari.com/en/article/4205544>

Download Persian Version:

<https://daneshyari.com/article/4205544>

[Daneshyari.com](https://daneshyari.com)