PERCUTANEOUS US (ULTRA SOUND) GUIDED FINE NEEDLE ASPIRATION (FNA) OF ENDOTHORACIC NEOPLASM

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ABSTRACT

Introduction*: Ultrasound (US)-guided fine needle aspiration (FNA) of percutaneous, transparietal endothoracic lesions, is a useful method in the diagnostic process for anatomopathological characterization. This sampling is a minimally invasive procedure, with a low complication rate and can be performed under loco-regional anesthesia*

Material and methods*: We retrospectively studied (2009 to 2019) the utility of US guided transthoracic FNA in the diagnosis of suspected endothoracic lesions on 54 patients (34 men and 20 women), aged between 44 and 79 years, with pleural, pulmonary or mediastinal neoplasm viewable with an US examination.*

Results*: The definitive diagnosis of malignant or benign neoplastic disease was obtained by the pathological examination of the material obtained through the US-guided FNA or by other procedures performed subsequently: biopsies/surgery and clinical information, associated with clinical follow-up. The accuracy of the US guided FNA was 94.4% (51/54) with a sensitivity of 93.8% (93.8) and specificity of 100% (5/5); multiple FNA were performed in 24% of cases (13/54).*

Conclusions*: US-guided FNA is a procedure that can be performed in one day surgery and allows a significant reduction in healthcare costs and has a particularly high diagnostic accuracy with good patient compliance.*

Keywords: *Fine needle aspiration (FNA), Percutaneous, Ultrasound (US)-guided.*

DOI: 10.19193/0393-6384_2022_4_356

Received *March 15, 2022;* ***Accepted*** *May 20, 2022*

Introduction

Ultrasound (US)-guided fine needle aspiration (FNA) of percutaneous, transparietal endothoracic lesions, is a useful method in the diagnostic process for anatomopathological characterization. This sampling is a minimally invasive procedure, with a low complication rate and can be performed under loco-regional anesthesia[1].

The purpose of this retrospective study was to evaluate the usefulness of US-guided FNA in the diagnosis of suspected endothoracic malignant neoplasm, in terms of diagnostic efficacy, complications, mortality and healthcare costs.

Materials and methods

A retrospective evaluation of the cases treated from 2009 to 2019 was performed; the diagnosis of malignant or benign neoplastic lesion was made possible by means of the cytological/histological examination of tissues obtained by US-guided FNA or other procedures performed subsequently (surgery, clinical information, instrumental clinical follow-up). A 3.5 Mhz convex ultrasound probe was used. The procedure was performed under loco-regional anesthesia with lidocaine; only in 3 cases it was necessary to perform anesthetic sedation with Midazolan.

The needles used for the sampling of endothoracic lesions ranged from 21 to 18 gauge, in relation to the high or low risk complications and to the tumor size. At the end of the sampling, the suitability of the material was assessed in collaboration with the pathologist; if it was not sufficient, further samples were taken by the same technique. The patient remained under clinical observation (chest X-ray and ultrasound) for 24 hours.

Results

We performed US guided trans-thoracic FNA on 54 patients (34 men, 20 women), aged between 44 and 79 years, with a pleural, pulmonary, and mediastinal neoplasm viewable with an US examination. Of the 54 cases: 28 were lung carcinomas, 13 pleural metastases, 3 mesoteliomas, 1 reactive pleural thickening, 2 mediastinal lymphomas, 2 teratoma, 1 lung metastases, 4 mediastinal goiters.

The accuracy of the US guided FNA was 94.4% (51/54) with a sensitivity of 93.8% (93.8) and specificity of 100% (5/5); multiple FNA were performed in 24% of cases (13/54).

The US guided FNA of chest neoplasm has allowed to obtain extremely short hospital stay, and performing procedure time (5 - 8 minutes); it reduced the health costs (avoiding transfer to the radiology unit, the use of means, personnel and instruments to perform a thoracic CT- guided FNA.

We did not observe any major complication; minor ones were found in 14.8% (8/54) cases (mild chest pain). The definitive diagnosis of malignant or benign neoplastic disease was obtained by the pathological examination of the material obtained through the US-guided FNA or by other procedures performed subsequently: biopsies / surgery and clinical information, associated with clinical follow-up.

Discussion

US-guided FNA is a procedure that can be performed in one day surgery and allows a significant reduction in healthcare costs and has a particularly high diagnostic accuracy with good patient compliance.

The guided US sampling for the cyto-histological examination of endothoracic neoformations has high diagnostic accuracy values, but it's related to the localization of the neoplasm and to the size of the tumor (nodule size <1.5 cm, accuracy = 64 - 75%; nodule size > 1.5 cm, accuracy = 80-97%). Equally important factors are the number of passes with the needle[3].

Pneumothorax and hemorrhage are rare complications during US guided FNA, since the lesions are adhered to the chest wall and are therefore visible by US[2].

Conclusions

It is possible to state that the US guided FNA allows, as part of the diagnostic process of endothoracic lesions, to reduce performing procedure time, hospital stay and health costs.

References

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