Ultrasound guided pleural brushing: a new method for obtaining pleural specimen in malignant effusion

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Abstract:

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Abstract Purpose: Encouraging positive diagnostic yield in malignant pleural effusion could be obtained by pleural brushing performed through two techniques, the first was closed and the second was thorascopic. Until now, ultrasound guided pleural brushing is not included within these techniques and its diagnostic yield therefore is not evaluated. So the aim of this study was to evaluate the diagnostic yield of this procedure and its contribution as a technique previously used in the intervention pulmonology practice to obtain pleural specimen for cytological examination in malignant pleural effusion.

Methods: This prospective interventional study was conducted in the Chest Department, Assiut University Hospital during the period from July 2014 to September 2015. Patients who had highly suspicious malignant pleural effusion (clinical, radiological, and laboratory) were hospitalized and enrolled in this study. Patients with bleeding tendency or coagulation profile abnormalities were excluded from the study. Patients were also excluded from this study if the etiology of effusion was proved to be benign. Informed written consent was obtained from all patients. The equipment used in our study were ultrasound apparatus (ALOKA-Prosound SSD3500SV), biopsy forceps (KARL STORZ-Germany 10329L BS), the bronchoscopic cleaning brush (PENTAX CS6002SN) trocar and cannula of Cope's needle and the semi-rigid thoracoscope (LTF; Olympus; Tokyo, Japan). Thoracentesis, pleural brushing and biopsy forceps of the pleura were performed for all enrolled patients in the ultrasound unit of the Chest Department while thoracoscopy was done in the endoscopy unit only for patients in whom the diagnosis could not be achieved by these procedures.

Results: Among 22 patients who were finally documented to have malignancy, the ultrasound guided pleural brushing provided diagnosis in 9 (41%) cases. It was exclusively diagnostic in three patients. Interestingly, the yield of this procedure had its contributions regarding the final pathological diagnosis of our cases; it could augment the positive yield to be 55% instead of 41% (for pleural fluid cytology alone), 82% instead of 68% (for biopsy forceps alone) and 86% instead of 72% (for both fluid cytology and forceps biopsy). These recorded complications in our study were minimal and not associated with any mortality.

Conclusions: Ultrasound-guided pleural brushing is a new method for obtaining pleural specimens. Its simple and relatively safe procedure. This technique provides additional diagnostic yield in malignant pleural effusion. We recommend it besides others in our diagnostic practice for suspicious malignant effusion especially when thoracoscopy is not available.

Keywords:

Keywords: Ultrasound, Pleural brush, Malignant effusion

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