ORIGINAL RESEARCH ARTICLE

Tanaffos (2003) 2(7), 7-10

Bronchoalveolar Lavage in the Assessment of Peripheral Lung Cancer

Shahram Firoozbakhsh, Enayat Safavi

Department of Internal Medicine, Pulmonary Division, Imam Khomeini Hospital, Tehran University of Medical Sciences and Health Services, TEHRAN-IRAN

ABSTRACT

***Background**: In patients suspected of having lung cancer but with no evidence of endobronchial lesion, biopsies taken by transbronchial, percutaneous or open lung surgery can contribute to diagnostic yield but each with their limitations and complications. Recently, cytologic analysis of bronchoalveolar lavage specimens has been shown to improve the diagnostic yield for peripheral lesions. The objective of this study was to determine the value of bronchoalveolar lavage cytology in diagnosing peripheral lung cancer in Imam Khomeini Hospital.*

***Materials and Methods**: We performed a study among 47 admitted patients with biopsy proven peripheral lung cancer in whom bronchoalveolar lavage cytology was studied.*

***Results**: In patients with a peripheral lesion, BAL was positive for malignant cells in 36.2%.*

***Conclusion**: Bronchoalveolar lavage cytology was proved to be a valuable diagnostic tool in peripheral lung cancer in our country.* **(Tanaffos 2003; 2(7): 7-10)**

***Key Words**: Bronchoalveolar lavage, Cytology, Lung cancer*

INTRODUCTION

Fiberoptic bronchoscopy is probably the most frequently utilized and important test for diagnosing lung cancer. With its extended visual range, excellent patient's acceptance, low complication rate, and high diagnostic yield, fiberoptic bronchoscopy provides a safe and effective means for making the diagnosis. Lung cancer may present the endoscopist with a normal endoscopic examination, evidence of distortion, and extrinsic compression of a bronchus or a recognizable true endobronchial lesion. Suspicious endobronchial areas are usually sampled with a series of techniques including washing, brushing, and forceps biopsy. Each of these modalities has an average yield of 50 to 85 percent. If no endobronchial lesion is apparent, brushing transbronchial forceps biopsy and transbronchial needle aspiration contribute to the diagnostic yield (1).

Bleeding is always a concern when an airway lesion is biopsied. Pneumothorax occurs in 1-10% of

Correspondence to: Firoozbakhsh Sh
Tel.: 0912-1056030
E-mail address: Shafirus@yahoo.com

cases of transbronchial biopsies (TBB) (2). Cytologic analysis of BAL specimens has been shown to improve the diagnostic yield for peripheral lesions (3,4,5).

The yield for BAL is increased if it is performed after other sampling techniques. It also helps tamponade any bleeding that may have occurred as a result of biopsy (2). Therefore, with respect to the safety of this procedure, we decided to evaluate the value of lavage in peripheral lung cancer patients admitted in our hospital, who were candidates for transbronchial, transthoracic or open lung biopsy.

MATERIALS AND METHODS

We performed a study among 47 admitted patients in Imam Khomeini Hospital with biopsy proven peripheral lung cancer in whom bronchoscopy was done; moreover, bronchoalveolar lavage cytology was studied. No endobronchial lesion was detected in the bronchoscopy of these patients.

RESULTS

In this study, 39 (83%) patients were male and 8(17%) were female. There was no significant difference in positive bronchoalveolar lavage results between males and females with peripheral lung cancer.

The majority of patients were in their seventh decade of life.

In bronchoalveolar lavage of these patients, 17(36.2%) samples were positive for the presence of malignant cells.

Six patients had small-cell lung cancer (SCLC), and others were diagnosed as having non-small cell lung cancer (NSCLC). In those with SCLC, 2(33.3%) patients had positive BAL cytology, and among those with NSCLC, 15(36.5%) had positive cytology report.

Table 1. Pathologic distribution of BAL samples.

	NCLC (%)	SCLC (%)	Total (%)
Positive	15 (36.5%)	2 (33.3%)	17 (36.2%)
Negative	26 (63.5%)	4 (66.7%)	30 (63.8%)
Total	41(100%)	6 (100%)	47 (100%)

DISCUSSION

The majority of patients in this study were male whose diseases may be attributed to cigarette smoking habit, which is more prevalent among males.

The age distribution of these patients is in accordance with other records (6).

The success rate of cytologic examination of bronchoalveolar lavage in patients with primary lung cancers varies considerably according to different authors (7-11). The sensitivity of BAL in detection of peripheral lung cancer in our hospital was in the range of reported rate in other references.

The wide range of yields of flexible bronchoscopic evaluation of non-endoscpically visible peripheral masses (30-90% average yield of 60%) undoubtedly relates to the experience and technique of the operator and pathology personnel as well as to the location and size of the tumor. Although the result of this study was encouraging in order to rise the sensitivity of this procedure, we must pay more attention to the method of BAL and transferring the samples to the laboratory. Increased care and expertise in processing, sectioning, and interpreting the samples will also increase the yield.

Since in patients with a peripheral lung cancer in order to take a tissue biopsy we must do a percutaneous lung biopsy or an open lung biopsy with their evident complications. Bronchoalveolar lavage cytology which is a minimally invasive method and has no absolute contraindications beyond those commonly associated with bronchoscopy will

be a suitable method especially in critically ill patients or in those patients who don't want to accept the increased risk of more invasive procedures.

The result of lavage cytology was compared with biopsies which were taken either with transbronchial, transthoracic, or open approach. It must be mentioned that in this center bronchoalveolar lavage is performed following general inspection of tracheo-bronchial tree, and in localized diseases, the sample is taken from the involved segment. After wedging the fiberoptic bronchoscope into the third or fourth generation bronchial subsegment, sterile saline is instilled through the bronchoscope and then aspirated into a trap. About 100cc fluid is delivered into the subsegment of the lung in 20cc aliquots; the recovered fluid is transported to the laboratory as soon as possible.

It must be mentioned that biopsies and BAL cytologies were analysed in different laboratories, so the results of one study didn't affect the other.

ACKNOWLEDGEMENT

The authors are grateful to pathologists and cytopathologists in Imam Khomeini hospital (central building and Meraj) for providing the opportunity for this study to be done.

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