

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Transbronchial Lung Biopsy (TBLB) To Verify The Diagnosis In Newly Diagnosed Patients With Bacteriologically And Histologically Unconfirmed Diagnosis Of Tuberculosis.

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ABSTRACT

246 patients were examined at the inpatient treatment at the Nalchik TB dispensary. All patients underwent bronchial bronchoscopy with material extraction (246 biopsies). As a result of the conducted studies, 100% of the patients at the time of (TBLB) received the material. Verification of tuberculosis (diagnosis confirmed) - 41.9%, while - bacteriological in - 35.4% of cases, histological - 0.4%, - bacteriological and histological - 6.1%. The verification of another pathology (erroneous Ds) was 23.6%. The first place for verifying the diagnosis in the study group is a malignant tumor (13.4%), followed by granulomatous inflammation (9.8%), tuberculosis (6.5%). Also in patients identified rare diseases like alveolar proteinosis, vasculitis (Churg-Strauss syndrome), hemosiderosis, malt-lymphoma. Thus, in newly diagnosed patients with an unconfirmed diagnosis of pulmonary tuberculosis, it is advisable to perform TBLB with a histological and bacteriological study of the biopsy, including necessarily PCR analysis in order to verify the diagnosis.

Keywords: TBLP, tuberculosis, diagnosis, bacteriological

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THE RELEVANCE OF RESEARCH

The main reason for the late diagnosis of diseases with bronchopulmonary pathology is the lack of a single diagnostic tactics. Thus, errors in the diagnosis of infiltrative pulmonary tuberculosis - 30%, the observation period in the TB dispensary is from 1 to 3 months. [8]. Errors in the diagnosis of disseminated pulmonary tuberculosis are 30% [1, 3, 4, 6]. A third of patients with sarcoidosis and alveolitis of various etiologies are observed and receive anti-tuberculosis chemotherapy in an antituberculosis dispensary [2, 5]. Hypodiagnosis of oncological diseases in favor of pulmonary tuberculosis - in 14-39% of cases, the observation period in the TB dispensary is 1.5-2 months. [7]. Despite the available modern diagnostic capabilities (examination of broncho-alveolar lavage fluid, peri-bronchial lung biopsy, surgical lung biopsy, high-resolution computed tomography, immunological methods, etc.), the number of diagnostic errors has not decreased over the years. In a number of medical institutions, according to different authors, trial therapy continues to be widely used to prove tuberculous etiology [9,10].

Many diffuse and focal pathologies of the lung have a similar clinical and radiological picture. Differential diagnosis of lung diseases is very complicated, without histological examination is often impossible [1, 3]. In 1974, Levin published a biopsy experience using a flexible bronchoscope. A transbronchial biopsy allows using the inserted bronchial forceps to obtain for histological examination the tissue of the peripheral formations adjacent to the bronchial wall. Before the biopsy, all possible methods of visualization diagnostics (radiography, computed tomography, magnetic resonance) are usually used. Before the biopsy, all possible methods of visualization diagnostics (radiography, computed tomography) are usually used. This is necessary for the most accurate definition of the localization of pathology, especially with focal lesions in the lungs. A biopsy is performed immediately during diagnostic bronchoscopy, under a local anesthetic from suspicious areas with tweezers take a tissue for analysis. This procedure is almost safe. After it, there is sometimes a slight admixture of blood in the sputum, but this is not dangerous and quickly disappears. A rare complication is a pleural puncture with too deep infusion of air through the bronchoscope. The manipulation lasts about half an hour.

Given the current requirements for the treatment and diagnostic process, namely the need to quickly establish a reliable diagnosis for the appointment of adequate therapy, the use of transbronchial biopsy as the safest and most effective method among invasive differential diagnosis of pulmonary diseases is topical.

Purpose of the study. To study the effectiveness of the use of the method of transbronchial lung biopsy (TBLB) in newly diagnosed tuberculosis patients without bacteriological and histological confirmation of the diagnosis.

MATERIALS AND METHODS

A total of 246 patients were examined at inpatient treatment in the Nalchik TB dispensary, aged 18 to 88, 145 (58.9%) of them men and 101 (41.1%) women. All patients with newly diagnosed lung tuberculosis without bacteriological and histological confirmation of diagnosis (ICD-10, A.16.0), as well as with negative results of microscopic, cultural and molecular-genetic examination of phlegm for tuberculosis. The duration of patients staying in the hospital ranged from 1 to 10 months. The patients had concomitant diseases: COPD, 2-3 tbsp. - in 38 patients, CHF, 2-3 functional class in 29; bronchial asthma, medium-heavy course in 8; diabetes mellitus, in subcompensated stage - 7, alcoholism (drug addiction) in the acute stage - 6; paraplegia lower 4, schizophrenia in 4, HIV infection 4 patients, epilepsy with episodic character in 3. Patients received anti-tuberculosis chemotherapy, 228 people had the first regimen and 18 patients had 4 chemotherapy regimens.

All patients underwent bronchial bronchoscopy with material extraction (246 biopsies). To conduct TBLB used fibro-bronchoscope, previously conducted local anesthesia and instillation. Biopsy forceps FB 15C or FB 20B were used. Previously, together with the doctor-röntgenologist, the biopsy site was determined the zone of the most noticeable changes. During the biopsy, 2-5 pieces of lung tissue were taken. Material obtained during TBLB. was directed to cytological, histological and bacteriological studies. The number of biopsy specimens was 1-8 (4.1). Procedure time: 6-21 min. (11.9). Depending on the duration of their treatment by antituberculous drugs before lung biopsy was distributed as follows: up to one month - 73 people, up to 2 months - 134, from 3 to 5 months - 28, 6 or more months 11 people. The overwhelming majority of patients registered infiltrative tuberculosis (107), disseminated tuberculosis in 71 patients, 22 focal patients, pulmonary tuberculoma in 19, fibro-cavernous tuberculosis and cavernous tuberculosis in 18 patients, and 5 cirrhotic and

caseous pneumonia in 4 patients. During TBLB, 5 patients (2.0%) had complications of the procedure, including: - in 3 patients, iatrogenic pneumothorax; 1 patient had submissive pulmonary hemorrhage and 1 patient had epileptic seizure. Cases of specific process progression in the lungs and lethal outcomes after biopsy was not observed. Complications after conducting premedication and anesthesia of the respiratory tract in the study also was not noticed. The statistical processing of the research materials was carried out on an IBM PC with the MS Windows XP Professional operating system using the BIOSTAT application version 4.03. The reliability of the difference between the mean values was estimated by the method of Student t-test number.

RESULTS

As a result of the studies, 246 patients (100%) were taken the material with the help of TBLB. Verification of tuberculosis (diagnosis confirmed) in 103 (41.9%), with bacteriological analyses - 87 (35.4%) cases, histological - 1 (0.4%), bacteriological and histological - 15 (6,1%).

Verification of another pathology (erroneous Ds) was among 258 patients (3.6%), with 1 (0.4%) for *bacteriological verification*, and 57 (23.2%) for *histologic verification*. In the course of the TBLB, associated pathologies were found, only in 2.5% (6 patients), including: - *Infiltrative TB + lung cancer* (2 patients); - *Focal TB + lung cancer* (1 patient); - *Disseminated TB + lung cancer* (1 patient); - *Disseminated TB + alveolar proteinosis* (1 patient); - *Disseminated TB + silicosis* (1 patient).

The spectrum of drug resistance (by PCR, BACTEC methods) MBTB to antituberculous drugs was performed among 103 patients, 65% of patients retained drug susceptibility to antituberculous drugs, 16.5% had MDR tuberculosis, and 2.9% had XDR tuberculosis.

Table 1 presents the results of a histological examination of a biopsy material obtained with TBLB. The first place for verifying the diagnosis in the study group is a malignant tumor (13.4%), followed by granulomatous inflammation (9.8%), tuberculosis (6.5%). Also rare diseases like alveolar proteinosis, vasculitis (Churg-Strauss syndrome), hemosiderosis, malt-lymphoma were found (table 1).

Table 1: Results of histological examination of biopsy material obtained through TBLB

Results of histological examination	Abs.(случ.)	Rel.(%)
<i>Malignant tumor</i>	33	13,4
<i>Granulomatous inflammation</i>	24	9,8
<i>Tuberculosis</i>	16	6,5
<i>Sarcoidosis</i>	8	3,3
<i>Alveolar proteinosis</i>	3	1,2
<i>Chronic abscess</i>	2	0,8
<i>Alveolitis (ELISA and AAA)</i>	2	0,8
<i>Adenoma</i>	1	0,4

<i>Vasculitis (Churg-Strauss syndrome)</i>	1	0,4
<i>Hemosiderosis</i>	1	0,4
<i>Silicosis</i>	1	0,4
<i>Malt-lymphoma</i>	1	0,4
TOTAL	93	37,8

The data of our study confirm that the use of bronchofibroscope with TBLB providing biopsy allow us to increase the frequency of morphological verification, especially at an early stage of the disease. We also conducted research of biopsy material obtained using TBLB by the method of cultural sowing. Thus, the results of the bacteriological study gave the following results, so the bacteriological verification was 42.3% (104 patients), of them: *tuberculosis* among 103 patients, *mycobacteriosis* – 1 patient.

Also, the study of the information content of the results of TBLB on clinical and x-ray verification of forms of tuberculosis of the respiratory system, the presence and form of concomitant diseases (table 2). So, from the table it follows that the greatest verification of the diagnosis in the study of the material during the TBLB is obtained in destructive forms of tuberculosis of the respiratory system, namely fibroblast-cavernous, caseous pneumonia, disseminated form of tuberculosis. In the study of the results of TBLB among patients having presence and structure of concomitant pathology, the high verification was revealed in the combination of tuberculosis with diabetes and COPD .

Table 2: Results of TBLB, depending on the clinical and radiological form of pulmonary tuberculosis

Clinical and radiological form of pulmonary tuberculosis	Frequency	The diagnosis is verified		Verified tuberculosis		Verified other pathology		The diagnosis is not verified	
		Abs.	%	Abs..	%	Abs..	%	Abs.	%
<i>Focal CT + FTC</i>	22	5	22,7	5	22,7	1	4,5	17	77,3
<i>Infiltrative</i>	107	68	63,6	48	44,9	22	20,6	39	36,4
<i>Disseminated</i>	71	54	76,1	34	47,9	23	32,4	17	23,9
<i>Fibro-cavernous tuberculosis and cavernous tuberculosis</i>	18	15	83,3	10	55,6	5	27,8	3	16,7
<i>Tuberculoma</i>	19	10	52,6	4	21,1	6	31,6	9	47,4

<i>Cirrhotic</i>	5	0	0	0	0	0	0	5	100
<i>Caseous pneumonia</i>	4	3	75,0	2	50,0	1	25,0	1	25,0
TOTAL	246	155	63,0	103	41,9	58	23,6	91	37,0

Thus, the high informative value of the results of TBLB has been revealed depending on the clinical and radiological form of pulmonary tuberculosis, the presence and structure of concomitant diseases.

CONCLUSIONS

1. A newly diagnosed patient with an unconfirmed diagnosis of pulmonary tuberculosis, it is advisable to perform TBLB with a histological and bacteriological study of the biopsy, including necessarily PCR analysis in order to verify the diagnosis.
2. In case of diagnosis verification of pulmonary tuberculosis without bacterial excretion, in the absence of information on the MBT sensitivity to anti-tuberculosis drugs, it is necessary to perform a culture and molecular genetic study of the biopsy material obtained at the TBLB in order to obtain information on the spectrum of MBT drug resistance.
3. Improvement of the medical diagnostic algorithm will improve the results of etiological diagnosis of newly diagnosed lung tuberculosis patients without bacteriological and histological confirmation of the diagnosis during treatment in TB dispensary.

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