

Morphological Characteristics of Pulmonary Tuberculosis Immunogistochemical Study

*Shomurodova Muhayya Rahmonovna*¹

Abstract: As a result of the reforms implemented in the healthcare system in our republic, special attention is being paid to strengthening the health of the population, treating and preventing oncological and infectious diseases, including tuberculosis, and effective preventive measures to reduce the incidence of oncological and tuberculosis among the population. activities are being carried out.

In recent years, a steady increase in the number of patients with low-quality tumors has been observed against the background of the ongoing crisis in the field of tuberculosis. Tuberculosis is listed as one of the 10 leading causes of death in a 2018 World Health Organization report.

Keywords: lung, tuberculosis, immunohistochemistry, CD-45, CD-56 morphology, expression.

The purpose of the study: to study the morphological changes of lung tissue that have undergone tuberculosis in an immunogistochemical way.

Materials and methods: the study studied the medical history data of 135 patients, who were treated in stationary conditions at the Republican specialized phthisiatrics and pulmonology Scientific Applied Medicine Center, Bukhara regional phthisiatrics and pulmonology Center, 2010-2023. Patients under the study were examined using anthropometric, palpation, percussion, auscultation and modern instrumental, clinical-laboratory, bacteriological and morfological methods using all general clinical-diagnostic methods.

Table 1. Distribution of patients by gender and age

Gender	Patient number of S	1-17 years old	18-44 years old	45-59 years old	60-74 years old	75-90 years old	Over 90
Man	75 (55,6%)	-	12 (8,9%)	24 (17,8%)	31 (23,0%)	7 (5,2%)	1 (0,7%)
Woman	60 (44,6%)	1 (0,7%)	14 (10,4%)	22 (16,3%)	19 (14,1%)	4 (3,0%)	-
Total	135 (100%)	1 (0,7%)	26 (19,3%)	46 (34,1%)	50 (37,0%)	11 (8,1%)	1 (0,7%)

The age of patients ranged from 15 to 93 years, with an average age of 54.9±2.2 years. Table 1 shows that among patients, men suffered 1.25 times more than women. Of those affected - 54.1% - were working age patients under the age of 59, while 37.0% - 60-74 and 8.8% of 75 and older-were in the condition. That being said, the highest incidence-79.9% - was among patients over the age of 45.

Results of laboratory analyzes in hospitalization

Laboratory indicators	Absolute number	%
Anemia Grade I (90-110 g/l)	34	25,2±2,8***
Anemia Grade II(70-90 g/l)	15	11,1±1,4**
Anemia Grade III (70 g/l>)	3	2,2±0,8*

¹ Bukhara State Medical Institute



EDR 20-30 mm/s	16	11,9±1,7**
EDR 30-40 mm/s	12	8,9±1,1*
EDR 40-50 mm/s	4	3,0±1,5*
EDR 50-60 mm/s	11	8,1±1,9*
Leukocytosis 9-12x10 ⁹ /l	21	15,6±2,4**
Leukocytosis 12-14x10 ⁹ /l	14	10,4±1,6*
Leukocytosis 14-16x10 ⁹ /l	9	6,7±1,2*
Biochemical analysis of blood		
ALT amount raised	10	7,4±1,1**
AST quantity raised	16	11,9±1,6**
Bilirubin elevated	9	6,7±1,3*
Decreased total protein content	25	18,5±1,5
The amount of Mochevina raised	22	16,3 ±1,2*
Creatinine increased	6	4,4±1,6*
Increased sugar content	7	5,2±1,8*
Urine analysis		
Proteinuria	8	5,9±1,9*
Leukocyturia	71	52,6±2,4*
Erythrocyturia	14	10,4±1,6**
Bacteriuria	7	5,2±1,8*
Urate salt	13	9,6±1,4*
Oxalate salt	16	6,73±1,3*
Phosphate salts	3	2,2±0,8*
Urine pH-acidic	84	62,2±3,8*
Urine pH-alkaline	33	24,4±2,6*
Urine pH-neutral	18	13,3±1,7*

Note:* - p <0,05; ** - p <0,01; *** - p <0,001.

From the table above, we can see that in the total blood analysis of patients under examination: anemia - 38.3%, an increase in Ect - 31.9%, leukocytosis - 32.7% in the patient; in the biochemical analysis of blood: an increase in liver enzymes and bilirubin – 26.0%, a violation of the filtering function of the renal ducts – 20.7% in the patient, and in the general analysis of urine – 52.6% in most cases.

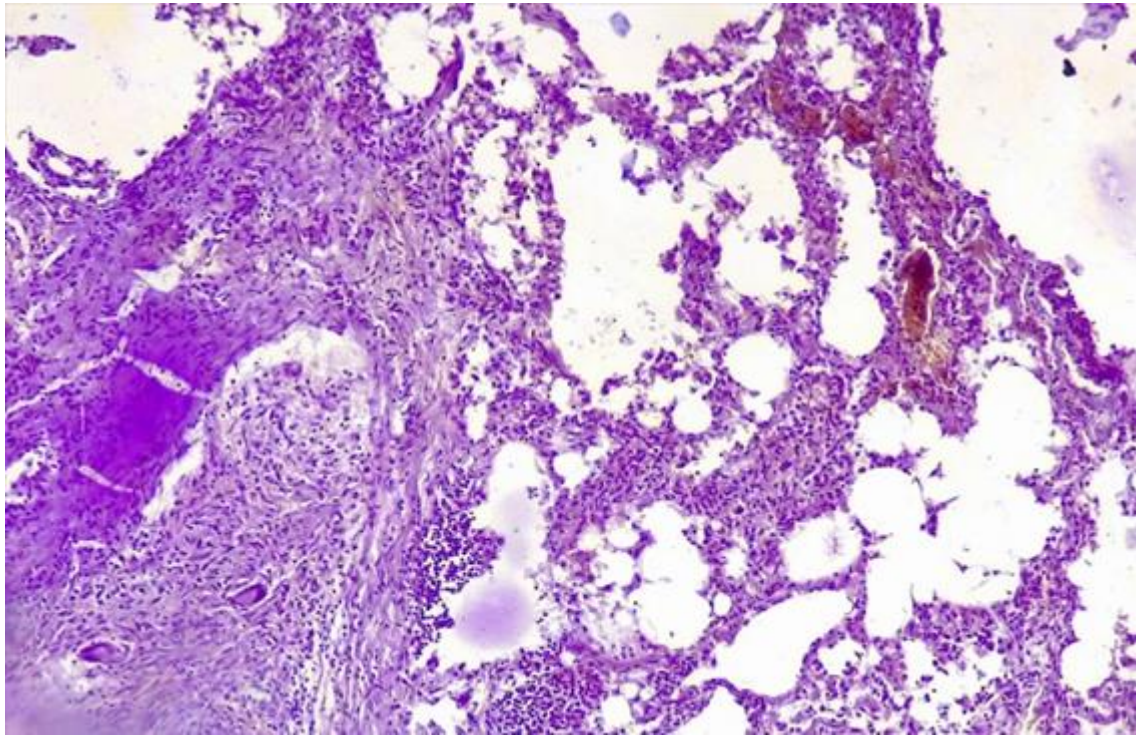
The sputum of patients, pathological material obtained at the time of operation, fluid from the pleural cavity was examined by methods of bacterial planting in the cytological, histological, microscopic, Gene/Xpert and HAIN-test apparatus in a molecular-genetic, as well as in a solid and liquid nutrient medium.

Paraffin bricks made from biopsies from 12 tuberculosis patients were selected for immunogystochemical examination, 2mkm thick histological incisions were made from them, dehydration, demasking was performed after deparaphinization was painted using antithanases in the automated special system of Ventana Benchmark XT, Roche, Switzerland. The study painted micropreparete samples CD-45 and CD-56 marker antibodies from patients with pulmonary tuberculosis.

Results and conclusions

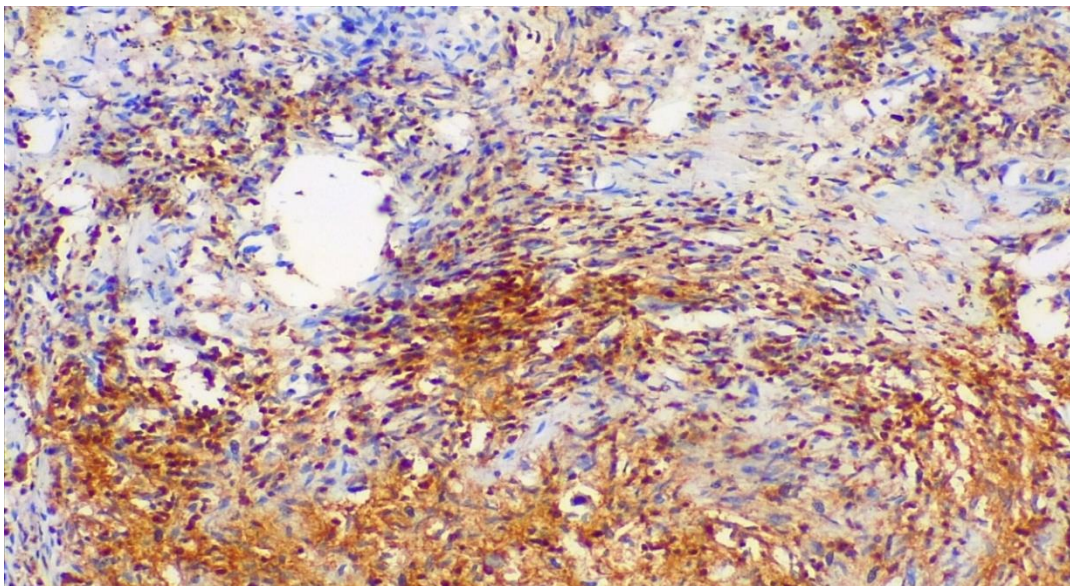
The patient underwent a macropreparete morphological - examination from the surgical procedure, and the diagnosis of pulmonary tuberculosis was histologically verified.



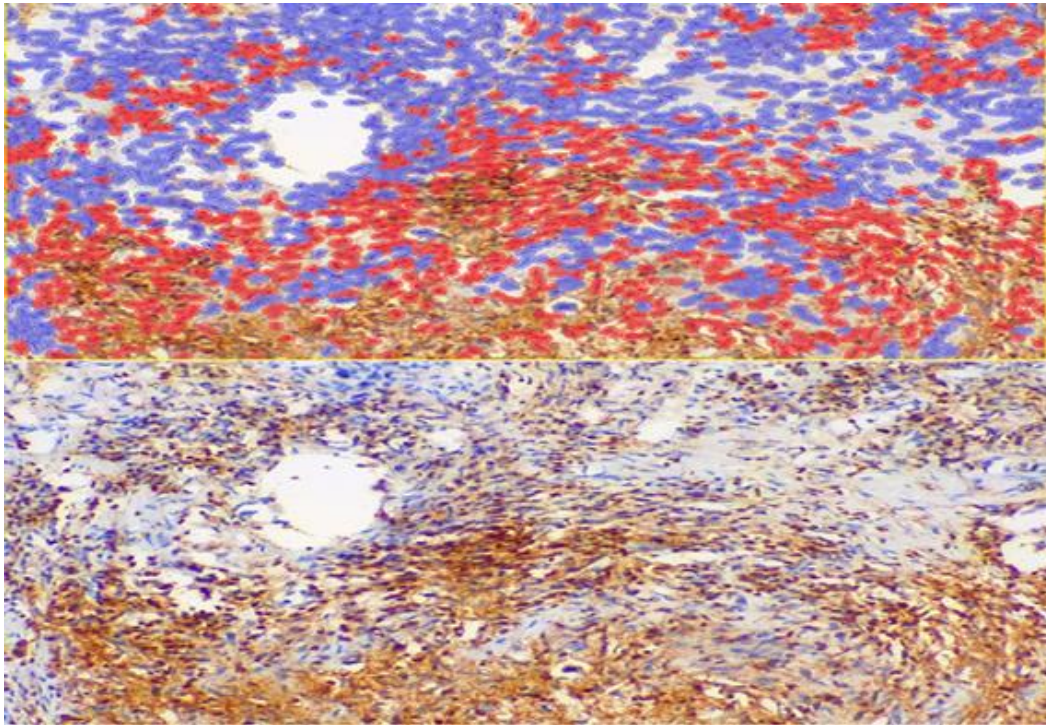


Picture 1. Micropreparate from the lung tissue of a patient with tuberculosis is located: limited tuberculous granuloma, lymphocytic infiltrate and a small number of giant multicellular Langhans cells. Pulmonary vascular hyperemia and perivascular hemosiderosis, alveolar barrier loss, emphysematous cavities and fibrotic tissue have occurred.

The immunohistochemical examination method-12 (40.0%) was used in a case of pulmonary tuberculosis, and markers of lymphocytes CD-45, CD-56 were examined and analyzed. Example No. 3 from clinical material, in which the condition of the marker CD-45 in pulmonary tuberculosis is studied.

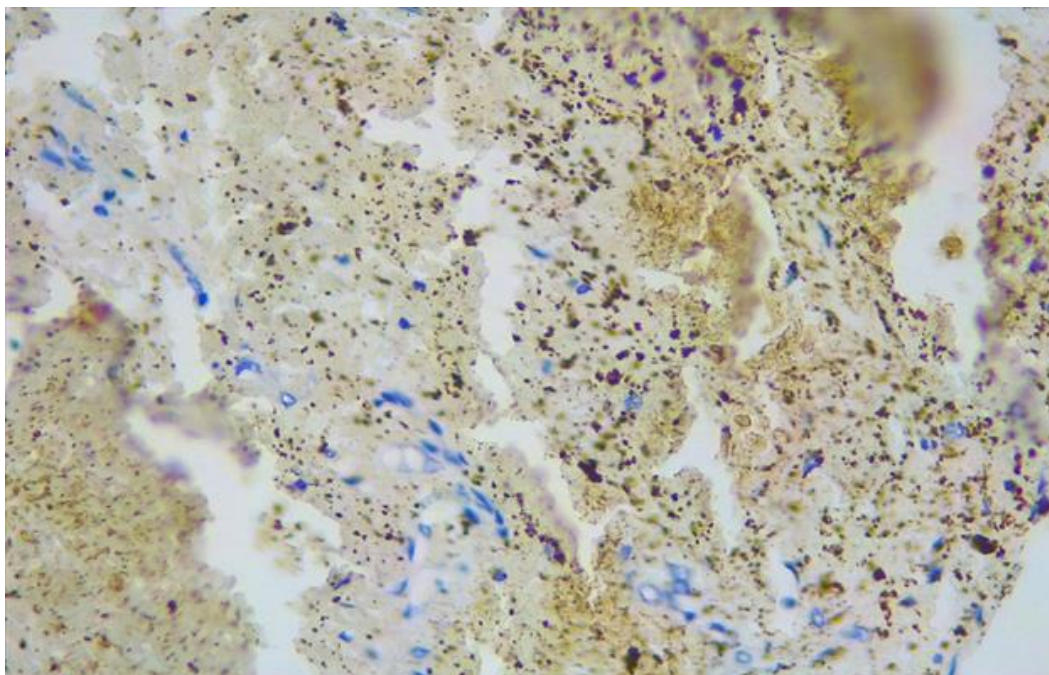


Picture 2. Micropreparation from the lungs of a patient with tuberculosis. The immunohistochemical method has a positive expression of CD-45 marker of 2+. Dab is painted with chromogenic paint. Enlarged 200 times.

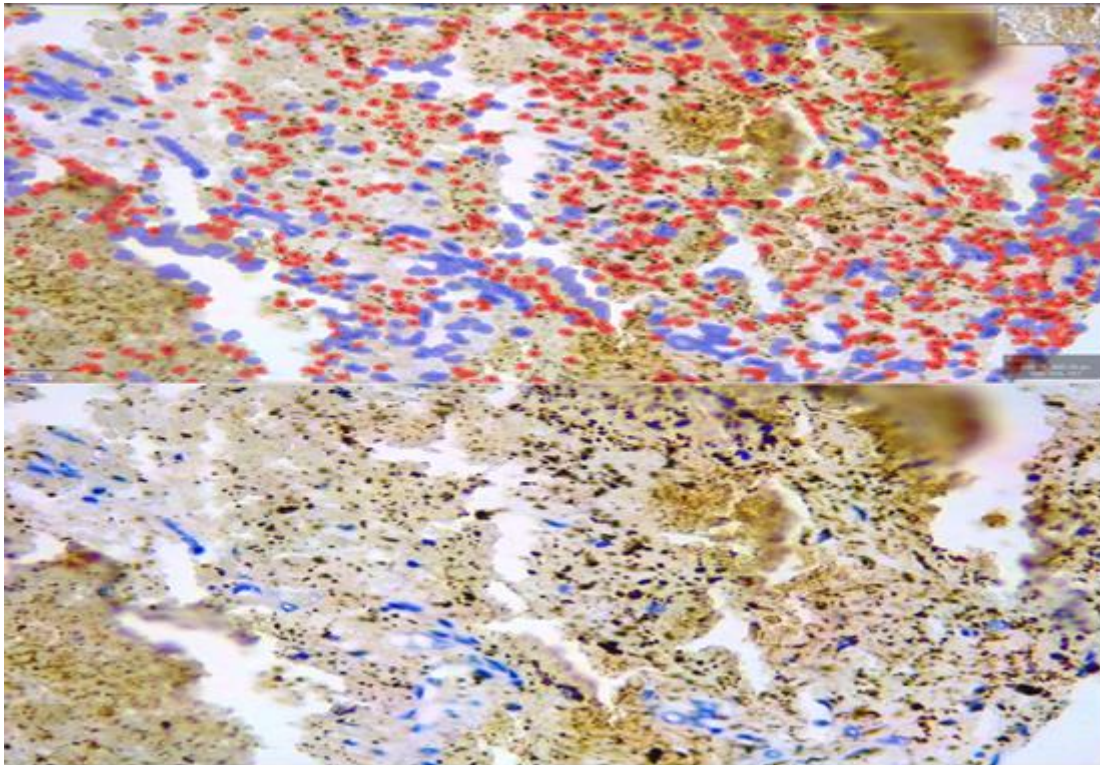


Picture 3. Micropreparation: pulmonary tuberculosis. Note: the figure above shows morphological and morphometric indicators tiled under the program Qupath 4.4.0, with cells negatively stained with blue i.e. cells without immune (lymphocyte) cells marked, and with red one positively expressed – CD-45 i.e. lymphocyte cells dyed.

The total number of cells identified in the examination (Figure 3) was 2,021 (100%), the cells where negative expression was observed were 1,140 (56.4%), the cells where positive expression was observed were 881 (43.6%). The total surface area of the tissue being measured was 4124 (100%) mkm², of which the total area of positive expressed cells was 0.9 (0.022%) mkm². In Example 4 from clinical material, a case of lymphocyte marker CD-56 in pulmonary tuberculosis has been studied.



Picture 4. Micropreparation from the lungs of a patient with tuberculosis. The immunogistochemical method has a positive expression of CD-56 marker of 3+. Dab is painted with chromogenic paint . Enlarged 200 times.



Picture 5. (duplicate) note: in the figure above, the program Qupath 4.4.0 is used morphometric indicators, where cells that are negatively stained with blue i.e. cells that are not immune (lymphocyte) cells are marked, and those that are positively expressed with red i.e. lymphocyte cells are painted.

Number of cells detected	1086
Negative expression	377
Positive expression	709
Positive expressed cells %	62,38 %
Total area of positive expressed cells mm2	0,0006 mm2
The total surface of the tissue being measured is	12480 mkm2

The total number of identified cells in the examination (figure 3.8) was 1086 (100%), negative expression observed cells-377 (34.7%), positive expression observed cells – 709 (65.3%). The total surface area of the tissue being measured was 12,480 (100%) mkm2, of which the total area of positive expressed cells was 0.6 (0.0048%) mkm2.

When the expression of micropreparations from a patient with pulmonary tuberculosis under the QuPath program of immunogystochemical – CD-45 and CD-56 markers was studied, the degree of markerinig expression of CD-45– 43,6-44,0% (2+) - Intermediate level, CD-56 marker expression - 45,9%-62,38 % (3+) – showed a high level.

Literature

1. Shomurodova Mukhayo Rakhmonovna, (May 6, 2023). Morphological Features and Morphometric Parameters of the Lungs after Correction with an Immunomodulator Under the Conditions of Experimental Chemotherapy. Journal of Natural and Medical Education (pp. 55-60).
2. Shomurodova Mukhayo Rakhmonovna, (05 2023) Mastopatiya. Yosh Patmorfolog Nigohida. Amaliy va tibbiyot fanlari ilmiy jurnali (193-197) <https://sciencebox.uz>
3. Shomurodova Muxayyo Raxmonovna (05 2023) Morfometricheskie Pokazateli Legkix Posle Korreksii Immunomodulyatorom V Usloviyax Eksperimentalnoy Ximioterapii Amaliy va tibbiyot fanlari ilmiy jurnali (198-202) <https://sciencebox.uz>



4. Shomurodova M. R. (2023). Morphological Changes in Lungs Caused by Chemotherapy in Breast Cancer. *American Journal of Pediatric Medicine and Health Sciences* (2993-2149), 1(10), 341–344. Retrieved from <http://grnjournal.us/index.php/AJPMHS/article/view/2088>
5. Volchenko N.N., Frank G.A. Kompleks morfologicheskix i prognosticheskix faktorov pri rake molochnoy jelezы: Posobie dlya vrachey. M., 2000.
6. Immunogistoximicheskie metody: rukovodstvo. Per. s angl. pod red. G.A. Franka i P.G. Malkova // M., 2011, - 224 s.
7. Pojarisskiy M., Leenman Ye.N. Znachenie immunogistoximicheskix metodik dlya opredeleniya kharakteru lecheniya i prognoza opuxolevыx zabolevaniy *Arx. patol.*, 2000; (5): 3-11.
8. Schmitt S.A., Love S.W. Apoptosis and therapy. *G. Path.*, 1999; 187: 127-37.
9. Viale G., Regan M.M., Mastropasqua M.G. et al. Predictive value of tumor Ki-67 expression in two randomized trials of adjuvant chemoendocrine therapy for node-negative breast cancer // *J. Natl cancer Inst.* 2009. Vol. 100 (3). R. 207-212.

