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FEATURES OF THE COURSE OF TUBERCULOSIS OF THE RESPIRATORY SYSTEM IN PATIENTS OF DIFFERENT AGE GROUPS

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Abstract: A comparative analysis of the results of examination of young and elderly patients with respiratory tuberculosis is presented. Statistical data on the forms of tuberculosis, clinical pictures, clinical and laboratory data among this category of patients were obtained. Tuberculosis in adolescents is more often detected during preventive examinations and contact examinations, and among adult youth — when seeking medical help. Unilateral limited processes without destruction or with small cavities, without isolation of mycobacterium tuberculosis, are more typical for adolescents. In adults, tuberculosis is more often accompanied by pulmonary symptoms, intoxication, and complications. It is recommended to take into account the established features when working with these age groups at the stage of the general treatment network for the timely active detection of tuberculosis patients

Keywords: tuberculosis, diagnosis, age groups

Introduction

Significant progress in combating tuberculosis has been achieved in the Republic of Uzbekistan over the past decade, largely due to the consistent implementation of various national clinical protocols and programs. This progress is reflected in the substantial decline in both the incidence and mortality rates of tuberculosis. However, despite the stabilization of key epidemiological indicators, tuberculosis remains a condition that requires ongoing and focused attention. Current challenges, such as the rise in drug-resistant tuberculosis and the spread of HIV infection, continue to exert a significant impact on the epidemic's dynamics.

To effectively control the spread of tuberculosis, it is essential to ensure the timely detection of the disease within the population. It is often the case that the initial point of contact for tuberculosis patients is not with phthisiatric specialists, but with primary healthcare providers, such as general practitioners and territorial doctors. This highlights the importance of timely tuberculosis detection at the outpatient and polyclinic levels, which in turn demands modernized management, methodological, and organizational approaches. Early detection and diagnosis,

particularly when considering the different manifestations of tuberculosis across various age groups, is crucial within the broader healthcare framework.

In a study conducted at the Samarkand Regional Center for Phthisiology and Pulmonology, four groups of patients diagnosed with pulmonary tuberculosis were examined: adolescents aged 15-17 years, adults aged 18-44 years, adults aged 45-59 years, and adults aged 60-74 years. All patients were evaluated according to the national clinical protocol for managing respiratory tuberculosis in adults.

The subject of the study. This included assessments of demographic and social history, clinical and radiographic examinations (including computed tomography when necessary), and sputum testing for Mycobacterium tuberculosis using fluorescent microscopy and culture methods with drug susceptibility testingr

Methods

The analysis of the demographic structure of pulmonary tuberculosis patients revealed a significant decline in the proportion of female patients with increasing age. Among adolescents, females constituted 63.4% of the patients, but this proportion dropped to 37% in the 18-44 age group, a statistically significant difference. In the 45-59 age group, males accounted for 54% and females for 46%, while in the 60-74 age group, the gender ratio was nearly equal, with males comprising 48% and females 52%.

Further examination of specific patient histories indicated that adolescents were significantly more likely to have had close contact with an adult tuberculosis patient—a recognized risk factor—with 59% reporting such exposure, compared to 23% in the 18-44 age group.

Result and Discussion

To effectively prevent the development and spread of tuberculosis within the population, early detection of the disease is paramount. This is particularly true for identifying pulmonary tuberculosis in both adults and adolescents, where regular preventive fluorography plays a crucial role. However, preventive examinations only detected a third of the patients in the study: 35 individuals (30%) in Group II and 30 individuals (35%) in Group I. The detection rates were even lower in Groups III and IV, at 25% and 12%, respectively.

Given the high contagion potential of tuberculosis, it is also vital to thoroughly examine individuals who have been in contact with a patient who is a known bacterial shedder, frequently utilizing fluorography within this group. The study's results indicated that the detection of tuberculosis through contact tracing among adolescents was 25 patients (29%), which was significantly higher compared to 6 patients (5%) in the 18-44 age group ($p < 0.01$).

Most patients across all groups were diagnosed when seeking medical care, with a higher proportion in adult groups: 74 individuals (65%) in Group II, 53 individuals (70%) in Group III, and 49 individuals (92%) in Group IV. In contrast, only 33 individuals (38%) in Group I were diagnosed this way, a statistically significant difference ($p<0.01$). These findings suggest that the diagnostic capabilities of preventive examinations for older patients are underutilized, necessitating a more thorough approach to their implementation and assessment.

A comparative analysis of clinical forms of pulmonary tuberculosis revealed that infiltrative tuberculosis was the most prevalent form across all groups, with 62 cases (71%) in Group I and 90 cases (58%) in Group II. In recent years, this form has become the most common among newly diagnosed patients. Among adolescents, there was a significantly higher incidence of acute, limited forms of tuberculosis—detected mainly through preventive examinations—with 15 cases (17%) compared to just 2 cases (2%) in Group II ($p<0.01$). Conversely, diffuse

tuberculosis, characterized by widespread lung involvement and frequent tissue destruction, was more prevalent among adults, with 22 cases (19%) in Group II and 5 cases (6%) in Group I ($p<0.01$).

In Group III, infiltrative tuberculosis was also the most common clinical form, with 51 cases (68%). Other forms included fibrocavernous tuberculosis in 7 cases (9%), disseminated tuberculosis in 6 cases (8%), and tuberculoma in 5 cases (7%). Additionally, 4 cases (5%) involved intrathoracic lymph node tuberculosis, while cirrhotic and cavernous tuberculosis each accounted for 2 cases (3%), and focal tuberculosis for 1 case (2%). Group IV similarly showed a predominance of infiltrative tuberculosis, with 28 cases (53%), and 3 cases (6%) of focal tuberculosis.

Bacteriological studies of sputum revealed that SMB positivity was most frequently observed in Group II, with 83 patients (73%), followed by Group I, with 24 patients (28.1%) ($p<0.01$). The detection rates were lower in Groups III and IV, at 25% and 56%, respectively. When examining SMB-positive cases using sputum smear microscopy with fluorescent staining, massive bacterial shedding was more common among adolescents in Group I (10 patients, 12%) compared to adults in Group II (37 patients, 32%) ($p<0.005$). This suggests that initial cases of tuberculosis in older adults are associated with higher levels of bacterial excretion than in adolescents.

The study's findings on sputum analysis align with the observed radiographic characteristics of pulmonary tuberculosis in younger patients. Radiographic examinations frequently revealed lung tissue destruction in Group II patients—88 cases (77%)—compared to 34 cases (39%) in Group I ($p<0.01$). The extent of pulmonary destructive changes was also greater in Group II, with 43 cases (37%) compared to 13 cases (15%) in Group I ($p<0.01$). The presence of lesions spreading to other lung segments was similar between the two groups, with 15 cases (17%) in Group I and 28 cases (24%) in Group II. Group III exhibited a radiographic profile similar to that of Group II. In Group IV, destructive lung tissue changes were observed in 27 patients (51%), with 19 cases (36%) showing small cavities up to 2 cm in size, and 16 cases (31%) displaying multiple fragmented cavities.

Among elderly patients, the X-ray findings for tuberculosis of the respiratory system were complicated by age-related changes, signs of previous primary tuberculosis, non-specific lung diseases, and impaired pulmonary circulation. The extent of lung involvement was significant in adults: extensive processes (affecting more than two lung segments) were found in 33 patients (38%) in Group I and 75 patients (65%) in Group II ($p<0.01$). Bilateral lung involvement was present in 19 adolescents (22%) and 48 adults (42%) ($p<0.05$). In Group IV, X-ray examinations revealed that in 33 patients (63%), the lung process was limited to 1-2 segments, while in 20 patients (37%), the process was more widespread, involving three or more segments.

Due to the extent of lesions and the pronounced destruction observed, pulmonary tuberculosis in adults presents with a more pronounced clinical picture. Specifically, 82 patients (72%) in Group II and 41 patients (47%) in Group I reported respiratory-related complaints ($p<0.01$). Cough was present in 38 patients (44%) in Group I and 85 patients (74%) in Group II ($p<0.01$). Similarly, shortness of breath was noted in 4 patients (5%) in Group I and 49 patients (42%) in Group II ($p<0.01$), while chest pain was reported by 5 patients (6%) in Group I and 29 patients (25%) in Group II ($p<0.01$).

In Group IV, the manifestation of intoxication and bronchopulmonary syndromes was less pronounced: 77.2% of patients were assessed as having a satisfactory condition, and in 87%, body temperature remained within normal limits. The predominant symptoms in this group were weakness, sweating, productive cough, and weight loss. In some cases, patients misinterpreted

these symptoms: weakness and weight loss were attributed to old age while sweating and cough were considered symptoms of chronic conditions. Consequently, tuberculosis was often detected as a comorbidity during the examination for other pathologies in 35.9% of these patients.

Comorbidities were present in 41 adolescents (42.7%) and 108 adults (77.1%) ($p < 0.001$). All elderly patients with respiratory tuberculosis had comorbid conditions, with cardiovascular pathology being the most prevalent: ischemic heart disease was found in 35 individuals (66%), various degrees of hypertension in 25 individuals (47%), gastrointestinal diseases in 22 individuals (41%), respiratory system diseases in 17 individuals (32%), and urinary system diseases in 20 individuals (37%).

The results of our studies reveal demographic differences in the composition of tuberculosis patients: among adolescents, females were more frequently affected, whereas in adults under 25 years of age, their proportion decreased. In contrast, the likelihood of tuberculosis in men significantly increased in the older age groups. Tuberculosis in adolescents was often detected during preventive screenings or as a result of contact tracing, whereas in older adults, it was primarily identified when seeking medical care. Respiratory tuberculosis in the elderly was mainly diagnosed during medical consultations for intoxication and bronchopulmonary complaints or examinations for comorbid conditions within the general healthcare system.

Therefore, in these younger populations, the respiratory system plays a crucial role in the early and active detection of tuberculosis within the general healthcare framework.

Conclusion

The study reveals significant age-related differences in the clinical presentation and diagnosis of pulmonary tuberculosis, highlighting the necessity for age-specific approaches in tuberculosis management. Adolescents predominantly presented with less severe forms of tuberculosis, often detected during preventive examinations, whereas older adults exhibited more advanced disease stages, often diagnosed when seeking medical care due to symptoms. The findings imply that enhancing preventive measures, particularly in older populations, and improving early detection protocols are essential for better tuberculosis control. Future research should explore targeted interventions and diagnostic strategies to address these demographic disparities in tuberculosis detection and treatment outcomes

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