



# CHARACTERISTICS OF INSTRUMENTAL EXAMINATION FINDINGS IN PULMONARY TUBERCULOSIS AND HIV COINFECTION

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*Comparative analysis of radiographic, ultrasound, bronchoscopic, and ECG findings in patients with pulmonary tuberculosis (Group I), tuberculosis-HIV coinfection (Group II), and HIV/AIDS (Group III).*

## ABSTRACT

*Radiographic, ultrasound, bronchoscopic, and electrocardiographic examinations are of substantial diagnostic value for the timely detection of multi-organ involvement in tuberculosis-HIV coinfection and for individualizing treatment tactics.*

**Background.** Radiographic, ultrasound, bronchoscopic, and electrocardiographic examinations are of substantial diagnostic value for the timely detection of multi-organ involvement in tuberculosis-HIV coinfection and for individualizing treatment tactics.

**Aim.** Comparative analysis of radiographic, ultrasound, bronchoscopic, and ECG findings in patients with pulmonary tuberculosis (Group I), tuberculosis-HIV coinfection (Group II), and HIV/AIDS (Group III).

**Materials and Methods.** In 121 patients (TB, n=41; TB+HIV, n=38; HIV, n=42), chest radiography findings, the presence of exudative pleurisy, ultrasound examination, bronchoscopy, and ECG findings were compared across groups using Pearson's  $\chi^2$  test.

**Results.** Radiographic analysis showed that the infiltrative form predominated, being detected in  $82.9 \pm 5.9\%$  of the TB group and  $73.7 \pm 7.1\%$  of the TB+HIV group ( $P < 0.001$ ), with no cases recorded in the HIV group; the only finding in the HIV group was chronic bronchitis ( $16.7 \pm 5.8\%$ ;  $P = 0.244$ ), while the disseminated form was more common in the TB+HIV group ( $10.5 \pm 5.0\%$ ) than in the TB group ( $4.9 \pm 3.4\%$ ), although this difference did not reach statistical significance ( $P = 0.096$ ). Pleurisy was detected only in the TB+HIV group ( $10.5 \pm 5.0\%$ ;  $P = 0.011$ ), and signs of exudative pleurisy were likewise recorded only in this group — in a total of  $21.1\%$  of cases (right-sided  $7.9 \pm 4.4\%$ , left-sided  $10.5 \pm 5.0\%$ , bilateral  $2.6 \pm 2.6\%$ ) — with no cases occurring in the TB or HIV groups ( $P < 0.001$ ). Ultrasound findings showed that nearly all detected visceral pathology was concentrated in the TB+HIV group: hepatitis ( $15.8 \pm 5.9\%$ ;  $P = 0.006$ ), cholecystitis ( $21.1 \pm 6.6\%$ ;  $P = 0.002$ ), pyelonephritis ( $7.9 \pm 4.4\%$ ;

$P=0.035$ ), and pancreatitis ( $7.9\pm4.4\%$ ); at the same time, ultrasound examination was not performed at all in 100.0% of the HIV group and  $92.7\pm4.1\%$  of the TB group, compared with a markedly lower rate of  $65.8\pm7.7\%$  in the TB+HIV group ( $P<0.001$ ), reflecting the more frequent use of ultrasound in the coinfection group owing to the higher prevalence of multi-organ complaints. Bronchoscopy was not performed in the vast majority of patients (100.0% in the TB+HIV and HIV groups,  $95.1\pm3.4\%$  in the TB group;  $P=0.138$ ); the only two cases in which it was performed, both in the TB group, revealed findings characteristic of tuberculosis. On ECG, cardiac pathology was found in  $75.6\pm6.7\%$  of the TB group but in a markedly lower proportion —  $21.1\pm6.6\%$  — of the TB+HIV group, and was not recorded at all in the HIV group ( $P<0.001$ ); this difference is explained by the older age of patients in the TB group and the correspondingly higher baseline prevalence of concomitant cardiovascular pathology in this group.

**Conclusion.** Tuberculosis-HIV coinfection is characterized by an increased predisposition to reactive inflammatory processes in the pleural cavity and internal organs (liver, gallbladder, kidneys), indicating the need to incorporate comprehensive instrumental monitoring — including radiographic, ultrasound, and ECG examinations — as a mandatory component of the treatment program for this category of patients.

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