

EXPERIENCE AND PERSPECTIVES OF IMPLEMENTATION OF MATHEMATICAL MODELING IN DIAGNOSING OF PRIMARY OR SECONDARY TUBERCULOSIS

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Abstract

Based on informational technologies (IT) we performed digital evaluation of clinical, radiological and laboratory parameters of tuberculous inflammation. We defined the diagnosis effectiveness criteria. In 76 primary and 81 secondary tuberculosis cases we developed an algorithm of diagnosing, which helped to verify diagnosis in 90,7 % and 85,2 % of cases, respectively.

The aim of the study was to estimate the effectiveness of diagnosing of pulmonary tuberculosis, using mathematical model, which considered most clinical, radiological and laboratory features of disease.

Methods. Data of clinical, radiological and laboratory examination of 157 patients with pulmonary tuberculosis were analyzed, using IT modeling.

The results of the study confirmed the diagnosis in 69 of 76 patients with primary and in 69 of 81 patients with secondary tuberculosis. Thus, the algorithm, which we developed, helped to determine the origin of disease in most cases. Hence, we conclude that mathematical modeling increases the effectiveness of diagnosing of primary tuberculosis up to 90,7 % and secondary — up to 85,2 %.

Key words: mathematical modeling, tuberculosis, differential diagnosis.

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