

Development of the point scoring system of medical parameters for HIV severity monitoring and modeling in numerical terms

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The article considers the possibility of using a point scoring system of medical parameters for HIV severity monitoring and modeling in numerical terms. There were investigated the features of the use of medical parameters in the form of a point scoring system as well as the possibility of applying a numerical model for determining the HIV severity when tuberculosis is joined.

To solve the problem, it was developed a step-by-step algorithm for applying the point scoring system. Conclusions were drawn. The possibility to predict in numerical terms the outcome of the disease (in particular the AIDS progression) using the number of systematically collected medical parameters in HIV carriers is of great interest.

The information system development allows to determine the most important properties of the process and to separate its non-essential characteristics. Often the information system and modeling allows us to formulate new hypotheses and gain new knowledge about the object, those which were not available during the research.

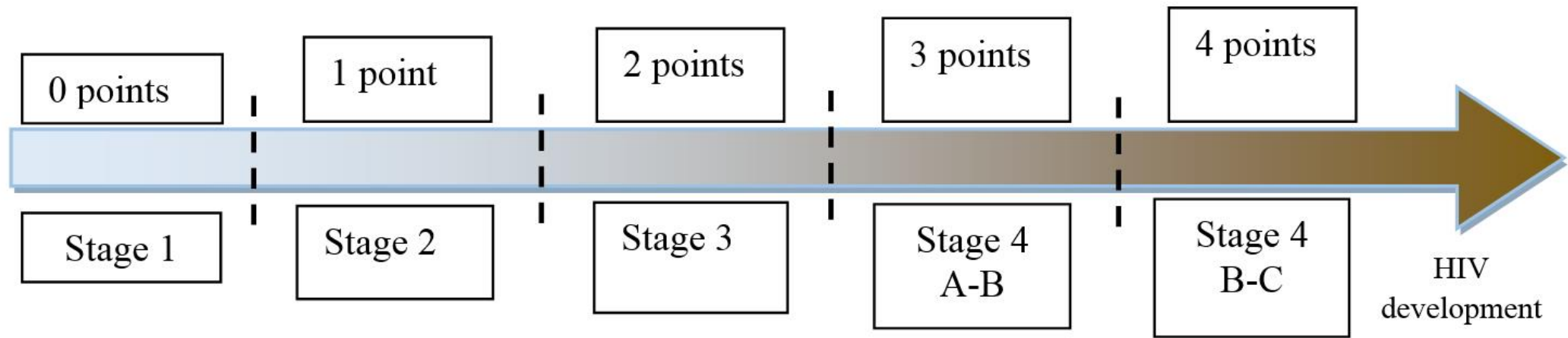


Figure 1. Point scoring system of HIV progression

definition of
tuberculosis point
scoring stages

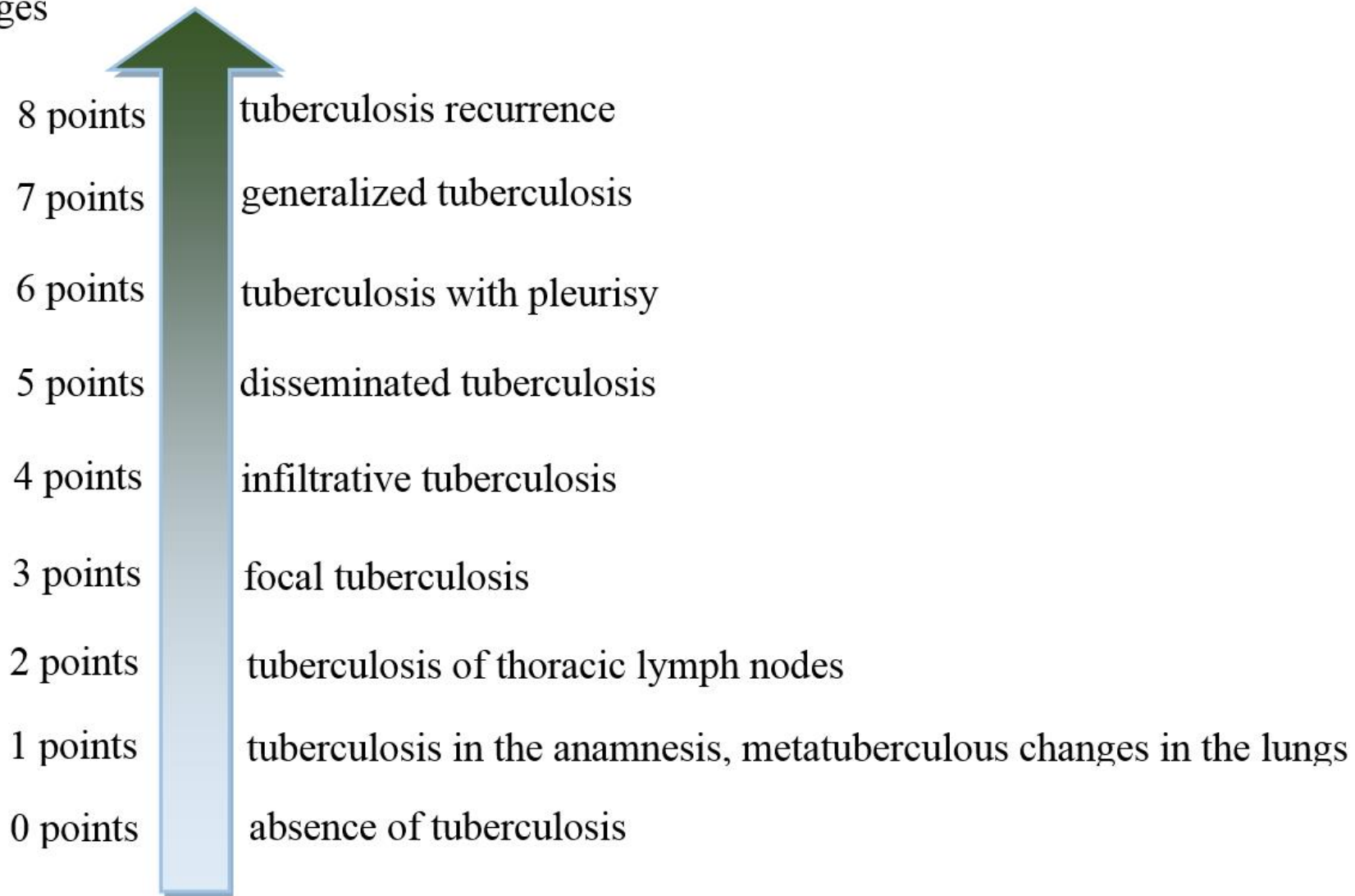


Figure 2. Point scoring system of the tuberculosis stages

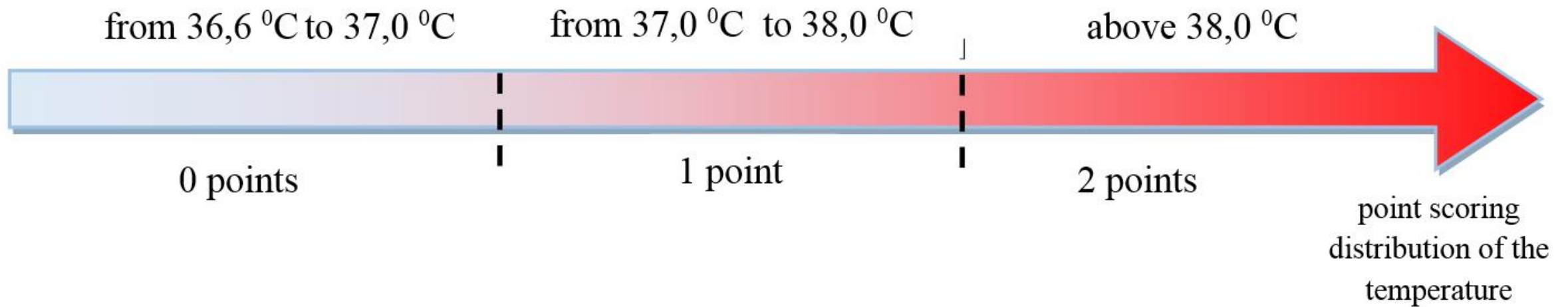


Figure 3. Point scoring system of body temperature measuring for the purpose of monitoring and modeling the AIDS severity in numerical terms

Results

- The study presents the development of the point scoring system of medical parameters for HIV severity monitoring and modeling in numerical terms. It was established the correlation between such parameters as the tuberculosis stage, deviation of body temperature, chronic obstructive pulmonary disease (presence or absence thereof), liver size and the AIDS progression in patients; there were developed scoring point equivalents of these parameters allowing the use of statistical methods and machine learning methods.
- The results of the study can be used for further development of the information system that allows deeper understanding of the processes of AIDS progression. The coefficients obtained by means of the regression analysis are the basis for the model that enables to prognose the risk of AIDS progression. The developed method has been tested in practice. It was also developed a computer program based on the results of the correlation analysis and the regression model. The implementation of this program will help to improve the quality of monitoring of the disease progression in inmates.