

THE HOLMES EFFECT PROBLEM IN QUANTITATIVE TELEPATHOLOGY (METHODICAL ASPECTS)

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While analyzing volumetric–and–spatial characteristics of three–dimensional object by the projection (in the rays transmitting) images of its “two–dimensional” equivalents, a histopathologist always faces with the phenomenon of shadowing of more opaque details upon transparent structures (the Holmes effect), which is the more intensive the more a real section thickness differs from a zero one. If the thickness is in proportion to the sizes of the components studied, their real volumetric relations in the object are two–fold distorted by the Holmes effect, and only the sections having the thickness which is $\sim 1/10$ — $1/20$ of the medium diameter of the structures studied allow to ignore the effect.

3 ways of the problem solution are considered:

- 1) technical way — sections of adequate orientation (for anisomorphous objects) and thickness should be used as well as proper densifying embedding media and special procedures to obtain representative area of sections and digitized images;
- 2) mathematical way — stereometry results should be corrected using special coefficients;
- 3) technicomathematical way — provides for combining of the first and second ways.

Key words: telepathology, histopathological sections, digitized images, stereometry, the Holmes effect.

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