MORPHOLOGICAL CHANGES IN EXPERIMENTAL TUBERCULOSIS RESULTING FROM TREATMENT WITH QUERCETIN AND POLYVINYLPYRROLIDONE

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Aims and objectives. Morphological study of tissue necrosis stages in experimental organpreserving tuberculosis pharmacotherapy using Quercetin and Polyvinylpyrrolidone (QP).
Background and methods. 32 laboratory mice of C57BL/6JLacSto strain were used in the experiment. The animals were divided into five groups, six to seven mice in each: group 1- Mycobacterium tuberculosis (MBT) uninfected mice; group 2- MBT infected mice; group 3- MBT infected and treated with antituberculosis preparation (ATP); group 4- MBT infected and QP treated; group 5- MBT infected and treated with ATP and QP. The mice were infected through caudal vein injection with MTB H37Rv strain. The preparation QP, which belongs to the capillary-stabilizing-remedy group, was used for the research. The ATP were izoniazid and streptomycin. Thus, the drug doses for the mice contained the following: isoniazid (10%, 5 mL), 45 mg/kg; streptomycin (1 g), 90 mg/kg; and QP (0.5 g), 45 mg/kg of the body weight of a mouse. The medicines used in the experiment on the mice were applied as follows: isoniazid and streptomycin, intramuscularly once a day; and QP, intraperitoneally according to a schedule (on the 5th day after the introduction of the infection every 2 h, and then every 12 h; on the 6th day and 7th day two times a day every 12 h).
Results. QP produced a strict delineation of caseous necrosis from the unaffected parts of the connective tissue with fibrosis in the center and a large number of Langerhans cells, which was not observed in the control groups without QP. The combination of QP and ATP had more pronounced effects. In MBT-infected mice, where QP was not used, unlike the group where QP was used, adipose dystrophy of hepatocytes was observed. Thus, the hepatoprotective effect of QP against TB can be suggested.
Conclusion. Under the influence of QP, the separation of caseous necrosis of granulomas from unaffected areas begins through connective tissue with fibrotization in the central part and a large number of Langhans cells and lymphocytes that are not observed in the control groups. The interaction of QP with anti-TB drugs shows more obvious effects: fast tendency of epithelioid cellular tubercles to fibrotization and separation of TB granulomas through connective tissue. In addition, in the control groups of animals infected with TB, in contrast to the experimental groups, fatty degeneration of hepatocytes is observed. Thus, we have shown the hepatoprotective function of QP against TB.

Keywords: Epithelioid cellular granuloma, Experimental model, Morphological changes, Polyvinylpyrrolidone, Quercetin, Treatment of tuberculosis