

Pathophysiological Mechanisms Destruction of the Lung Connective Tissue in Tuberculosis

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Conflict of interests: none

BACKGROUND. The restructuring of the lung tissue stroma during destructive tuberculosis is one of the most important pathological events in the formation of residual changes in the lung tissue during tuberculosis inflammation. Most patients with tuberculosis have destructive forms of this disease. Therefore, studies of pathomorphological changes in the pulmonary tissue of tuberculosis patients are very relevant.

It is known that the formation of cavities involves the destruction of the extracellular matrix, which includes collagen fibers that support the structure of the lungs. The destruction of this matrix leads to the destruction of lung tissue and is a consequence of the activity of proteinase enzymes. One of the products of the destruction of collagen fibers of the lung tissue is oxyproline and its fractions.

It has been proven that in the lungs collagen fibers break down matrix metalloproteinases (MMPs), which belong to the family of proteinases, and are able to affect all component soft extracellular matrix. The process of MMP synthesis is regulated at the transcription level, and the irproteolytic activity is controlled by proenzymes, as well as inhibition of active enzymes

DOI: 10.32902/2663-0338-2019-2-14-20

ОРИГІНАЛЬНЕ ДОСЛІДЖЕННЯ

by endogenous inhibitors, α_2 -macroglobulin and tissue inhibitors of metalloproteinases (TIMP), which play an important role in fibrosis processes.

However, it is important not only the level of MMP, but also their ratio with TIMP. An increase in the level of TIMP over MMP leads to the degradation of capillaries of the interalveolar septa, while the predominance of MMP over TIMP leads to the destruction of the component soft he extracellular matrix.

Recent studies indicate the role of aldosterone in the processes of fibrosis. It is able to activate blood monocytes, induce in flammation, lead to impaired fibrinolysis. Also aldosterone is able to enhance the synthesis and accumulation of collagen. Elevated levels of aldosterone, stimulating the growth of smooth muscle fibers, contribute to the development of fibrosis in the lungs. There is evidence that aldosterone is able to enhance the degradation of the extracellular matrix through the activation of MMP.

CONCLUSIONS. Thus, the destruction of the extracellular matrix is one of the most important pathological event sin the formation of residual changes in the lung tissue with tuberculous inflammation.

KEY WORDS: tuberculosis, collagen, hydroxyproline, matrix metalloproteinase, inhibit, aldosterone.