

18.1.3 - Inflammation

The estimation of intensity of inflammatory alterations of blood in early postinfarction remodeling

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Introduction: Structural postinfarction abnormalities is connected with inflammation. For better understanding of pathogenesis of postinfarction remodeling, it was studied the intensity of inflammatory disorders in early postinfarction period.

Purpose: Research of the intensity of inflammatory response in early postinfarction remodeling.

Materials and methods: 772 of patients with myocardial infarction (MI) were examined. Clinical blood analysis was performed at admission and on the 5th day of MI, as well as immunological examination, Echocardiography.

Results: In patients with end-diastolic diameter (EDD) of left ventricle (LV) ≥ 55 mm, 5 day MI white blood cells (WBC) level ($8,0 \pm 2,1 \cdot 10^9/l$ vs $7,3 \pm 1,9 \cdot 10^9/l$, $p = 0,0001$), absolute number of neutrophils ($5,0 \pm 1,7 \cdot 10^9/l$ vs $4,5 \pm 1,4 \cdot 10^9/l$, $p = 0,0006$) and monocytes ($0,64 \pm 0,30 \cdot 10^9/l$ vs $0,57 \pm 0,30 \cdot 10^9/l$, $p = 0,005$) were higher compared patients with $EDD \leq 55$ mm. The inflammatory alterations in patients with increased end-diastolic volume (EDV) and end-systolic volume (ESV) of left ventricle was similar.

The LV EDD was correlated with WBC level ($r = 0,3$; $p = 0,00002$), also with absolute number of neutrophils ($r = 0,3$; $p = 0,0002$) and monocytes ($r = 0,3$; $p = 0,007$). The positive connection of EDV LV with level of WBC ($r = 0,3$; $P = 0,007$) and absolute number of neutrophils ($r = 0,3$; $p = 0,0002$) was revealed. The positive connection of ESV LV with absolute number of neutrophils ($r = 0,3$, $p = 0,04$; accordingly). It should be noted that increase of ESD LV more 37mm was not accompanied by authentic increase of inflammatory factors, but the connection of ESV LV with IL-6 was noted ($p = 0,3$; $p = 0,03$).

As far as contractive function of myocardium declined, it was registered the increase of neutrophils (neutrophils on the 5 day in EF 55% and more - $4,5 \pm 1,4 \cdot 10^9/l$, EF 55-40% - $4,8 \pm 1,5 \cdot 10^9/l$, EF less 40% - $5,1 \pm 2,1 \cdot 10^9/l$, $p = 0,002$), also in formation of areas of akinesia (neutrophils on the 1 days - $9,2 \pm 3,3 \cdot 10^9/l$ vs $8,3 \pm 3,1 \cdot 10^9/l$, $p = 0,05$) and aneurysm of LV ($5,08 \pm 1,71 \cdot 10^9/l$ vs $4,52 \pm 1,48 \cdot 10^9/l$, $p = 0,0006$).

It should be noticed that functional activity of monocytes in patients with aneurism of LV was lower than in patients without aneurism ($CD14$ $0,035 \pm 0,02 \cdot 10^9/l$ vs $0,049 \pm 0,02 \cdot 10^9/l$, $p = 0,05$). It appears important obtained data that with hypertrophy LV and diastolic disfunction was noticed authentic increase of lymphocytes, expressing the marker of apoptosis CD95 ($0,458 \pm 0,276 \cdot 10^9/l$ vs $0,335 \pm 0,155 \cdot 10^9/l$, $p = 0,05$; $0,441 \pm 0,26 \cdot 10^9/l$ vs $0,342 \pm 0,21 \cdot 10^9/l$, $p = 0,01$, accordingly).

Conclusion: The increased activity of inflammatory markers, decline of functional activity of monocytes, the elevation of apoptosis marker, associated with bigger intensity of postinfarction remodeling processes. The acute phase of inflammation is necessary stage of healing, but with long-term clinical case, excessive activation or alteration of functional activity of leukocytes can lead to growth of structural and electrical remodeling.