Pregnancy Associated Plasma Protein-A (PAPP-A) is a metalloproteinase originally identified in the serum of pregnant women as a heterotetrameric complex with proMBP. Recent studies indicated that homodimeric form of PAPP-A (dPAPP-A) is notably expressed in unstable atherosclerotic plaques. It was shown that dPAPP-A is produced by activated cells of the immune system in unstable plaques and is released into the extracellular matrix. Also it was suggested that dPAPP-A could be involved in weakening of the fibrous cap.

However, there are certain methodological difficulties for investigation of plaque form of PAPP-A caused by its low concentration in tissue, high molecular weight of this protein and various posttranslational modifications. Moreover there is a lack of information about expression and localization of dPAPP-A in atherosclerotic plaque.

The aims of our study were:
1. to develop a method of PAPP-A immunodetection in atherosclerotic plaques of patients with atherosclerosis, to demonstrate distribution and localization of PAPP-A in the tissue;
2. to investigate the expression of dPAPP-A in vulnerable plaques.

Materials and Methods

Collection of tissue: The study group consisted of four patients with multisalulotic atherosclerosis: three patients were with aortic aneurism, one with 50-60% carotid artery stenosis (all men) (Table 1).

Immunochemistry: Samples were fixed by 4% formalin solution. Immunohistochemical staining was performed on 4-µm-thick paraffin sections by using peroxidase-labeled secondary antibodies.

In the study we have tested a set of mouse anti-PAPP-A monoclonal antibodies obtained with PAPP-AbromBP complex as an immunogen (HyTest Ltd). PAPP-A subunit-specific MAb 10A5 was selected for tissue staining. MAb 10A5 was used at a concentration of 10 µg/mL. Tissue sections were counterstained with hematoxylin and eosin.

Sandwich immunofluorescent assay (IFA): MAb 10A5 was used at a concentration of 10 µg/mL. Tissue sections were counterstained with hematoxylin and eosin.

We have developed method of PAPP-A immunodetection in atherosclerotic plaques. Our finding confirms the hypothesis suggesting dPAPP-A participation in inflammatory processes that could result in destabilization and rupture of atherosclerotic plaque.

References

Conclusion
We have developed method of IHC detection of PAPP in atherosclerotic plaques. Our findings confirm the hypothesis suggesting dPAPP-A participation in inflammatory processes that could result in destabilization and rupture of atherosclerotic plaque.