

The new approaches for study the growth regulation of various forms of children hemangioma

Vadachkoria Z.¹, Dzidziguri L.², Ghibradze G.², Modebadze I.³, Mikadze M.³, Dzidziguri D.³

¹Tbilisi State Medical University, Department of Pediatric Maxillofacial Surgery; 33 Vazha-Pshavela ave, 0186, Tbilisi, Georgia.,²G. Zhvania Academic Clinic of Pediatrics,³ Iv. Javakhishvili Tbilisi State University, Department of Biology, 3 Chavchavadze Av. 0179, Tbilisi, Georgia

It is known that disorders the expression of growth factors may trigger pathological processes in the body. For example, there is an assumption that the disturbance of positive and negative regulation of growth factors (VEGF and bFGF) can be associated with the development of hemangioma. Nowadays the subject of intense study is to investigate the expression of protein factors presence of which plays a leading role in angiogenesis at various stages of formation of hemangiomas.

It has been previously shown that endogenous thermostable protein complex isolated from the pro- and various organs of eukaryotic animals regulates cell proliferation of homologous tissue. The endogenous protein complex does not show species specificity, but reveals tissue-specificity with respect to terminally differentiated cells. It is shown that the active component of the thermostable protein complex with low molecular weight (12-17 kD) decreases the proliferation of the homological cells through inhibition of RNA synthesis. Therefore it was interesting to determine the cell proliferation of different degree of transformation that regulated by endogenous thermostable protein complex.

The aim of our study was the identification of the thermostable protein complexes in the cells of infant's hemangiomas.

Material and methods. The sources used in the experiments were postoperative material from Infants hemangiomas (cavernous, capillary) received from Tbilisi State Medical University G. Zhvania Academic Clinic of Pediatrics, and brain and pancreatic tissues from growing and adult rats. The influence of protein complex from cavernous hemangioma was studied in growing (10-12 g) white rats. Animals were divided into two groups: I - control (intact animals); II - test group. The protein complex (200γ) were injected in test group animals intraperitoneally. The thermostable protein complexes were obtained by alcohol extraction. Gel electrophoresis assay was used for the comparative analysis of the complex components. The mitotic index was determined for estimation of proliferative activity.

Results and discussion. The comparative study of thermostable protein complex (TPC) obtained from three different forms of children hemangiomas (post-surgery material) has been carried out. TPC derived from rat's pancreas and brain, was used as control. By electrophoretic analysis in polyacrylamide gel the content of protein complexes' low molecular weight component was studied. It was found that unlike rat pancreatic TPC, the low molecular weight component is in minor amounts in the cavernous and capillary hemangioma cells. At the same time, it turned out that its

content in the TPC of mixed hemangioma is relatively high. It was found that thermostable protein complex obtained from cavernous hemangiomas, does not inhibit the cell proliferation of heterotypic tissue. In particular, three hours after injection of children hemangioma's TPC does not cause the changes in mitotic activity of heterotypic tissue (pancreas, brain) in growing rats, which may be due to the minor content of the active principle in the complex.

Conclusion. On the bases of our results we can conclude that the thermostable protein complex is different in various forms of infant hemangiomas. Cavernous hemangiomas does not have the ability to inhibit the proliferation of heterotypic cells due to the minor content of the active ingredient in protein complexes (the component with the low molecular weight 12-17kD).