https://cejsr.academicjournal.io

The Significance of Pregnancy in the Pathogenesis of Hemangiomas (Literature Review)

Lutfullaev G. U.
Doctor of Medical Sciences, Associate Professor, Head of the Department of Otorhinolaryngology, Faculty of Postgraduate Education, Samarkand State Medical University

Nematov U. S.
Assistant of the Department of Otorhinolaryngology, Faculty of Postgraduate Education, Samarkand State Medical University

Lutfullaev U. L.
Doctor of Medical Sciences Professor of the Department of Otorhinolaryngology, Faculty of Postgraduate Education, Samarkand State Medical University

ANNOTATION: *Hemangiomas are tumors consisting of blood vessels associated with the system of these vessels, but with a significantly greater potential for growth than the surrounding normal tissues. According to world literature, during pregnancy and in the postpartum period, 30-45% of women turn to otorhinolaryngologists with such non-specific symptoms as nasal congestion, rhinorrhea, bleeding or anosmia, especially in the third trimester of pregnancy and during lactation, when the reactivity of the mucous membrane of the cavity the nose is caused by an increased content of estrogens in the blood, which causes dilatation of blood vessels and hypersecretion of the mucosa. There are several theories of pathogenesis, more often associated with traumatic tissue damage and hormonal factors (pregnancy, oral contraceptives).*

KEY WORDS: *hemangioma, pregnancy, pathogenesis, sex steroids.*

Hemangiomas are tumors composed of blood vessels connected to the vascular system, but with significantly higher growth characteristics than the surrounding normal tissue. The growth of hemangiomas is characterized by its autonomy, it does not depend on the normal development of body tissues, often damages them, grows into them and dies [1].

Hemangiomas can affect almost all organs and tissues of the body, but the most common starting point for angiomatous growth is the skin, subcutaneous tissue, oral and nasal mucosa. In scientific circles, the question of what a hemangioma is has long been discussed: a real tumor or a congenital pathological development of the vascular system [2].

The question of the etiology of hemangiomas is currently not debatable. According to studies [10], hemangiomas are vascular tumors, not angiodysplasias. According to his theory, hemangiomas are true tumors, and their development and growth are associated with intensive proliferation of angiogenic elements (angioblasts, poorly differentiated components of the vascular wall) present in the tissue and preserved from the early stages of embryonic development. The proliferation of angiogenic cells and, as a result, the intensive formation of microvessels in true hemangiomas is a self-induced and self-sustaining process based on the interaction of hemangioma cells. In their studies [5], they note the three-layer structure of the vascular walls (endothelium, periendothelial membrane, adventitial layer) and the presence of a large mass of specific vessels with a small amount of connective tissue stroma. When light-optical

studies in the dermis reveal the spread of diffusion, on the basis of the skin there are capillary hemangiomas that form lumps, cavernous hemangiomas, a combination of areas. At the same time, foci of sclerosis can often be seen in the stroma [9]. Based on the morphological affiliation of these formations, it can be concluded with certainty that hemangiomas are not dysplastic, but tumors [13].

In parallel with the solution of the question of the tumor nature of hemangiomas, the question of whether these tumors are congenital or arise during the growth of the body is being discussed in the literature. This problem has been discussed a lot, especially in otorhinolaryngology.

According to world literature, during pregnancy and in the postpartum period, 30-45% of women turn to an otorhinolaryngologist with non-specific symptoms, such as nasal congestion, rhinorrhea, bleeding or anosmia, especially in the third trimester of pregnancy and during lactation, when the reactivity of the nasal mucosa in the blood is associated with an increase in estrogen levels, which leads to vasodilation and hypersecretion of the mucous membrane. In rare cases, the manifestation of the disease is manifested by visual impairment, headache, local swelling in the nose. There are several theories of pathogenesis, which are often associated with traumatic tissue damage and hormonal factors (pregnancy, oral contraceptives) [6].

Estrogen production before the 20th week of pregnancy depends on the activity of the trophoblast and ovaries. From the 20th week, estrogen synthesis is carried out by the placenta with the active participation of the fetus. The fetus produces neutral steroids, which are precursors of estriol. The main precursor of steroids is cholesterol in the mother's blood, from which pregnenolone is formed in the placenta, and about 20% of it is excreted in the urine as the end product of metabolism - pregnandiol.

Progesterone in the body of the fetus serves as the starting point for the synthesis of neutral steroids in the adrenal glands and liver of the fetus. These neutral steroids are the main precursors of the placental formation of estriol, the main hormone of the fetoplacental system.

During pregnancy, the biological effect of estrogens (estriol is 85% of all estrogens) is aimed at the growth of the uterus, which contributes to hyperplasia and hypertrophy of the uterine muscle fibers. In addition, estrogens cause the growth of the mammary glands, but the leading role of estriol is to control the uteroplacental circulation. It is this effect of estrogens that can be attributed to the hormonal theory. The main role in the pathogenesis of hemangioma is assigned to sex steroids. Estrogen and progesterone play a key role in initiating disorders that occur during tumor development [4]. The above changes are manifested by a violation of the processes of mitosis and apoptosis, that is, the processes of programmed cell division and death are disrupted, resulting in the formation of a tumor. A tumor or derivative is an uncontrolled growth of cells of a living organism, in which their activity is disturbed and their genetic information changes. Malignant cells, which require more space, crowd out healthy cells and interfere with their normal functioning. Together with the blood, harmful cells move to different parts of the body. Settling in a new place, they interfere with the work of healthy neighboring cells and begin to actively produce their own species [11]. Virchow, who put forward the fiscal theory of the development of hemangioma in 1863, was the first to try to solve this problem. This theory was based on the fact that hemangiomas most often affect the skin around the pores of the face and the anterior surface of the neck. This theory has led to the opinion that the development of vascular tumors in these areas is due to anomalies in embryogenesis [1].

In 1878, Conheim proposed an embryonic, or pink, theory of the origin of hemangiomas, according to which hemangiomas develop from "lost" or overdeveloped cells during embryonic formation.

According to the theory of “tissue deformations” proposed by Albrecht in 1904 [1], hemangiomas are embryogenetic “tissue deformations”—hamartomas.

E. A. Puchinina considers hemangiomas as a product of the development of dystopic mesenchymal rudiments with a predominance of some elements of the vascular wall [6]. M. F. Glazunov also put forward the same opinion [3]. A.V. Kozlova, V.0. Kalina, Yu.L. Gamburg considered hemangioma as a pathological congenital development of the vascular wall [4].

R. Gudrun, who wrote about the tumor nature of hemangiomas (2), showed that the proliferation of endothelial cells characteristic of angiomas distinguishes these formations from varicose veins and aneurysms. This opinion is supported by a number of authors [2].

According to I. A. Talalaenko, K. G. Selezneva [2,6], a significant part of hemangiomas are malformations of the hamartoma type and only a small part are real tumors - blastomas, however, the authors note that with angiomas, regardless of their origin, an increase in blood vessels is observed and new branches with budding may appear. They believe that it is difficult to distinguish true tumors arising from vessels from these tumor derivatives and propose to consider them together.

According to A.H. Shikham, S.I. Shehadi (1986) [3] distinguish between hemangiomas and vascular malformations according to the peculiarities of cellular activity, their characteristics and features of development. Microscopic examination of hemangiomas showed the presence of endothelial cell proliferation, and defects in vascular development were characterized by flat endothelium. Many authors have found high mitotic activity in tumor cells, while noting the possibility of spontaneous regression of hemangiomas, which fully corresponds to the tumor nature of the disease [3].

The close relationship between hemangioma formation and the embryogenesis of the vascular system has been emphasized (8). The vascular network originally originates from a mass of angio-oblast cells, which, when combined, form a network of capillaries - a model of the vasculature of any somatic area [4]. According to their theory, the appearance of hemangioma is the result of a complex disorder in the embryogenesis of the vascular system. This reflects the role of trauma, infection, and hormonal disorders, which are still secondary morphogenetic factors that contribute to the development of hemangiomas only in the prenatal period or in an already formed organism.

It has now been proven that the occurrence of vascular tumors is associated with the development of the vascular system in the embryonic period. It is known that embryonic angiogenesis goes through a series of successive stages:

- lacunar, starting from the mesoblast (first outside, then intraembryonic), in which vascular lacunae are formed as a result of the endothelial evolution of the peripheral elements of cell islands, and their central cells give rise to primitive primordial globules;
- reticular, arising from the beginning of blood circulation and accompanied by a functional difference between the arterial and venous sectors, their morphological differences are not yet expressed;
- parietal membranes are formed in various parts of the arterial, capillary, venous, and as a result of the functional and morphological restructuring of the primary capillary network, an arterial-capillary-venular network is formed that supplies blood to various tissues and organs.

In the postnatal period, angiogenesis continues and vascular budding occurs with the formation of rudiments from the endothelium of pre-existing capillaries. The angioperitelial complex is a complex of mesenchymal cells located around capillaries and venules and capable of differentiating in various directions (pericytes, osteoblasts, fibroblasts, adipocytes, chondroblasts, smooth muscle cells, and others) [5].

Vascular development and angiogenesis processes are complex, and several modulators of these processes are known. Modulators include receptor tyrosine kinases called angiopoietin (Ang) and vascular endothelial growth factor (VEGF). Changes in this system, both at the molecular and

chromosomal levels, can lead to uncontrolled vascular growth. In this regard, the rapid growth of tumors can be explained by the lack of angiogenesis inhibitors [5].

Currently, the leading role in the formation of vascular tumors is focused on genetic factors [1]. Their often familial, congenital, gradually developing character is noted. The factors causing their development are trauma, venous stasis, abnormal presence of some parts of the embryonic capillary network (usually lost at the angiogenesis trunk stage), parietal cell dysplasia, proliferation and development of neoplasia.

In most cases, the tumor remains asymptomatic for a long time, which can reach many years [5].

Statistics on the relative frequency of hemangiomas is very incomplete, since many patients with vascular tumors do not go to the doctor. According to different authors, the frequency of hemangioma among other tumors ranges from 1-7% [6]. Most often they are located in the face, 60-80% of the total number of hemangiomas are localized on the face [6]. Vascular tumors of ENT organs occupy the first place in terms of frequency of occurrence among benign derivatives of this area [7,10].

According to E. A. Puchinina (1972) [2], hemangioma often affects the mucous membrane of the nasal cavity (78%), less often the pharynx (16%). According to the study by Yu.L. Lutfullaeva (1989) [9] the nose is damaged in 18% of cases and the larynx is damaged in 8% of cases.

REFERENCES:

1. Antoniv T.V., Kazanova N.I., Grigorieva I.N. Early diagnosis and modern methods of treatment for ENT hemangiomas.// Journal of Ear, Nose and Throat Diseases, 2007, No. 3, p. 16-18.
2. Antoniv T.V. To the question of the treatment of patients with hemangioma of the ENT organs.//Bulletin of Otorhinolaryngology, 2007, No. 5, - p. 279 -280.
3. Antoniv V.F., Rishko N.M., Popadyuk V.I. and other Clinical classification of benign tumors of the ENT organs. // J. Bulletin of otorhinolaryngology.- 2001.-№ 4.- P.24-28.
4. Antoniv T.V., Kazanova N.I., Early diagnosis and modern methods of treatment for hemangiomas of ENT organs.// Journal of ear, nose and throat diseases, 2007, No. 3, pp. 26-28.
5. Antoniv T.V. To the question of the treatment of patients with hemangioma of the ENT organs.//Bulletin of Otorhinolaryngology, 2007, No. 5, - p. 279 -280.
6. Bogomilsky M.R., Yablonsky S.V. Benign tumors of the nasal cavity, paranasal sinuses and nasopharynx in childhood // J. Bulletin of Otorhinolaryngology. -1999. – No. 1.- P.58-62
7. Ivanenko E.S. Photochromotherapy in the treatment of congenital hemangiomas in young children. Abstract of the dissertation of the candidate of medical sciences. Rostov, 2004, 25 p.
8. Kostina T.V. Clinic, diagnosis and treatment of vascular neoplasms of the nose and paranasal sinuses. Abstract of the dissertation of the candidate of medical sciences, M., 2002, 23 p.
9. Karpishchenko S.A., Vereshchagina O.E., Lysyuk E.O. Capillary hemangioma of the nasal septum: a clinical case. Rational tactics of surgical treatment. Consilium Medicum. 2017; 19 (11.1. Respiratory Organs Diseases): 58–61.
10. Kozhevnikov V.A., Bauer T.V., Kozhevnikov E.V. Clinic and treatment of hemangiomas in children. Selected issues of oncology: Proceedings of the international scientific-practical conference, Barnaul. -1999. – p. 258-260.
11. Лутфуллаев, Г. У., Лутфуллаев, У. Л., Валиева, Н. К., Кобилова, Ш. Ш., & Валиева, С. Ш. (2020). Гигантская фибропапиллома ушной раковины. Клинические наблюдения. Вопросы науки и образования, (18 (102)), 28-32.

12. Лутфуллаев, Г. У., Кобилова, Ш. Ш., Неъматов, У. С., & Мусурмонов, Ф. Ш. (2019). Опыт применения локальной иммунокоррекции в лечении экссудативного среднего отита у больных с доброкачественными опухолями носа, околоносовых пазух и носоглотки. Вестник КГМА им. ИК Ахунбаева, (2), 55-57.

13. Лутфуллаев, Г., Кобилова, Ш., Хамраев, Ф., & Асророва, Ф. (2015). Усовершенствование лечения больных с юношеской ангиофибромой носоглотки. Stomatologiya, 1(3 (61)), 149-151.

14. Lutfullayev, G. U., Lutfullayev, U. L., & Kobilova, S. H. SH., Ne» matov US Distance Learning Experience in the COVID-19 Pandemic [Internet]. Problemy pedagogiki= Problems of Pedagogy. 2020; 4 (49).

15. Lutfullaev, G., Lutfullaev, U., Kobilova, S., Safarova, N., & Valieva, N. (2021). Exudative Otitis Media-Early Symptom of Junior Nasopharyngeal Angiofibroma. Annals of the Romanian Society for Cell Biology, 111-114.

16. Lutfullaev, G., Lutfullaev, U., Nematov, U., Hamraev, F., & Fayzullaev, D. (2021). Clinical Characteristics of Vascular Tumors of ENT Organs. Annals of the Romanian Society for Cell Biology, 104-110.

17. Лутфуллаев, У., Кобилова, Ш., & Неъматов, У. (2020). ОПЫТ ИСПОЛЬЗОВАНИЯ ПЛАТФОРМЫ ZOOM В ДИСТАНЦИОННОМ ОБУЧЕНИИ В УСЛОВИЯХ ПАНДЕМИИ COVID-19. Журнал кардиореспираторных исследований, 1(SI-1), 59-59.

18. Лутфуллаев, Г. У., Лутфуллаев, У. Л., Неъматов, У. С., & Сафарова, Н. И. (2020). Случай из практики: гемангиома полости носа у беременной женщины. Вестник науки и образования, (10-4 (88)), 89-92

19. Валиева, Н., Неъматов, У., & Махмудова, Н. (2014). Отогенный менингит. Журнал проблемы биологии и медицины, (3 (79)), 93-94.

20. АНТОНИВ, В. Ф., КОЛОДИЙ, Н. В., АКСЕНОВ, В. М., & ЛУТФУЛЛАЕВ, У. Л. (1991). Способ хирургического лечения заболеваний среднего уха

21. Шокировна, Қ. Ш., Умриллаевич, Л. Ғ., ВАЛИЕВА, Н. К., & ХАМРАЕВ, Ф. Х. БУРУН, БУРУН ЁН БЎШЛИҚЛАРИ ВА БУРУН–ҲАЛҚУМ ХАВФСИЗ ЎСМАЛАРИДА ЭКССУДАТИВ ЎРТА ОТИТ. БИОМЕДИЦИНА ВА АМАЛИЁТ ЖУРНАЛИ, 85.

22. ЛУТФУЛЛАЕВ, У., ВАЛИЕВА, Н., ХАМРАЕВ, Ф., ВАЛИЕВА, С., & АБДУРАХИМОВА, А. БОЛЕЗНЬ ВЕГЕНЕРА В ПРАКТИКЕ ОТОЛАРИНГОЛОГИИ.