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Importance of Pregnancy in the Pathogenesis of Hemangiomas

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Abstract: 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. The growth of hemangiomas is distinguished by its autonomy, independence from the normal development of body tissues, often to the detriment of the latter, growing and destroying them [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. For a long time in scientific circles, the question was solved, what is a hemangioma: a true tumor or a pathological congenital development of the vascular system [2].

The question of the etiology of hemangiomas is currently not controversial. According to studies [10], hemangiomas are vascular neoplasms, not angiodysplasias. According to his theory, hemangiomas are true tumors, the development and growth of which is associated with intensive proliferation of angiogenic elements (angioblasts, poorly differentiated components of the vascular wall) that exist in the tissue and, obviously, persist from the early stages of embryonic development. The proliferation of angiogenic cells and, as a result, intensive neoformation of microvessels in true hemangiomas, is a self-inducing and self-sustaining process, which is based on the interaction of the hemangiomas cells themselves. In their studies [5], they note the three-layer nature of the vessel walls (endothelium, periendothelial membrane, adventitia layer) and the presence of a continuous mass of peculiar vessels with a poor connective tissue stroma. Light-optical studies reveal a combination of areas built according to the type of capillary hemangiomas, cavernous hemangiomas, which are diffuse in the dermis, and form lobules in the subcutaneous base. At the same time, foci of sclerosis can often be seen in the stroma [9]. With regard to the morphological affiliation of these neoplasms, one can confidently conclude that hemangiomas have a tumor rather than a dysplastic nature [13].

In parallel with addressing the issue of the tumor nature of hemangiomas, the question is being discussed in the literature: are these tumors congenital or do they arise during the growth of the organism. Especially often this problem was discussed in otolaryngology.

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

estrogen in the blood, which causes dilatation of blood vessels and hypersecretion of the mucosa. Less often, the manifestation of the disease manifests itself with visual impairment, headaches, and a local feeling of fullness in the nose. There are several theories of pathogenesis, more often associated with traumatic tissue damage and hormonal factors (pregnancy, oral contraceptives) [6].

Up to 20 weeks of pregnancy, the formation of estrogens depends on the activity of the trophoblast and the ovaries. From 20 weeks, estrogen synthesis is carried out by the placenta with the active participation of the fetus. The fetus produces neutral steroids, which are the precursor to estriol. The main precursor of steroids is maternal cholesterol, from which pregnanolone is formed in the placenta, and about 20% of it is excreted in the urine as the end product of metabolism, pregnandiol.

In the body of the fetus, progesterone 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 for the formation of estriol in the placenta, which is the main hormone of the fetoplacental system.

The biological effect of estrogens (estriol is 85% of all estrogens) during pregnancy is aimed at the growth of the uterus, promotes hyperplasia and hypertrophy of the muscle fibers of the uterus. In addition, estrogens cause the growth of the mammary glands, but the leading role of estriol is the regulation of uteroplacental circulation. It is this action of estrogens that can be associated with 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 in the disruption of the processes of mitosis and apoptosis, that is, the programmed processes of cell division and death are disrupted, resulting in the formation of a tumor. A tumor or neoplasm is an uncontrolled growth of cells of a living organism, during which their functioning is disrupted and genetic information changes. Demanding more and more space, harmful cells push healthy ones aside and prevent them from working normally. Together with the blood, unhealthy cells enter various parts of the body. Having settled in a new place, they begin to actively produce their own kind, interfering with the work of healthy neighbors [11].

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