

SOME ASPECTS OF CLINICAL ANATOMY OF THE BREAST GLAND

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The mammary glands are the most visible formation on the anterior surface of the chest, especially in women. They are formed mainly by glandular and connective tissue, which performs a supporting function, located in adipose tissue along with blood vessels and nerves. Usually the mammary glands are well developed only in women. The superficial fascia of the chest bifurcates into an anterior and posterior layer, surrounding the mammary glands. The posterior layer is adjacent to the deep fascia covering the pectoralis major muscle. The largest protrusion is formed by the nipple, surrounded by pigmented skin (areola).

In men, the mammary glands are rudimentary, do not function and are represented by few ducts in the form of epithelial cords. Adipose tissue is no different from that located in other areas of the body.

The amount of adipose tissue determines the size of a woman's breasts outside the feeding period. The so-called mammary gland bed extends transversely from the edge of the sternum to the mid-axillary line, vertically from the level of the second to the level of the sixth rib. Two-thirds of the bed is formed by the fascia above the pectoralis major muscle, one-third by the fascia above the serratus anterior. Between the mammary gland and the fascia covering the pectoralis major muscle there is a small amount of loose connective tissue, the presence of which determines a small degree of mobility of the mammary gland relative to the surface of the pectoralis major muscle. A small portion of the mammary gland extends along the inferolateral edge of the pectoralis major muscle to the axilla, forming the appendage (tail) of the mammary gland. During the menstrual cycle, this process may enlarge slightly, causing concern in women and suspicion of a tumor or enlarged lymph nodes.

The mammary glands are tightly attached to the dermal layer of the skin covering them through special ligaments (retinaculacutis). These connective tissue compactions are especially well developed in the upper part and perform a supporting function for the lobes and lobules of the gland.

During puberty (8-15 years), the mammary glands enlarge due to the development of glandular tissue and, no less, the accumulation of adipose tissue. The nipple and

areola also enlarge. The size and shape of the mammary gland is influenced by genetic, ethnic and nutritional factors.

From the primary buds of the epithelium of the milk ducts, 15-20 lobes of the mammary gland develop, forming parenchyma. Thus, each lobule opens with a separate duct, which are not connected to each other. In the area of the areola of the nipple, the ducts form extensions - sinuses, where secretions accumulate during lactation. When the baby begins to suckle at the breast, squeezing the areola and the underlying sinuses of the milk ducts, a hormonally mediated relaxation reflex occurs and milk is secreted into the lumen of the milk ducts.

In the areola area of the nipple there are a number of fatty glands that enlarge during pregnancy and secrete an oily substance that provides lubrication to the areola and nipple. Nipples are conical or cylindrical elevations in the center of the areola; they do not contain adipose tissue, hair, or sweat glands. At the top of the nipple, in the depths of numerous grooves, the milk ducts open. They are formed mainly by circularly arranged muscle fibers that compress the ducts and strain the nipple in response to stimulation during feeding of the baby.

The mammary glands are modified sweat glands. Accordingly, they do not have a capsule or vagina. The round shape and volume of the mammary glands depends mainly on the amount of fatty tissue in them, with the exception of pregnancy, when the amount of glandular tissue increases. Milk-secreting alveoli are grouped as acini. In most women, the mammary glands enlarge during the menstrual cycle under the influence of gonadotropic hormones.

Changes in breast tissue, such as branching of the milk ducts, occur during the menstrual cycle and pregnancy. Readiness for secretion is formed by the middle of pregnancy. However, milk secretion does not occur until the baby is born. Colostrum, a creamy, yellowish fluid, may be secreted during the last trimester of pregnancy and early lactation. It is rich in proteins and immunoglobulins. It contains a growth factor necessary for the development of the gastrointestinal tract in a newborn. In women who have given birth repeatedly, the mammary glands are enlarged. In old age, the mammary glands become smaller due to degeneration of glandular tissue and a decrease in the amount of adipose tissue.

Innervation of the mammary glands is carried out by the cutaneous branches of 4-6 intercostal nerves.

The blood supply to the mammary glands is provided by the mammaryi laterales et mediales respectively the lateral thoracic, posterior and anterior intercostal arteries. Venous drainage is mainly into the axillary vein and partly into the internal mammary veins.



Lymphatic drainage is important due to the possibility of metastasis of cancer cells. From the nipple, areola, and lobules of the gland, lymph flows into the subareolar lymphatic plexus. From it, most of the lymph (75%), especially from the lateral quadrants, flows into different groups of axillary lymph nodes. The remaining part of the lymph, especially from the medial quadrants, flows into the parasternal lymph nodes or nodes of the opposite side. From the lower medial quadrant, lymph can flow into the abdominal cavity into the lower diaphragmatic lymph nodes.

Understanding lymphatic drainage from the breast suggests the pathway of cancer cell metastasis in adenocarcinoma (cancer) of the breast. Cancer cells usually pass through 2-3 groups of lymph nodes before entering the venous system. Impaired lymphatic drainage can lead to edema (accumulation of excess fluid in the subcutaneous tissues), which in turn leads to deviation and thickening of the nipple, wrinkling of the skin like an orange peel, and deformation of the mammary gland.

Breast cancer usually metastasizes by lymphogenous route. Cancer cells form peculiar nests in regional lymph nodes. A huge number of lymphatic anastomoses leads to the spread of cancer cells to numerous lymph nodes - axillary, cervical, parasternal, supraclavicular, abdominal, and nodes on the opposite side. Since most of the lymph flows into the axillary nodes, they are most often affected. Palpation of enlarged axillary nodes allows one to suspect breast cancer. However, the absence of their increase does not guarantee the absence of metastases of cancer cells to other groups of lymph nodes.

The posterior intercostal veins drain into the azygos and semi-azygos veins running along the spinal column, which anastomose with the internal vertebral venous plexuses. Cancer cells can metastasize through the bloodstream into the spinal canal, cranial cavity to the brain.

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