CHARACTERISTICS OF CHANGES IN THE NERVOVASCULAR SYSTEM IN THE NECK REGION DURING HANGING ON THE STRANGULATION LOOP (LITERATURE REVIEW).

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Annotation: *The strangulation furrow is a specific sign of hanging on the neck, the furrow, in turn, is located in the upper, middle and lower third of the neck, rising horizontally and obliquely in the direction, and its width and depth are different. In this regard, the morphological changes that occur in the vessels and nerve fibers in the neck are manifested to varying degrees. In the neurons of the ganglion and ganglion in the neck area and in the nerve ganglions of the sympathetic nerve ganglion above the neck area. There are foci of hemorrhage, axonal rupture, argentophilia in the ganglia of the myelin sheath, homogeneous neurofibrillation, abnormal distribution of basophilic substance in ganglion cells, chromatolysis, pyknosis of the cell nucleus and eccentric location of the nucleus.*

Key words: *hanging, neck area, nerve, blood vessel, morphology.*

The following changes are observed during the histological examination of nerve fibers in the neck region during the period of survival of hanging on the skin - argentophobic and hyperargentophobicity of nerve fibers, varicose expansion and fragmentation of nerve cylinders, granular disintegration of nerve fibers. Changes such as fullness and focal hemorrhage occur in ganglia in the neck area of the vagus nerve and in the lower areas. Weak impregnation of cylinders in the nerve fibers of the skin, different contours, swelling, vacuoles, myelin layer swelling, vacuolization, expansion of the nasechka, and changes in the form of fragmentation are observed in some nerve fibers [5,6].

Focal demyelination, improper impregnation, rupture of axons, myelin sheath and ganglia located below the neck area have focal demyelination, homogenous neurofibrillation, misdistribution of basophilic substance in ganglion cells, chromatolysis, pyknosis of many cell nuclei, and eccentric location of the nucleus in ganglia located below the neck area. Accurate information was provided by the presence of foci of hemorrhage in the neurons of the vagus nerve ganglion and in the nerve ganglia above the cervical region of the sympathetic nerve [17,18].

Histological examination of the lymph nodes located above (under the chin, under the jaw) and below (under the armpit, above the spine) from the strangulation egata caused by hanging on the back revealed changes such as hemorrhage, blood

saturation, hemorrhage in the fat cell around the capsule of the lymph node, hepyremia of the venules in the capsule. determined [9].

I.A. Kontsevich, using the neuromorphological method, gave information about the changes in the nervous apparatus, vagus nerve and spinal ganglia in the strangulation area of the neck and neck. He stated that various forms of excitability, degeneration, rupture of axons, loss of the myelin layer and sometimes thickening are observed in the skin nerves in the strangulation area of the neck and in the areas where the stray nerve is mainly affected by herpes [10].

When the strangulation egate is viable, nerve fibers in the neck area - argyrophobia, partial hyperargentophilia of nerve fibers, varicose expansion, fragmentation, granular disintegration of nerve fibers in the axis cylinders are manifested. In addition to these, changes such as fullness and focal bleeding are observed in the laryngeal part of the larynx, the part of the vagus nerve in the neck area, and its ganglia in the lower branches, as well as in the root part of the tongue [17,18].

Strong compression of the cervical organs causes compression of the sympathetic nerve and, as a result, narrowing of the pupils (Schneider F. 1994), as well as changes in skin and muscle nerves in the form of argentophilia, swelling, varicose veins, fragmentation, swelling, swelling, fragmentation and vacuolization of the myelin sheath in the nerves, as well as stray in the conductive part of the nerve in the neck area - impregnation, impregnation with an unclear contour, axon ruptures occur [15,16].

Changes such as thickening of the epidermis in the affected skin, lack of observation of its surface layer, pink color of the remaining areas, oblong shape of the cell nucleus, uncertainty of the structure of epidermal cells in certain areas of the skin, homogenization of collagen fibers, basophilia, metochromasia, lack of observation of the nucleus in connective tissue cells, elastic the fibers are fragmented and the vessels collapse, there is no blood in them, there is an increase in the impregnation of the cylinders in the nerve axes in the egate area, there is a vague curvature, there is no fiber of the neurofibrils and the appearance of vacuoles in them, the myelin layer is swollen, vacuolized, the expansion of the nasechula, fragmentation of some nerve fibers is determined [14].

Having determined the observed changes in the lungs depending on the location of the lymph node, he came to the following conclusion. In all 10 cases where the nodule was located in the front of the neck, Tarde spots were observed on the anterior and interlobular surface of the lung, in 10/9 cases when the nodule was located on the anterior side, Tarde spots were observed on the anterior lateral surfaces of the lungs, and in 10/7 cases where the nodule was located posteriorly, Tarde spots were observed on the lateral and diaphragmatic surfaces of the lung. defined [7].

Strangulation egata is considered a specific sign of hanging on the neck, and egata, in turn, differs in width and depth in the upper, middle and lower third of the

neck, horizontally and obliquely rising in direction. In addition, the signs observed as a result of hanging on the surface are ecchymosis of the connective tissue of the bladder, anisokarya (as a result of compression of the sympathetic nerve), biting the tip of the tongue, bleeding from the nasal passages, bleeding in the mucous membrane of the oral cavity, fracture of the sublingual bone, hiccups, rupture of the intima of the carotid artery. and blood transfusion, universal symptoms occur [4,5].

Hangovers can occur while standing, kneeling, sitting, or lying down. Depending on the nature of the wipe material, it can be soft - a sheet, scarf, towel (in rare cases it can be a collar of clothes), semi-hard - the most common material is a rope, cord, belt, belt, hard material - electric wire, thin metal cables. According to the structure of the knot, mobile and non-mobile, it is also divided into open and closed types. The closed knot is tied close to the neck, and in the open type, it is in the form of a ring, from which the base of the human head freely enters. With the mass of the body, this hump compresses the neck from the front and sides. Depending on the location of the knot in hanging on the neck, the typical knot is located in the back or nape of the neck, and the atypical knot is located in the front or sides of the neck [8].

There may be one or many neck warts depending on the number, full or irregular depending on the hanging position - sitting, kneeling, lying down. According to the observations, in most cases, in a vertical, i.e. full position, 70-65%, in less cases, the knee is hanging in a 20% position. According to the author, the difference between typical and atypical hangovers is that, in the typical variant, the hinge node is located on the back of the neck or in the nape of the neck, and in the atypical variant, the hinge node is located in front of the neck or on one of the two sides. In rare cases, the parotid node can be located in areas other than the neck - between the chins, mouth or oral cavity. Due to this, the morphological changes occurring in blood vessels and nerve fibers in the neck area are manifested in different degrees. [12,13].

When hanging on the mat, the placement of the egat in the neck area depends on the position of the body. It usually has a curved ascending character and can be from the back to the front, or from the side. The width of the surface depends on the width and thickness of the surface, and the depth of the surface depends on the thickness of the surface and the hardness of the material, in what situation the body is located on the surface. If a material with a hard material is used, the changes in the area of the neck and neck are profound, and there are strong changes in the soft tissues of the neck and the nerve blood vessels in this area [17].

In cases of typical hangovers with a hard material, microscopic examination of the internal organs reveals conditions such as blood circulation disorders, increased permeability of the vessel wall, dystrophic changes, focal swelling, hemorrhage, and atelectasis in some parts of the lungs. Heart, liver, and kidney vessels are full, vascular wall thickening, and dystrophic changes have been cited [1,19].

The morphological characteristics of strangulated slag depend on the type of slag: hard and semi-solid materials leave a deep, well-defined mark, and soft slag materials

leave a superficial soft slag. In addition, the authors have provided information about the relief, width, and direction of the neck, injuries of the neck organs - transverse rupture of the intima of the common carotid artery (Amyuss sign), hemorrhage in the adventitia layer (Martin's sign), hemorrhage in the medial leg of the thoracolumbar muscle [21].

According to the authors, when the skin material is soft, in the area of strangulation, the epidermis has not changed much, its core is thickened, homogenization of collagen fibers and tinctorial properties are weak. The veins are swollen, and the connective tissue in this area is swollen. In most cases, foci of hemorrhage are observed in the skin and subcutaneous fat. Dystrophic processes in the epidermis in the cushion-like hanging area of the skin in the upper part of the skin, fullness and hemorrhages in the private layer of the skin are noticeable. The myocytes in the muscle tissue in the area of the leg are thickened, the fibers are sparsely located, and foci of hemorrhage in the muscle tissue are observed [20].

The main sign of hangover is strangulation, which is a negative appearance of the hangover on the skin. When hanging on the mat, the egat is often located in the upper part of the neck. During the histological examination of the skin and subcutaneous fat layers on the edges of the skin, the capillaries and extravasates, stasis, cell infiltration, arterial thrombi, thickening of the epidermis, reactive changes in the nerve elements and nodes of the skin are observed [8,9]. According to the author, there are edges, width and depth of the strangulation egate, which will have a different appearance depending on the nature of the material. In addition, in the examinations, information was given about fractures of the hyoid bone and larynx, bleeding in the soft tissues of the neck, rupture of the intima of the common carotid artery, bleeding in the capsule of the lymph nodes located above the strangulation neck, bleeding in the intervertebral discs of the neck, and general septic symptoms [22].

In order to determine the viability of the strangulation egret during hanging from the ceiling, the authors determined the viability of the strangulation egret by comparing the morphological changes observed in them based on various parameters in order to determine the level of blood saturation of the blood vessels in the neck area. Due to the complexity of this method, it is not currently used in practice [13].

In strangulation asphyxia, local blood circulation disorders in the brain and mechanical impact on the neck organs are of fundamental importance, and during histological examination, blood circulation disorders in internal organs, increased vascular wall permeability and their acute dystrophy, lung edema, and vacuolar dystrophy in the brain, brain swelling are observed [1,2 ,3].

In typical cases of strangulation asphyxia, the liquid state of the blood, acute hemorrhages in the serous and mucous membranes, weak swelling of the lungs and brain, the absence of glial reaction in the dead neurons, acute emphysema of the lungs, the absence of desquamation of alveolar macrophages, and the fullness of the capillaries in the internal organs, mainly the brain and lungs, are characteristic. Also,

strangulation asphyxia in the case of alcohol intoxication, the above morphological appearance can take a different form without showing its characteristics [11,22].

As it can be seen from the analysis of the literature, the death from complications of mechanical asphyxia is expressed due to the morphofunctional changes of the human body when the life is preserved when the mechanical asphyxia index is high. It has been thoroughly studied that this condition leads to changes in the body's individual condition of the wart material and blood vessels and lymphatic vessels in the internal organs, but the dependence of one change on the other change, i.e. depending on the nature of strangulation, we can see that the changes in the neck vascular nerves and brain tissue have not been sufficiently studied. Because the brain tissue is demanding of oxygen, and this lack of oxygen is directly related to the blood vessels and nerves of the neck. Therefore, it is important to comprehensively study these changes in forensic medical practice.

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