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HISTOLOGICAL CHARACTERISTICS OF THE MUCOUS MEMBRANES OF THE NOSE IN PATIENTS WITH SINUSITIS IN ARID ZONE

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Relevance of the problem: In a hot climate, great dryness air, its high temperature and dustiness for a greater parts of the year are factors that affect all the most important vital functions of the body (1,4,6). Inflammatory diseases of the nose and paranasal sinuses can be etiologically caused in similar climatic conditions by the above effects, which is reflected in the nature of the course of the disease (2,3,5.).

Uzbekistan is a significant frequency of purulent-atrophic form sinusitis. Most of the authors describing the clinical picture of atro-physical sinusitis, note the importance of adverse climatic conditions for the etiology and course of this form of the disease, however, we no experimental evidence was found to support this assumption. In addition, it is not possible to find out the client who of the factors has a more adverse effect mucous membrane of the nose and paranasal sinuses (high temperature or dustiness).

Purpose of the work: To experimentally study the influence of the arid zone of Uzbekistan cystana on the condition of the nasal mucosa and paranasal sinuses.

Material and research methods:

Based on the foregoing, we experimentally on rabbits the influence of the above factors on the mucous membrane of the cavity was studied nose and maxillary sinuses. Depending on the impact applied, the animals were divided into 3 equal groups (16 rabbits each). The mass of rabbits was from 2 to 4.1 kg.

The first group of animals was exposed only to high temperature.

air temperature (40 C °), the second one was obsessed with conditions of increased dustiness, and the third was exposed to both factors.

During the experiment, the rabbits were kept in individual chambers, where, depending on the purpose of the experiment, a high ambient temperature, or dust content of air with concentration dust concentration of 0.2 mg/m (which is twice the maximum allowable concentration, however, close to the dustiness of the air in the city of Andijan in summer time). During the third series of experiments, both factors took place. Rabbits were kept in the cells from 7 to 45 days.

Animals were slaughtered by a threefold overdose of a narcotic substance on days 7, 20, 30 and 45 after the start of the experiment. (4 rabbits were slaughtered in each period in all three series). During the experiment, the influence of the listed factors on the mucous membrane of the nasal cavity and maxillary sinuses was studied. At the time indicated above, after slaughtering the rabbits, the microscopic picture of both the nasal mucosa and the paranasal sinuses was carefully studied, and then pieces were cut out on the mucous membrane of the nasal cavity and maxillary sinuses on both sides. The tissues were fixed in neutral 10% formalin and, after decalcification, embedded in paraffin (eloidite). Sections were stained with hematoxylin-eosin and picrofuchsin according to Van Gieson. In the first series of experiments, macroscopically, the mucous membrane of the nasal cavity and maxillary sinus in rabbits after 7 days was moderately swollen, hyperemic. The nasal passages had mucus.

Morphologically, on the 7th day, the mucous membrane of the nasal cavity is thin,

covered with a prismatic epithelium of uniform width with secreting goblet cells, on the surface there is a significant amount of mucus.

In the own layer of the mucous membrane, edema of the secreting glands of various configurations and sizes. The density of the glands is high, part of the glands fits tightly, the epithelium in them is prismatic, ciliated. Vascular plethora, poor leukocyte infiltration. A similar picture was found in the maxillary sinus.

After 20 days of the experiment, macroscopically, the mucous membrane the nasal cavity of rabbits is moderately moist, slightly hyperemic, the nasal passages are clean without any admixture of pathological contents.

Histological studies of the mucous membrane of the nasal cavity of the rabbit during this period of exposure showed that the integumentary epithelium of the respiratory type was of uneven width, the secretion of scrofulous cells was moderate. Among the epithelial cells, a large number of lymphocytes. The amount of mucus on the surface is uneven, scarce; the presence of edema of the underlying tissues, the secretion of the glands is uneven, scarce. In the lamina propria, there is a pronounced lymphocyto-histocytic infiltration.

Uneven plethora of blood vessels, lymphatic vessels is moderately dilated. A macroscopic examination of the mucous membrane of the maxillary sinus of a rabbit on the 20th day of exposure to elevated air temperature revealed that the mucous membrane was moderately swollen, unevenly hyperemic, the amount of mucus on the surface was meager.

Histological examination revealed moderate mucosal edema, uneven secretion of glands and plethora of tissues, round cell infiltration of the stroma. The mucous membrane of the nasal cavity of rabbits on the 30th day - exposure to high temperature is unevenly hyperemic, on the surface there is a thick whitish odorless discharge.

Histological examination showed that the mucous membrane of the maxillary sinus is covered with multi-row ciliated epithelium of uneven width, areas of the secreting epithelium are replaced by areas with signs of desquamation and regeneration.

The amount of dense mucus on the surface is uneven. Moderate swelling of the underlying tissue. Presence of lymph-histocytic infiltration. Glands of various sizes. The epithelium of the terminal sections of the glands in different stages of secretion, the vessels are plethoric. We revealed the most pronounced changes in the mucous membrane of the nose and maxillary sinus after 45 days of exposure to high air temperature. Macroscopically revealed dryness of the mucous membrane of the nasal cavity of the rabbit, uneven hyperemia, there are single dry crusts.

Histological examination reveals an epithelium of the mucous membrane of uneven width, areas of desquamation alternate with areas of hypersecretion. In the foci on the surface is dense mucus. In the underlying tissue, moderate lymphocyto-histocytic infiltration with a meager admixture of leukocytes and sclerosis of the lamina propria, the advantage of its deep sections. The glands are typical, at different stages of the secretory cycle, the end sections of some of the glands are atrophied.

Macroscopically in the maxillary sinus after 45 days of exposure to high temperature air, the mucous membrane is unevenly hyperemic, dry.

In the sinuses scanty, odorless, thick discharge. Histological studies show the uneven width of the ciliated epithelium, signs of its atrophy, desquamation, metaplasia towards the transition, focal presence of thick mucus on its surface. Sclerosis, poor round cell infiltration of the stroma, and atrophy of the glands are expressed in the underlying tissue. Sclerosis of the walls of blood vessels, plethora of capillaries.

Thus, prolonged exposure to high air temperature leads to a reactive state of the mucous membrane, manifested by hypersecretion of the integumentary ciliated and glandular epithelium, followed by its damage, desquamation, regeneration and a decrease in mucous secretion against the background of increasing sclerosis of the lamina propria. Clinically, this is regarded as a tendency to atrophy.

In the second series of experiments (exposure to dust) on the 7th day of exposure

in the nasal passages, the presence of liquid mucus is noted. mucous membrane the maxillary sinus is also swollen, on its surface there is a certain amount of mucus. Morphological studies reveal an increase in the secretion of goblet cells of the epithelium, the epithelium is of uniform width. On the surface of its significant amount of mucus. There is swelling of the own plate, plethora of blood vessels, expansion of the lymphatic vessels. The glands are typical, secrete, moderate leukocyte infiltration of the stroma.

In the mucous membrane of the maxillary sinus, the picture is similar.

20 days after exposure to dust, the mucous membrane of the nasal cavity of the rabbit macroscopically looks swollen, hyperemic, its surface is covered with cloudy viscous mucus, the mucous membrane of the maxillary sinus is also edematous, swollen, with mucus on its surface. A microscopic examination of the nasal mucosa of a rabbit revealed that the goblet glands secrete it, and there is mucus on the surface of the epithelium. The epithelium is uneven in width, infiltrated with lymph-leukocyte elements. Lymphatic vessels are dilated. The glands are typical, their epithelium is in a state of hypersecretion, swollen.

Histological examination of the mucous membrane of the maxillary sinus shows the unevenness of its width, the presence of mucus on its surface, poor lymphoid infiltration of tissues, secretion of goblet cells, edema of the epithelium and its own plate, focal lympho-leukocytic infiltration. The glands of the mucous layer are of different sizes, secrete unevenly. Vascular plethora was noted. After 30 days of exposure to dust on the mucous membrane of the nose and maxillary sinus of the rabbit, the macroscopic changes are the same: uneven hyperemia of the mucous membrane, its dryness, the presence of a certain amount of crusts.

Histologically, the nasal mucosa is covered with an epithelium of uneven width, signs of its damage, desquamation, scant lymphoid infiltration are visible. The underlying tissues are moderately edematous with lymphohistocytic infiltration of the stroma and signs of subepithelial sclerosis of the terminal sections of the glands with signs of moderate secretion, some of them with signs of epithelial atrophy.

The vessels are unevenly plethoric, the lymphatic vessels are unevenly dilated. Histological examination of the mucous membrane of the maxillary sinus after 30 days of the experiment revealed

It seemed that the epithelium secretes it almost throughout its entire length, in some places it is scaly, only basal cells are preserved. The swelling of the underlying layers is uneven. Histiocytic infiltration joins the lymphoid infiltration of the stroma, foci of sclerosis, glands with signs of atrophy are noted. After 45 days of the experiment, macroscopically, the mucous membrane of the nasal cavity and maxillary sinus of the rabbit is dry, unevenly hyperemic, with single dry crusts.

Histologically, the nasal mucosa of a rabbit after 45 days of exposure to dust is an integumentary epithelium with signs of dystrophy and desquamation, in some places metaplasia into a multilayer flat epithelium. In its own plate, the presence of focal sclerosis and lymphocyto-leukocyte infiltration. The epithelium of the glands secretes unevenly, part of the glands is in a state of atrophy, the lumens of the blood and lymphatic vessels are dilated, the capillaries are plethoric.

Histological changes in the mucous membrane of the maxillary sinus

chi of the rabbit consisted in its atrophy. This was manifested by the replacement of a significant part of the ciliated epithelium by stratified squamous, i.e. epithelial metaplasia. The mucous membrane was deformed by areas of sclerosis. In the stroma focal lymphocyto-histiocytic infiltration. Vessel walls are moderately sclerotic.

Thus, in the second series of experiments, the first signs of atrophy are on the 20th day, although clear signs of atrophy are observed by

30 days of dust exposure of rabbits and they are especially pronounced by the 45th day of the experiment. The phenomena of atrophy in similar periods of exposure to high temperature are less pronounced, although a trend towards the development of atrophic processes in the mucous membrane is also outlined during these periods of the experiment.

The third series of experiments was carried out with simultaneous exposure to high temperature and dust on the mucous membrane of the nose and sinuses. Macroscopically, on the seventh day of the experiment, the mucous membrane of the nasal cavity and maxillary sinus was somewhat hyperemic, covered with a small amount of mucus. Morphologically, the nasal mucosa is covered with multi-row ciliated secreting epithelium, on the surface of its mucus, the subepithelial layer is edematous. Scanty infiltration of leukocytes around the vessels. In the thickness of the underlying tissue expressed plethora, swelling around the glands. Glands of a typical structure in the stage of active secretion. The mucous membrane of the maxillary sinus with symptoms of edema and a sharp plethora of blood vessels, covered with multi-row ciliated epithelium, on the surface of its mucus. The glands are typical, they secrete.

Analyzing the results of histological studies, we

In the mucosa of the nasal cavity and maxillary sinus, it can be concluded that already on the 7th day of the experiment, catarrhal inflammation is observed in the mucous membrane. This is evidenced by pronounced plethora and edema of the underlying tissue, infiltration by a small number of leukocytes around the vessels,

active secretion of the glands, and an increase in the amount of mucus on the surface of the epithelium.

On the 20th day of the experiment, macroscopically, the mucous membrane of the nose and maxillary sinus is hyperemic, sometimes dry, in 2

rabbits in the nasal cavity and maxillary sinus, a small amount of thick, odorless discharge was found. Microscopically, the mucous membrane of the nasal cavity is partially covered with a multi-row epithelium, in some places the epithelium is scaly. There is a thick exudate on the surface of the epithelium. The cytoplasm of cells of the integumentary epithelium of various density, goblet cells of the ciliated multi-row epithelium in the stage of active secretion. In some places, the accumulation of lymphoid plasma cells and eosinophils. Stroma with edema and vascular plethora, fibroblast reaction, with an increase in the number of collagen fibers. Part of the glands with dilated lumens. Lymphatic vessels are dilated.

The mucous membrane of the maxillary sinus is covered with high prismatic epithelium of uniform width with signs of hyperplasia and pronounced secretion of goblet cells. Under the epithelial layer, edematous connective tissue with full-blooded vessels of various sizes, typical glands, secretes. Scanty lymphoid infiltration of the stroma. The lumens of the lymphatic vessels gape.

Thus, by the 20th day of the experiment in the mucous membrane of the

In the nasal cavity and maxillary sinus, deep morphological changes of a catarrhal-productive nature are observed. By the 30th day of the experiment, the following changes occur in the nasal mucosa and maxillary sinus. Macroscopically, the mucous membrane of the nasal cavity is dry, hyperemic, with isolated dry crusts on the surface.

The mucous membrane of the maxillary sinus is dry, contains a small amount of odorless secretion. Microscopically, the mucous membrane of the nasal cavity is covered for some extent by a multi-row ciliated epithelium, heterogeneous in structure: there are areas of a typical structure with signs of secretion, as well as areas with signs of hypoplasia and atrophy. Glands of various sizes, typical structure, partially atrophied. The presence of swelling around the glands. Marked areas with accumulations of glands surrounded by connective tissue with scant lymphoid infiltration.

Severe infiltration of the own layer of the mucous membrane with lymphocytes and leukocytes, its sclerosis. Vascular plethora: sclerosed vessels. The mucous membrane of the maxillary sinus is covered with multi-row ciliated epithelium of uneven width with metaplasia, the presence of transitional epithelium is noted. In the underlying tissue round cell infiltration, swelling around the glands, in some of them the epithelium is hyperplastic. The walls of the vessels are sclerotic, the capillaries are full-blooded. Directly under the epithelium there is an overgrowth of connective tissue of various density, a clear lymphoid infiltration, full-blooded vessels with sclerotic walls.

Thus, by the 30th day of the experiment in the mucous membrane of the lobule of both the nasal cavity and the maxillary sinus morphologically a chronic inflammatory process with signs of atrophy, as evidenced by the uneven structure of the epithelium: in some places

its metaplasia towards the transitional epithelium, there are areas where the process of proliferation of connective tissue elements is enhanced, often replaced by areas of sclerosis. On the 45th day from the beginning of the experiment, hyperemia of the mucous membrane of the nasal cavity is macroscopically determined, its surface is dry, atrophic. Single dry crusts on the surface. The mucous membrane of the maxillary sinus is also dry, in three rabbits there is a small amount of thick and viscous discharge in the sinuses.

The histological picture of the mucous membrane of the nasal cavity and maxillary sinus by the 45th day of the experiment was similar in all (4) rabbits. A pronounced change in its proliferation was found with the formation of papillary outgrowths, desquamation of the integumentary epithelium. The underlying connective tissue is sclerotic with focal chronic inflammatory infiltration.

The glands are solitary, with hyperplastic epithelium, capillaries

bloodline. The mucous membrane of the maxillary sinus is covered with stratified squamous epithelium in the form of islets, alternating with stratified prismatic epithelium. The integumentary epithelium is thinned in places, the subepithelial zone is significantly sclerotic, in places with hyalinosis. The vessels of the mucous membrane are thickened due to sclerosis, the presence of perivascular round cell infiltration is noted. Poor lymphoid infiltration of the stroma, there are single glands with hyperplastic epithelium, the terminal sections of the glands are reduced in size.

Thus, by the 45th day of the experiment, the mucous membrane of the nasal cavity and maxillary sinus is in a state of chronic inflammation with epithelial atrophy, metaplasia and replacement with transitional epithelium. Under the epithelium there is an overgrowth of connective tissue of varying density with scanty lymphoid infiltration.

Single glands in the field of view. Already on the 7th day, the first signs of catarrhal inflammation are observed on the mucous membrane of the nasal cavity and the maxillary sinus. Both under the influence of individual factors, and with a combination of them. Hot air, causing catarrh, and then dystrophic changes in the mucous membrane of the nose and paranasal sinuses, is somewhat less of an irritant than dust. The most pronounced changes in the mucous membrane are observed under the simultaneous influence of both temperature and dust factors, when by the 20th day atrophic changes in the epithelium appear in certain parts of the nasal cavity and maxillary sinus. As the exposure time increases, metaplasia of the epithelium appears, that is, a new qualitative state arises, while the prismatic epithelium first turns into a transitional, and then into a multilayer flat, atrophic process captures the deeper layers of the mucous membrane. The amount of fibrous tissue increases. The terminal sections of the glands decrease in size due to compression by the sclerotic stroma. The secretory function of the glands decreases, their epithelium flattens, sometimes their cystic expansion is observed.

Thus, we experimentally proved the detrimental effect climatic factors of the arid zone of Central Asia on the mucous membrane part of the nasal cavity.

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