hypercholesterolemia.

Conclusion. Thus, at chronic alcoholic hepatitis, the presence of extrahepatic systemic lesions is due to the toxic effect of alcohol on the endocrine glands, vessels, nervous system, and organs of the gastrointestinal tract, which was observed by other researchers. However, in indigenous patients they developed early and their number and severity were significantly higher [1, 5, 7].

Pain syndrome in patients with chronic alcoholic hepatitis in most cases is associated with the development of concomitant secondary chronic pancreatitis, gastritis and duodenitis. A number of authors have noted the presence of these diseases as the cause of the onset of pain. Chronic hepatitis combined with clinical symptoms is closer to alcoholic than to viral hepatitis. Very important was the fact that CVH replication markers were absent in all patients [2, 3, 6].

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D.K. Garmaeva, M.T. Buzinaeva, A.I. Pavlova

MORPHOLOGY OF MUCOSA-ASSOCIATED LYMPHOID TISSUE (MALT) OF LARYNX IN GENERAL HYPOTHERMIA

DOI 10.25789/YMJ.2018.64.11

ABSTRACT

We have studied the cytoarchitectonics of mucous-associated diffuse lymphoid tissue (MALT - mucosa-associated lymphoid tissue) of the larynx in persons who died from hypothermia. The material was collected in the summer (June, July, and August) and winter (December, January, and February) seasons of the year with the support from the State Budget Institution of the Bureau of Forensic Medical Examination of the Sakha (Yakutia) Republic. Death caused by low natural temperature occurred most often at ambient air temperatures ranging from -34°C to -40°C, less often at -31°C to -33°C. As one of the most frequent factors contributing to the onset of death from hypothermia is alcohol intoxication, for comparative characteristics of the morphology of lymphoid tissue, we also investigated the group of persons who died from general hypothermia with underlying alcohol intoxication.

Significant changes in the cellular composition of the mucous-associated diffuse lymphoid tissue of the larynx were revealed: a decrease in T- and B- lymphocytes and plasma cells and an increase in the number of destructively altered cells and macrophages.

Keywords: mucosa-associated diffuse lymphoid tissue (MALT), larynx, cytoarchitecture, hypothermia.

The study of the effects of low temperatures on the human body is one of the topical areas of basic and clinical medical sciences. The Sakha (Yakutia) Republic is a region with extreme climatic and geographical conditions, where the cold is one of the main environmental factors of adverse effects on the human body [1, 2, 5]. When activating protective reactions of the organism, an important role belongs not only to the central organs of the immune system, but also to its peripheral structures, in particular the immune (lymphoid) tissue of the walls of hollow organs. Located on the border between the external internal bodily environments, the peripheral parts of the immune system provide sanitation to the tissue complex. Destroying foreign substances and detoxification of the body [6, 13] depends on the functional activity of these structures.

When a person adapts to the conditions of the North, the mucosa-associated lymphoid structures of the respiratory organs are primarily affected by low temperatures, as they are the first "target" in the path of cold air penetration. In this regard, one of the promising areas of research on the pathological influence of the cold factor on the human body is the study of the immune structures of the larynx, which are located at the surface of the organ and are the first specific barrier to the penetration of antigens, in particular cold air.

In both domestic and foreign scientific literature, there is zero data on the morphology of the mucosa-associated lymphoid tissue of the laryngeal walls related to death from general hypothermia, as well as when this type of death is combined with alcohol intoxication under conditions of low air temperatures in the Sakha (Yakutia) Republic. The purpose of our study is to optimize the postmortem diagnosis of death from general hypothermia by examining the cellular com-

position of the mucosa-associated diffuse lymphoid tissue of the laryngeal mucosa in the climatic conditions of the Sakha (Yakutia) Republic.

Materials & Research Methods. The material for the study was samples of the mucous membrane of the larynx from the region of the vestibule, the left and right ventricles and the sub-vocal region. The object of the study was diffuse lymphoid tissue of the mucous membrane of the larynx, recovered from bodies of deceased men in the territory of the Sakha (Yakutia) Republic. The material was collected in the summer (June, July, and August) and winter (December, January, and February) seasons of the year with the support from the State Budget Institution of the Bureau of Forensic Medical Examination of the Sakha (Yakutia) Republic. Death caused by low natural temperature occurred most often at ambient air temperatures ranging from -34°C to -40°C, less often at -31°C to -33°C. As one of the most frequent factors contributing to the onset of death from hypothermia is alcohol intoxication, for comparative characteristics of the morphology of lymphoid tissue, we also investigated the group of persons who died from general hypothermia with underlying alcohol intoxication.

Thus, all studied deceased bodies were divided into 3 groups: the first – persons who died in the summer from fatal mechanical injury, had no respiratory system pathology (control group); the second – persons who died from general bodily hypothermia (GBH) in the winter season; the third – persons who died in the winter season from alcohol intoxication (AI), who had no respiratory system pathology during their lifetime.

The material was fixed in a 10% neutral formalin solution, embedded in "Histomix" paraffin. Paraffin blocks were cut on a Leica HL 1210 microtome at slice thickness of 0.3-0.5 μm. Sections for histological review were stained with hematoxylin and eosin. Cytoarchitectonics of lymphoid structures were studied using a Leica DMD light microscope under oil immersion at 90x magnification, using a 25-node ocular morphometric grid of Stefanov S.B. [14]. Counting of cells (per unit area S = 0.016 mm^2) was performed in surface epithelium, in laryngeal mucous coat and in the submucosal layer. During the analysis and histological preparations we accounted for small, medium, large lymphocytes, immature and mature plasma cells, macrophages, mast cells, eosinophils, neutrophils, fibroblasts, cells in a state of mitosis, and destructively altered cells. The data obtained were recorded as tables. Statistical processing of the obtained data was carried out according to the method of variation statistics with the definition of arithmetic mean (X) and its margin of error (Sx). The significance of differences with the p-95% reliability ($p < 0.05$) was estimated by method of confidence intervals between Student's t-distribution indicators [2, 8]. All mathematical calculations were carried using Microsoft Office Excel 2007 table editor.

Immunophenotyping of T- and B-lymphocytes and macrophages (CD3 +, CD20 +, CD68 +) was performed using the PolyVue Mous/Rabbit HRP Kit (manufacturer Diagnostic BioSystems, USA) imaging system according to the instructions of the manufacturer. Antigen unmasking was performed for 2 minutes in citrate buffer (pH 6.0). Primary antibodies (CD20 +, CD3 +, CD68 +) were incubated at 37°C for one hour. The result of the reaction was visualized with diaminobenzidine [4, 9, 10]. Microscopy of immunohistochemical preparations was carried out in transmitted light using a Leica DMD microscope under oil immersion with 90x microscope magnification. Photographing of microsections was carried out using a Leica digital microscope.

Research Results & Discussion. The mucosa-associated lymphoid structures of the larynx are represented by both diffuse lymphoid tissue and an accumulation of lymphoid cells. Diffuse lymphoid tissue is found in the epithelium, in the lamina propria of the mucous membrane and in the submucosal layer of all parts of the organ, and lymphoid accumulations are located in the region of the vestibule, the ventricles and the anterior wall of the subglot region. This article presents the results of a morphological study of cells of the diffuse lymphoid tissue of the mucous membrane of the ventricles of the larynx.

Our research has shown that the effect of low natural temperature on the human body leads to significant morphofunctional changes in the mucous membrane of the larynx, both in persons who have died from a general hypothermia of the organism, and in persons who have died from general hypothermia of the organism against the background of alcohol intoxication. Thus, a stratified squamous epithelium swells, a large amount of mucus is deposited in the epithelial cells, edema is observed in the mucosa itself, the glands and excretory ducts dilate, and the accumulation of mucus in the lumens (Fig. 1).

In the epithelium of the ventricles of the larynx with general hypothermia, the number of reticular cells decreases by 1.2% compared to the control group, the number of large lymphocytes decreases by 36.6% compared to the control group and by 13.1% compared with the group who died from alcohol intoxication. The number of medium lymphocytes decreases by 0.3%, small lymphocytes – 1.6% less compared with the control group and 4.5% less compared with alcohol intoxication, plasma cells – 1.2% more. Significantly increase in the number of cells in a state of destruction – 22.2% more compared with the control group and 20.3% more compared with alcohol intoxication, macrophages – 14.3% more compared with the control group and 1.7% more compared to with alcohol intoxication.

In the lamina propria of the laryngeal mucosa, the number of reticular cells decreases by 2.1% compared with the control and 2% compared with alcohol intoxication; the number of large lymphocytes decreases by 13.7% compared to the

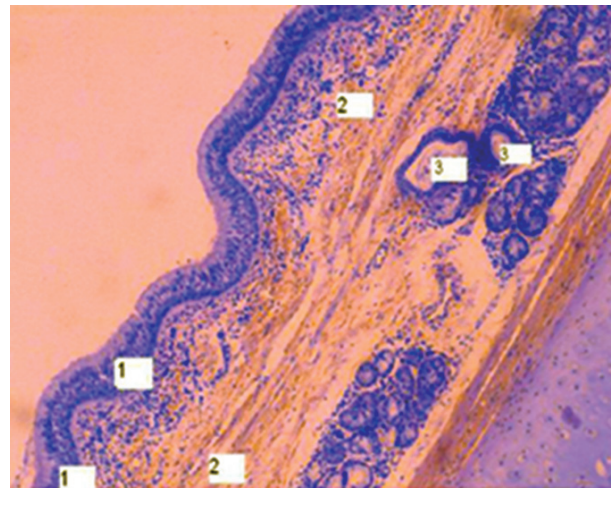

Fig.1. The mucous membrane of the vestibule of the larynx in conditions of exposure to low natural temperatures in the winter season. The epithelial layer is swollen, thickened, in the goblet cells the deposit of mucoid secretion (1), in the lamina propria of the mucous membrane edema (2), the excretory ducts of the glands are enlarged, and in the lumens there is an accumulation of mucoid secretion (3). Stained with hematoxylin and eosin. Zoom of approximately 7 by 25

control and 10.1% by compared with alcohol intoxication, medium lymphocytes – by 5.3% compared with the control and 3.2% compared with alcohol intoxication, small lymphocytes – by 1.5% compared with the control. In the group of persons who died from general hypothermia of the organism, the number of plasma cells in the mucosa itself was reduced by 3.2% compared with the control group and 2.4% compared with alcohol intoxication. The number of destructively altered cells due to general hypothermia increased by 11.1%, macrophages by 5.4% compared with the control group, and compared with alcohol intoxication of cells in a state of destruction increased by 14.4%.

In the submucosal layer of the ventricles of the larynx, the number of large lymphocytes decreases by 4.9% compared with control and by 11.2% compared with alcohol intoxication. Medium, small lymphocytes and plasma cells in the submucosal layer of the larynx did not occur in general hypothermia of the organism, at the same time we found the presence of single eosinophils not found in the control group and the group of alcohol intoxication. The number of macrophages compared with the control and alcohol intoxication increases – by 6.2% and 3.5%, respectively.

The results of the immunohistochemistry study of the local immune system of the mucous membrane of the laryngeal ventricles in individuals who died from hypothermia compared with those who died in the summer period showed a decrease in T-cell (CD3 +) by 24%, B-cell link (CD20 +) – by 17% and activation macrophageal histiocytic cell population (CD68 +) - by 11% (Fig. 2). Our research allows us to confirm the data of many authors [1, 7, 11, 12], who claim that when the body is exposed to low natural temperatures, cellular and humoral immunity is suppressed.

Conclusions

1. Peripheral immune structures (MALT - mucosa-associated lymphoid tissue) are highly sensitive to the effects of low natural temperatures, which manifest itself in the form of pathological changes of diffuse lymphoid tissue in the mucous membrane of the larynx.

2. Changes in the mucosa-associated diffuse lymphoid tissue in the mucous membrane of the larynx when exposed to low natural temperatures are characterized by a significant decrease in lymphocytopoietic processes, which results in a decrease in the percentage of lymphoblastic cells and cells in a state of mitosis.

3. Exposure to low natural temperatures in the Sakha (Yakutia) Republic causes depletion of mucous-associated diffuse lymphoid tissue of the laryngeal mucosa, which is expressed by a decrease in the number of lymphoid cells, in particular T-lymphocytes, B-lymphocytes, plasma cells, and also a significant increase in the number of destructive altered cells, and as a result, macrophages.

4. To improve the quality of pathological diagnosis of death from general hypothermia when exposed to low natural temperatures, it is recommended to use the study of the cellular composition of diffuse lymphoid tissue of the mucous membrane of the larynx.

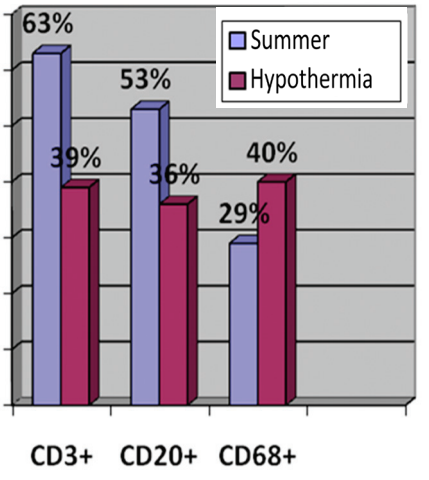

Fig.2. The immune status of diffuse lymphoid tissue of the ventricles of the larynx in individuals who died from general hypothermia compared with the control group (CD3 + – T-cell antigen; CD20 + – B-cell antigen; CD68 + is a macrophage marker (monocytes and histiocytes)

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METHODS OF DIAGNOSIS AND TREATMENT

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THE ROLE AND THE PLACE OF ARTHROSCOPY OF THE HIP JOINT IN TREATMENT OF ASEPTIC NECROSIS OF THE FEMORAL HEAD

DOI 10.25789/YMJ.2018.64.12

ABSTRACT

Aseptic necrosis of the femoral head (ANFH) is one of current problems in orthopedics today. The arthroscopy of a hip joint in ANFH is a modern way of minimal-invasive surgery. We use the following staged means of arthroscopy: capsulotomy and synovectomy, debridement and sanation of a joint, revision of degenerative and dystrophic changes, resection of the affected cartilage, microfracturing, removal of free microscopic and macroscopic fragments of cartilage. The quality of life in operated patients before and after was estimated on Harris Hip Score (HHS). Arthroscopy of the hip joint has shown the positive clinical results and indeed improves quality of life in patients. It is necessary to revise more deeply all possibilities of arthroscopic surgery of the hip joint, to estimate all results, to improve treatment methods and to achieve long remission of a disease.

On the basis of the orthopedic department of the KGBUZ Regional Clinical Hospital No. 2 in Khabarovsk, an analysis of the frequency of occurrence of aseptic necrosis of the femoral head, its various diagnostic methods, conservative and operative treatment, and the pathological picture of the disease among the adult population in various age categories was made. The obtained positive results of treatment indicate the need for further study of the problem in order to achieve a long lasting remission, and possibly a complete recovery of the patient.

Keywords: arthroscopy, aseptic necrosis of the femoral head.

Introduction. Aseptic necrosis of the femoral head (ANFH) is wide spread multifactorial poliethiologic disease affecting primarily men of working age, the initial link in the pathogenesis of which is not exactly understood. ANFH diagnosis presents considerable difficulties, due to the late-stage patients, late medical care, and the absence of clear diagnostic symptoms. Edema of the bone marrow in the initial stage of the pathological process can be detected only on MRI investigation. Traditional conservative treatment has not enough effectiveness and provides short-term improvement only in the early stages of the process due to the use of drugs with low or unproven effectiveness, and anyhow results the complete replacement of the joint only for a short period of time. Surgical methods mostly are traumatic and require long-term rehabilitation, while not providing for long-term remission, and hip replacement is associated with high risks of components' instability.

Nowadays, one of the little-known methods of surgical treatment in ANFH patients is arthroscopy of the hip joint [8, 9].

Materials and methods of research. On the basis of Territorial state educational Health facility "Regional clinical hospital №2" in Khabarovsk we've analyzed the frequency of aseptic necrosis of the femoral head, different methods of its diagnostics, conservative and surgical treatment, as well as the pathological picture of the disease among the adult population of different age. From 2015 to 2017, 97 patients diagnosed with aseptic necrosis of the femoral head of the 2nd-4th degree (according to ARCO) were treated in the hospital, which is 25% of all degenerative diseases of the hip joint. 53% of the cases were middle-aged women (45-59 years).

The **purpose** of the study is to analyze the frequency of ANFH occurrence.

Results and discussion. Detection of the disease ANFH at an early stage in most cases is extremely difficult and formed 9 percent of cases, post-traumatic ANFH - 13% of patients and 4% had congenital abnormalities of the hip joint [3].

Complaints of patients after hospitalization are usually non-specific, which is probably is one of the reason for incorrect interpretation at the ambulant stage of examination: permanent pain syndrome (93%), increasing under weight load (92), accompanied by a violation of limb function (98) and requiring the use of additional means of support in movement (64%).

Despite the development of modern highly informative radiographic methods of diagnosis, the main standard of examination is radiography of the affected joint, and an additional method of investigation only in 4% of cases is magnetic resonance imaging.

Late-stage pathological process, the severity of clinical symptoms lead to the surgical treatment, which was performed in 65% patients. Mostly total cementless hip replacement (Zimmer, DePuy). In 1% of cases, due to instability of the acetabular component, augments were used during the press-fit. Instability of the endoprosthesis components in late follow-up occurred in 3% of cases, all around implants with a cement type of fixation.

Intraoperational autopsy material was taken for histological examination in 50 patients, both who undergone total hip replacement and core decompression. In