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RESULTS OF CYTOLOGICAL EXAMINATION OF PATIENTS WITH CHRONIC INFLAMMATORY DISEASES OF THE LARYNX

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ABOUT ARTICLE

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Abstract: Chronic inflammatory diseases of the larynx (CIAG) are a collective concept of a fairly large number of diseases with different etiologies. Nosological forms of diseases of the larynx in this case are presented in a wide range - from functional disorders leading to respiratory failure, benign formations of the larynx to gross, long-term cicatricial stenoses that require complex reconstructive operations. The pathomorphological assessment of such a condition of the larynx is primarily associated with the presence of chronic inflammation of the mucous membrane and elements of the larynx, including the submucosal layer, as well as the muscles and cartilages of the larynx. Most often, chronic inflammation of the larynx is localized in the region of the vocal cords, the subvocal region of the larynx with the transition to the cervical trachea and is a secondary manifestation of the damaging factor.

INTRODUCTION

To date, there are two different types of cell death - apoptosis and necrosis. Most of the factors that cause cell necrosis are able to initiate apoptosis if they act in small doses. These include physical (radiation, ultraviolet exposure, hyperthermia) and chemical (oxidants , toxins, antitumor drugs) stimuli known as cytotoxic agents [6].

Unlike necrosis, apoptosis is observed not only with external damage. It also occurs as a reaction to endogenous factors - hormones, cytokines, derivatives of arachidonic acid, direct intercellular contacts

[13]. Obviously, necrosis and apoptosis differ in morphological and biochemical manifestations. Comparison of these two types of cell death is possible with the help of biochemical and electron microscopic studies [18].

The morphological sign of apoptosis is a decrease in size, shrinkage of the cell, thickening, fragmentation of chromatin and pressing against the inner surface of the nuclear membrane. One of the main biochemical manifestations of apoptosis is DNA fragmentation [19]. These changes serve as the earliest manifestation of apoptosis, preceding degradation processes. At this moment, the progression of apoptosis can be stopped by the action of inhibitors [1]. Subsequently, due to the condensation of the cytoplasm, the nucleus is split into small fragments. In the cytoplasmic membrane, protrusions are formed, which are separated from the cell in the form of apoptotic bodies. Apoptotic bodies are taken up by macrophages or neighboring cells and thus removed from the tissue. The absorbed material is destroyed by the action of lysosomal enzymes, and phagocytes are not activated. In this case, no inflammatory reaction is observed, which excludes damage to neighboring cells [10-14].

Thus, all changes occurring in a cell during its physiological death can be divided into two phases [4–9].

- phase of reversible changes [1];

- irreversible phase [10,11].

The processes occurring during the 1st phase determine the type of cell death (apoptosis or necrosis) and depend on the type of apoptosis induction. The processes occurring during the 2nd phase do not depend on the type of apoptosis induction [3].

channels primarily occurs , which leads to damage to cell membranes and a decrease in ATP synthesis. Necrosis is usually accompanied by an inflammatory reaction with scar formation [12-17].

Therefore, from the point of view of morphological and biochemical processes, apoptosis can be defined as a form of cell death, which manifests itself in a decrease in its size, condensation and fragmentation of chromatin, thickening of the outer and cytoplasmic membranes without the release of cell contents into the environment [23-29].

Results and discussions. For an objective assessment of reparative processes in the larynx and trachea, cytological studies of imprint smears were performed. The availability and speed of preparation of cytological preparations allows you to use this method to determine the cellular composition, the effectiveness of the therapy and monitor the patient's condition (Table 1) .

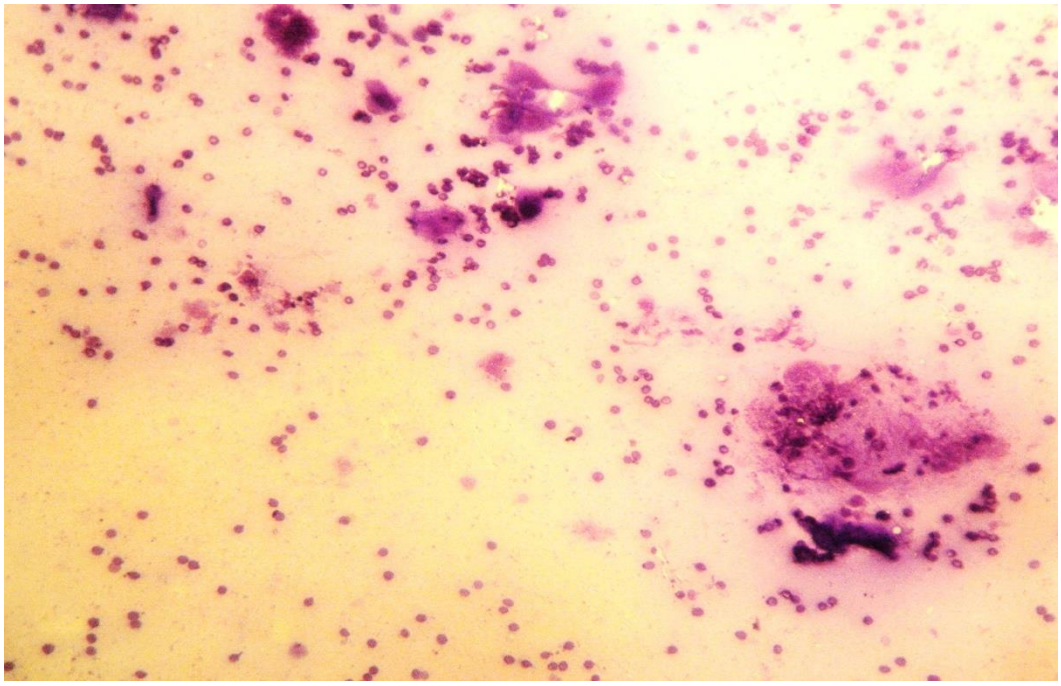
Table 1

Characteristics of the cytogram of wound prints in patients with a purulent form of chronic stenosis of the larynx and trachea.

Index		Purulent form
Leukocytes, abs .		51.3±6.50
Destruction of leukocytes, %		100
Cellular composition, %	Neutrophils	89.1±6.1
	Eosinophils	0.8±0.05
	Lymphocytes	1.7±0.40
	Monocytes	—
	Polyblasts	1.3±0.30
	Macrophages	0.16±0.01
	fibroblasts	—
	Multinucleated cells	—
	Plasma cells	—
	Endotheliocytes	—
	epitheliocytes	—
The number of absorbed microbial bodies per 1000 leukocytes		$2.5\ 10^{8}$ ±0.7

Cytological diagnostics involves the study of morphological features of individual cells and their relative positions in tissue complexes. In a cytological study, the complex composition of indicators is of great importance for identifying effective changes associated with therapeutic pathomorphosis.

Cytological examination of smears-prints in patients with CVD revealed typical signs of alteration of cell proliferation with the formation of polymorphonuclear cell infiltrates. The basis of the inflammatory infiltrate was polymorphonuclear neutrophilic leukocytes. Prior to the treatment, the cytogram was characterized by the presence of a large number of leukocytes in the field of view, detritus, and destruction of leukocytes.



Rice. 1 . Detachable from the tracheostomy of the patient M-nov, 54 years old before treatment. The predominance of polymorphonuclear neutrophils. Coloring according to Romanovsky-Giemsa. SW. x200.

The cellular composition of smears-imprints was characterized by the presence of a large number of neutrophils (89.1±6.1). The content of eosinophils was 1.7 ± 0.4, monocytes - 0, polyblasts - 1.3 ± 0.3, macrophages - 1.6 ± 0.01, while fibroblasts and epithelium were completely absent. The number of absorbed microbial cells per 1000 leukocytes was 2.5x10 8 ±0.7. Phagocytic activity was mainly characterized by the extracellular arrangement of microbial cells (Table 1).

Macrophages, mast cells, and cells of the lymphoid series were found in small quantities (Fig. 1). Cytological examination of the exudate revealed mixed (completed and incomplete) phagocytosis.

Conclusions. There is a certain relationship between the morphological picture of both emerging and recurrent scar tissue and indicators of cell death (apoptosis and necrosis) and proliferation (mitosis), as well as the expression of genetic markers of cell renewal (p53 protein and PCNA) in the conditions of the studied pathology. The greater the volume of cicatricial regenerate and the degree of stenosis of the larynx, the higher the indicators of proliferation and expression of the PCNA protein and the lower the indicators of both apoptotic and necrotic death of fibroblasts, the expression of the p53 protein.

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