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MEMORIAL
Alexander Fleming

MODERN METHODS OF ENSURING HEALTH AND QUALITY OF HUMAN LIFE THROUGH THE PRISM OF DEVELOPMENT OF MEDICINE AND BIOLOGICAL SCIENCES

Peer-reviewed materials digest (collective monograph) published following the results of the CXXXIV International Research and Practice Conference and III stage of the Championship in Medicine and Pharmaceutics, Biology, Veterinary Medicine and Agricultural sciences.
(London, November 24 - November 30, 2016)

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FEATURES OF CYTOLOGICAL PICTURE AT MULTIFORME EXUDATIVE ERYTHEMA IN ORAL CAVITY

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Conference participants,
National championship in scientific analytics,
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It was studied the cytological picture of the erosions contents in patients with toxic-allergic form of multiforme exudative erythema in oral cavity. It was found that the composition of cellular elements is specific for the exudate of nonspecific inflammation. Hematogenous and histiogenous cells are mostly not destroyed. There is a large number of the cell of mononuclear type, polyblasts, eosinophils and epithelium frequent present in the state of hydropic degeneration.

Keywords: *multiforme exudative erythema, toxic-allergic reaction, cytology, eosinophils, polyblasts, mononuclear cells.*

Introduction. Multiforme exudative erythema (MEE) is an acute polymorphic dermatosis, which occurs in the form of a bluish-red color rash on the skin of the extremities, mucous membranes, sometimes in the genital area [1].

The etiology of MEE is not fully understood, so the causes of the disease are varied, but in patients with this disease there is some trigger factor which triggers the mechanism of the immune reaction of hypersensitivity. One of them is the infectious diseases caused by the herpes simplex virus [10], Chlamydia [8] and mycoplasma pneumonia [13]. Another factor is the allergens of medicated nature [2, 5-7].

In this regard, many local authors identify infectious-allergic (idiopathic) and toxic-allergic (symptomatic) forms of MEE. In the development of idiopathic form the main trigger factors are infections. In toxic-allergic form it is revealed the hypersensitivity to different medications [3]. Toxic-allergic form is characterized by vivid hyperemia, a tendency to lesions merge, frequent lesions of the mucous membranes, including genital, expressed epidermolytic component (vesicles), isomorphic reaction. Infectious-allergic form is often present in the form of small elements of the "stagnant" shade that do not have a tendency to merge, preferentially localized on the extremities and less frequently on the mucous membranes [2].

In the clinic, the foreign experts often distinguish two forms of MEE - big and small. Both are characterized by the same type of primary lesions, but differ in the presence or absence of mucosal lesions and general symptoms [14].

According to the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) -WHO Version for (2016) the following forms of MEEt (L51 Erythema multiforme) are distinguished: L51.0 Nonbullous erythema multiforme, L51.1 Bullous erythema multiforme, Stevens- Johnson syndrome, L51.2 Toxic epidermal necrolysis [Lyell], L51.8 Other erythema multiforme, L51.9 Erythema multiforme, unspecified [9].

As the disease develops acutely, it demands to start the treatment at an early stage. However, cystic syndrome in the oral cavity appears at a number of dermatoses (Lyell's syndrome, acantholytic and nonacantholytic pemphigus, bullous pemphigoid, Duhring's disease, bullous form of lichen ruber planus, vesico-vascular syndrome, acute herpetic stomatitis), which requires timely differential diagnosis of this condition. One of the methods of diagnosis of MEE is cytology. It is relatively informative, non-invasive, it takes little time and acceptable to patients.

The aim of the study was to investigate the features of the cytological picture under toxic-allergic form of multiforme exudative erythema in oral cavity.

Materials and methods. The study included 15 patients with MEE (6 men and 9 women), aged 26-57 years, directed to the department for consultation. We adhered to the domestic interpretation of the diagnosis formulation and considered the type of MEE in patients as a toxic-allergic, which corresponds to the code L51.1 Bullous erythema multiforme, Stevens-Johnson syndrome ICD-10. All patients, after removing the pellicle, underwent the sampling of the contents of erosion by scraping. The material was fixed in a solution of methanol, stained by Romanovsky-Giemsa method. In cytological preparations it was studied the qualitative and quantitative composition of hematogenous and histiogenous cellular elements.

Results. All patients reported rapid development of the disease, usually within 1-2 days. There was a sharp pain in the oral cavity even at rest, worse when speaking, tongue movements, eating. From the medical history we found that before the development of stomatitis the patients were treated, for various reasons, with medications (antibiotics, sulfonamides, nonsteroidal anti-inflammatory drugs, tranquilizers). It should be noted that here we indicate only groups of drugs, which, according to the literature, most common cause the toxic and allergic reactions. However, patients took, on their own or prescribed by a doctor, not only these drugs, but others

(vitamins, desensitization, expectorants, antacid, etc.). Therefore, it is difficult to indicate the specific source of the drug allergic reactions.

On examination of the oral cavity there was observed diffuse or limited erythema and swelling of the mucous membranes of the lips, cheeks, floor of the mouth, tongue, soft palate. In some patients under this background, there were sharply painful large erosions, while others had multiple gray or white fibrinous pellicles, which were pulled off difficultly, at the same time exposing the bleeding erosion. Gingiva was intact. The patients had no skin lesions (Fig. 1).

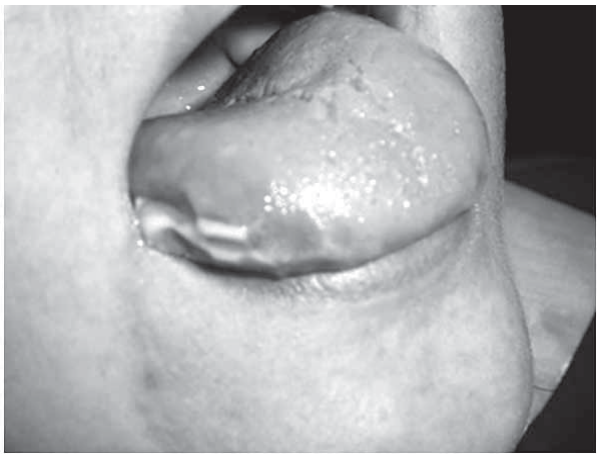

Fig. 1. Patient S., 53 years old. Multiforme exudative erythema of the oral cavity

In preparations the cytologic picture is consistent with acute nonspecific inflammatory process: the accumulation of white blood cells, red blood cells, epithelial cells, microflora. Noteworthy is the presence in cytological preparations of all patients the unbroken eosinophils nearly in every field of view. A large number of unaltered neutrophils and their clusters with vacuolated cytoplasm are found (Fig. 2).

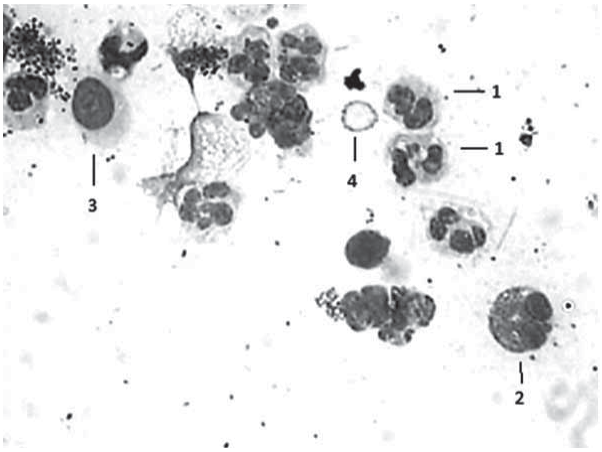

Fig. 2. The cellular structure of the contents of erosion at MEE. Staining by Romanovsky-Giemsa method. 700 × 1 - neutrophils, 2 - eosinophil, 3 - lymphocyte, 4 - erythrocyte

Almost in every field of view monocytes and lymphocytes are identified. Most often they also have vacuolated cytoplasm (Fig. 3).

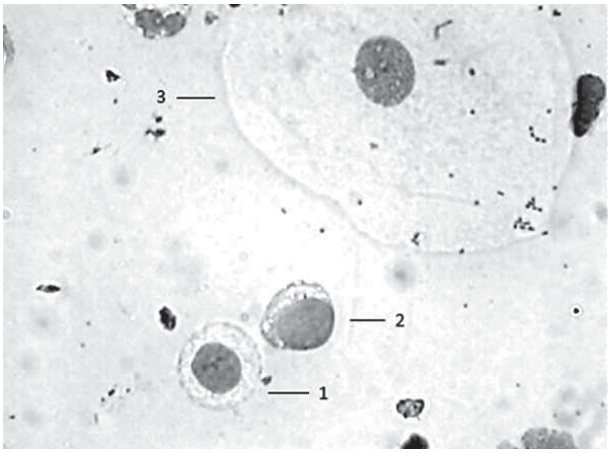

Fig. 3. The cellular structure of the contents of erosion at MEE. Staining by Romanovsky-Giemsa method. ×700: 1 – lymphocyte, 2 – monocyte, 3 - epithelium

In addition to monocytes of vasogenic origin, the tissular monocytes (histiocytes) are seen. They were found most often in the transformed form as polyblasts and macrophages, but the phagocytic reaction was weakly expressed. They had different sizes and shapes (Fig. 4).

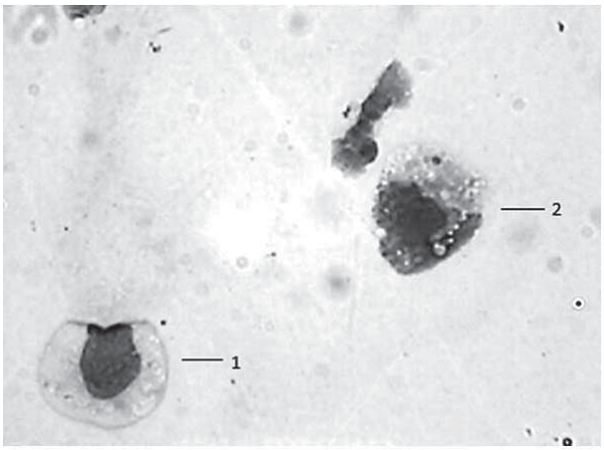

Fig. 4. The cellular structure of the contents of erosion at MEE. Staining by Romanovsky-Giemsa method. ×700: 1 – polyblasts, 2 - macrophage

It was observed the sporadic epithelial cells in the state of hydropic degeneration or their layers (Fig. 5). Microbial background was represented scantily, mainly with coccal flora.

The role of many cells in the wound fluid is studied well enough. The presence of eosinophils, in most cases, evidences of allergic reactions. Their detection in the content of erosions should set up a specialist on an appropriate genesis of a pathological condition. Lymphocytes and other mononuclear cells constitute the majority of wound exudate cells, they play a key role in the immune response, taking part in the processes aimed at maintaining homeostasis, the regulation of the inflammation intensity. Monocytes actively phage and digest microbes, erythrocytes and other cells. Circulating monocytes migrate into the inflammatory focus and differentiate into exudate macrophages. These cells, often with T-lymphocytes, constitute an inflammatory exudate. It is believed that polyblasts are formed partially from the lymphocytes by hypertrophy of the nucleus and protoplasm, partially from to tissue histiocytes. Polyblasts role in wound focus is enormous, they produce immune bodies, and in other words, they are involved in the development of tissue immunity, in cleaning wounds from bacteria and dead cells and in regenerative processes [4, 12].

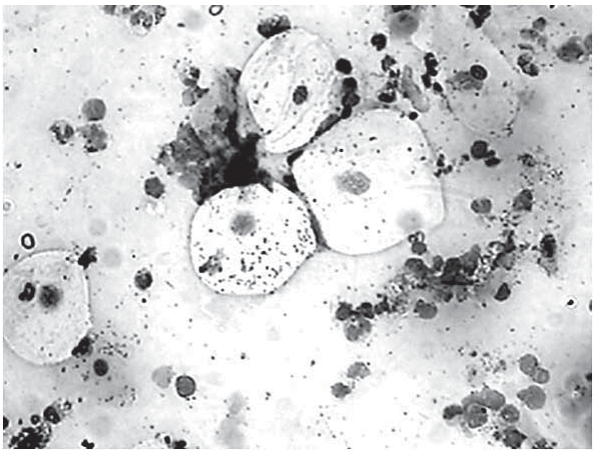

Fig. 5. The cellular structure of the contents of erosion at MEE. Staining by Romanovsky-Giemsa method. ×280: epithelial cells in the state of hydropic degeneration

Conclusions. Thus, in a material of erosion at multiforme exudative erythema the morphological structure is typical for nonspecific inflammation. Gistiogenous and hematogenous elements are preferentially undestroyed with vacuolated cytoplasm. Cells are represented by eosinophils, lymphocytes, monocytes with transformation into polyblasts and macrophages.

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CONTENT OF PROTEIN AND GLYCOPROTEINS, THEIR COMPONENTS IN THE ORAL FLUID AT THE CHILDREN WITH CHRONIC GASTRITIS, DUODENITIS

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In the oral fluid of children with chronic gastritis, duodenitis increased protein content (up to 7.33±0.43 g/l) on a background of decreasing level of glycoproteins (up to 0.03±0.01 mg/ml). Coefficient of ratio protein / glycoproteins in the oral fluid increased in 9510 times, which have been shown the intensive decay of protein-carbohydrate complexes and increasing content of the protein fragments. In the composition of glycoproteins reduced amount of hexosamines (up to 0.23±0.01 mmol/l), on a background of increasing sialic acids (up to 0.16±0.01 mmol/l) and fucose (up to 0.87±0.02 mmol/l). Coefficient of ratio terminal and corpus monosaccharides in the glycoproteins of oral fluid at the patients with chronic gastritis, duodenitis increased 2.41 and 3.34 times, compared with the same values in the control group of children, which significantly modifies functional properties of the protein-carbohydrate complexes.
***Keywords**: oral fluid, gastritis, duodenitis, glycoproteins, hexosamines, sialic acids, fucose.*

One of the most perspective approaches to non-invasive diagnostic, focused on the oral cavity and upper gastrointestinal tract diseases is consider researching of the oral fluid composition.

Oral fluid criteria should describe both the local and general reactions, i.e. covered mucous membranes of a digestive tract. Composition of the oral fluid should change in a case of the inflammatory and non-inflammatory lesions, carried out in oral cavity and an upper gastrointestinal tract.

Non-specific antimicrobial components of the oral fluid are protein-carbohydrate complexes (glycoproteins). Protein and glycoproteins create the oral fluid viscosity and a layer that protects mucous membranes of the oral cavity from influence factors of the physical and chemical nature, pathogenic microflora.

Purpose of research – to study content of the protein and glycoproteins, their components in the oral fluid at the children with chronic gastritis, duodenitis.

Materials and methods. There were examined 189 patients, among them 92 (48.7%) of boys and 97 (51.3%) of girls, aged from 12 till 17 years. First group included 107 patients with chronic gastritis, duodenitis. Second group (control) included 82 children with healthy oral cavity, without the somatic pathology.

Patients in the first group (56 girls and 51 boys) were treated in the gastroenterological department of the regional children's clinical hospital. Period of gastrointestinal disease at the examined patients, according to the anamnesis, was varied from 1 to 6 years. Diagnosis of gastroduodenal pathology was confirmed after clinical, endoscopic and ultrasonic examinations.

Determination contents of glycoproteins, hexosamines, fucose and sialic acids in the oral fluid were performed at the children with chronic gastritis, duodenitis, and among children of control group, according to our authors' methods. Research of the protein was carried out by biuret's method.

Results and discussion. Analysis of an oral fluid revealed increasing of protein content among children group with chronic gastritis, duodenitis (table 1). Chronic gastritis and duodenitis are acid-related diseases. Their basic pathogenic link should be increasing production of the hydrochloric acid by the stomach glands. Increasing of protein content in the oral fluid at the children is consider to be protective reaction of organism against rising of the gastric juice acidity and reflux of acid stomach contents into the esophagus with concomitant motor disorders in the gastrointestinal tract.

To our opinion, increasing of protein level in the oral fluid is compensatory reaction, which has been shown an intensive function of salivary glands at the inflammatory processes of gastroduodenal area. Investigation of a protein level with using biuret's method allows us to identify its fragments, firstly. Secondly, we could reveal a link between increasing of the total protein level and the fast disintegration in the structures of an upper digestive tract.

At the same time, content of glycoproteins was significantly decreased at the children with chronic gastritis, duodenitis, as the result of their rapid destruction in the oral cavity, and deterioration synthesis of the protein-carbohydrate complexes in the salivary glands.