4. Paramonov YuO. Rasprostranennost kariyesa v stadii belogo pyatna i drugiye osobennosti stomatologicheskogo statusa yunosheskikh sportivnykh komand professionalnykh sportivnykh klubov. Rossiyskiy stomatologicheskiy zhurnal. 2016; 20 (3): 137-141. DOI 10.18821/1728-2802 [in Russian]
5. Saburov SK, Turaev NG. Otsenka vzaimodeterminirovannosti stomatologicheskikh i sistemnykh zabolevaniy. Vestnik Avicenny. 2013; 4:124 –129. doi: 10.25005/2074–0581–2013–15–4–124–129 [in Russian]
6. Sojher MI. Klinicheskie aspekty ispolzovaniya gialuronovoy kisloty v kompleksnom lechenii vospalitelnykh zabolevaniy parodonta. Rossiyskiy stomatologicheskiy zhurnal. 2016: 20(3): 146 –150. DOI 10.18821/1728–2802 2016; 20 (3): 146–150. [in Russian]
7. Aimetti M, Perotto S, Castiglione A, Mariani GM, Ferrarotti F, Romano F. Prevalence of periodontitis in an adult population from an urban area in North Italy: findings from a cross sectional epidemiological survey. Journal of Clinical Periodontology. 2015; 42: 622–631. doi: 10.1111/jcpe.12420.
8. Bergstrom J. Smoking rate and periodontal disease prevalence: 40 year trends in Sweden, 1970 – 2010. J Clin Periodontol. 2014; 41: 952–7. doi: 10.1111/jcpe.12293.
9. Drachev S N, Tormod B, Trovik TA. Oral health related quality of life in young adults: a survey of russian undergraduate students. Int J Environ Res Public Health. 2018 Apr; 15(4): 719. doi: 10.3390/ijerph15040719.
10. Holde GE, Oscarson N, Trovik TA, Tillberg A, Jönsson B. Periodontitis prevalence and severity in adults: a cross sectional study in Norwegian circumpolar communities. Journal of Periodontology. 2017; 88(10): 1012–1022. doi: 10.1902/jop.2017.170164.
11. Karacabey K, Saygin O, Ozmerdiventi R. The effects of exercise on the immune system and stress hormones in sportswomen. Neuro Endocrinol. Lett. 2005; 26 (4): 361–366. PMID: 16136008
12. Marin DP, Bolin AP, Campoio TR, Guerra BA, Otton R. Oxidative stress and antioxidant status response of handball athletes: implications for sport training monitoring . Int. Immunopharmacol. 2013; 17 (2): 462 –470 doi: 10.1016/j.intimp
13. Naveen KR, Vijaya KS, Saketh R R. Jamini K. Sports dentistry: A review. J Int Soc Prev Community Dent. 2014; 4(3): 139–146. DOI: 10.4103/2231–0762.149019
14. Pradhan A. Factors influencing the oral health of adults with physical and intellectual disabilities. Adelaide: The University of Adelaide, 2008. PhD thesis. DOI: 10.1111/j.1600–0528.2008.00455.x
15. Turner S, Sweeney M, Kennedy C, Macpherson L. The Oral Health of People with Intellectual Disability Participating in the UK Special Olympics. J Intellect Dis Res 2008; 52(1): 29–36. doi: 10.1111/j.1365–2788.2007.00971.x.

Стаття надійшла 15.12.2019 р.

DOI 10.26724/2079-8334-2020-4-74-28-31
UDC 616.314.2 – 002.2

N.V. Hasiuk, G.A. Yeroshenko[1], I.O. Mochalov[2], O.V. Klitynska[2], Kh.V. Pogoretska
I.Ya. Gorbachevskiy Ternopil State Medical University, Ternopil
[1]Ukrainian Medical Stomatological Academy, Poltava, [2]Uzhhorod National University, Uzhhorod

MORPHOCLINICAL ASPECTS OF THE CLINICAL COURSE OF ATOPIC CHEILITIS

e-mail: gasyuk.natasha@gmail.com

The paper presents some clinical and morphological features and aspects of the clinical course of atopic cheilitis. The findings of comprehensive observations proved that clinical course of the disease have an impact on the nature of changes in the cellular composition of the vermilion border. The comprehensive analysis of the cytograms enables considering atopic cheilitis in the examined cohort, in the absence of adequate therapy, as a continuous self-destructive process. Its components (inflammatory-infiltrative and destructive) can regress under the influence of effective treatment and reactivate when the process is exacerbated under the influence of provoking factors, namely neurogenic and sensitizing. The findings of the study indicate the pathogenetic significance of destructive changes in epitheliocytes and violation of colonization resistance to the clinical course of atopic cheilitis.

Keywords: cheilitis, vermilion border, cells, nucleus, microflora.

Н.В. Гасюк, Г.А. Єрошенко, Ю.О. Мочалов, О.В. Клітинська, Х.В. Погорецька

МОРФОЛОГІЧНІ АСПЕКТИ КЛІНІЧНОГО ПЕРЕБІГУ АТОПІЧНОГО ХЕЙЛІТУ

В статті представлені результати комплексного клініко- морфологічного дослідження особливостей клінічного перебігу та змін клітинного складу червоної облямівки губ у хворих на атопічний хейліт. Характер змін клітинного складу червоної облямівки, обумовлений клінічним перебігом атопічного хейліту, що дає можливість розгляду даного захворювання у осіб обстеженого контингенту, за умов відсутності адекватної терапії, як безперервний саморушний процес. Отримані результати слугуватимуть теоретичним підгрунтям для динамічного спостереження за станом пацієнтів при призначенні комплексного етіотропного, патогенетичного, симптоматичного лікування.

Ключові слова: хейліт, червона облямівка, клітини, ядро, мікрофлора.

The work is a fragment of the research project "Development of new individualized approaches to the diagnosis, treatment and prevention of dental diseases in patients with primary and secondary lesions of oral tissues based on the study of their pathogenetic mechanisms", state registration No. 0117U003024.

Phylogenetic and anatomical integrity of skin and vermilion border, as well as environmental factors, have an impact on the pattern of the fine dermatoglyphic furrows of skin and vermilion border, which makes this area favorable for the influence of exogenous factors and the development of pathological processes. Atopic cheilitis takes a special place among the latter, which can be both an independent disease and a symptom of atopic dermatitis [1, 4, 8, 9].

Current views on the etiology and pathogenetic mechanisms of the development of atopic cheilitis are multifactorial, due to the burdened polygenic heredity to atopy. This nosology is a kind of local manifestation of atopic dermatitis or neurodermatitis [2, 7, 10].

Infectious agents, emotional stress, altered interaction between cholinergic and sympathoadrenal systems, stability of cytoplasmic membranes, caused by free radical oxidation of lipids, activation of arachidonic acid metabolism and increased synthesis, play a significant role in the development of atopic cheilitis. Moreover, polyvalent allergy, diseases of the nervous and endocrine systems associated with favorable heredity can be considered as the risk factors for the development of atopic cheilitis [3, 11].

Recent publications indicate the role of genetic factors in the development of primary and secondary dental pathology [4, 5].

Hypothetically, genes, encoding a predisposition to atopy, are localized in the segment q22of the chromosome 21 [12].

Genetic factors determine the initial violation of the barrier function of the epidermis, which causes its high permeability to irritants and atopenes [13, 14].

The purpose of the study was to determine features of the cellular composition of the vermilion border in patients with atopic cheilitis.

Materials and methods. The material for the study was the cell composition obtained by scraping and taken from the corners of the mouth, in 16 (aged 24-31 years) patients with atopic cheilitis in the acute (n=7) and chronic (n=9) stages. The material was removed with a spatula with subsequent placement onto a glass slide and drying in open air for 3-5 minutes. Staining of the material was performed according to Romanovsky-Gimze, followed by microscopic and morphological analysis taking into account the percentage of different forms of epitheliocytes in the norm.

Each anatomical area of the oral mucosa has its own zonal type of keratinization and on histological sections is characterized by the presence of basal, thorned, granular and horny layer, and keratinization occurs due to orthokeratosis, a gradual process and apoptotic changes in the superficial layer of the epithelium [3, 4].

The process of keratinization of the vermilion border is somewhat different, which reduces its barrier function and makes it a target organ at the stage of the onset and development of the pathology of the specified anatomical localization. In order to unify the layers of the epithelium and more profound study, in our studies we use the cytological classification according to which basal, parabasal, intermediate, superficial cells and horny scales are identified in the epithelium [4].

Results of the study and their discussion. The examination of the patients showed that atopic cheilitis was characterized by prolonged course, with periods of exacerbation and remission, and , notably, 11 patients (68.75%) indicated stress as the main provoking factor. 5 patients (31.25%) associated exacerbation of the nosology with seasonality (activation of the process in winter and autumn, and remission in summer).

The major complaints of patients in the exacerbation phase were burning, redness and desquamation of the vermilion border. Burning was one of the first symptoms in 13 patients (81.25%) and was subsequently accompanied by swelling and infiltration of the vermilion border. 3 patients (18.75%) indicated desquamation as the first symptoms. Moreover, the topography of the lesion extends to the corners of the mouth. 4 patients (25%) complained of pain when opening the mouth, resulted from the cracks due to infiltration and dryness of the skin and vermilion border.

During remission, patients complained of desquamation and thickening of the skin in the focus of the lesion. Subjective sensations in the form of provocative burning were noted by 2 patients (12.5%). 16 patients (100%) indicated desquamation of the skin of varying intensity with a predominant skin lesion of the corners of the mouth and enhanced skin pattern of this anatomical area.

Skin lesions occurred in 12 patients (75%). Notably, manifestations on the skin were characterized by both typical localization (8 patients; bends of elbow and knee) and atypical (14 patients (25%); above the upper eyelids, ear area, in the ankle-metatarsal joints).

Medical histories showed that in (11) out of (16) patients the pathological process was a consequence of the acute skin process in childhood with subsequent chronicity, while 5 patients reported the onset of the disease at the age of (17-20) years.

Consequently, detailed analysis of the medical histories revealed that atopic cheilitis could be developed along with typical clinical manifestations of atopic dermatitis or as individual chronic lesion of the vermilion border and the skin caused by the acute atopic dermatitis.

The comprehensive examination of patients during exacerbation of the disease revealed the absence of distinct border between the perioral skin and the vermilion border, which indicates generalization of the process with the transition to the above sites. The lesion site was characterized by the presence of cracks of

varying depth associated with desquamation mainly with large scales. The epidermal scales tended to stratification caused by erythematous changes, dryness and lechenization.

The in situ changes in atopic cheilitis at the stage of remission were manifested by fine desquamation in the corners of the mouth caused by dryness and erythema; exfoliative epidermal scales were noted in the area of lip closure.

The major components of the cellular composition of the vermilion border are cells of the stratified squamous epithelium. They are present in the normal cytograms and in pathology. It should be noted that the squamous epithelial cells are heterogeneous, which reflects the heterogeneity of epithelial cells of the specified anatomical location [6]. In atopic cheilitis, the cytological cell composition changes in both the epithelial and connective tissue components.

At the same time, the cellular composition of the cryptograms, reflected the course of atopic cheilitis (acute phase or remission phase) and the intensity of inflammatory-destructive processes in tissues, was classified into two cytospecific types.

The cytograms made during exacerbation showed that cells of the intermediate layer prevailed over the other cells, the cytological organization of which corresponds to the class affiliation and the level of differentiation; a large number of pathogenic microflora and cells of the inflammatory reaction were visualized. Superficial epitheliocytes were also prominent. Numerous microbial compositions further initiate necrobiotic processes in both epitheliocytes and segmentonuclear leukocytes. At the same time, phagocytosis promoted destruction of the cytoplasm of segmentonuclear leukocytes. Coccal microflora adhered not only on the surface of epithelial cells, but also on the surface of segmentonuclear leukocytes. In addition, along with hematogenous cells, the cytograms showed mainly coccal flora and sporadic strands of pseudomycelium of Candida genus fungus (fig. 1).

Intermediate cells had the azure-positive cytoplasm and a centric nucleus. In some cells, the cytoplasm was elongated and erose. Cells were located mainly in aggregations. A change in the microbial composition was determined, which in this type of cytograms was represented mainly by cocci that adhere to the surface of epithelial cells. The cellular composition reflected the enhancement of the phagocytic response of segmentonuclear leukocytes, and as a consequence of incomplete phagocytosis. During phagocytosis, leukocytes are altered in the form of changes in the nuclear caused by rearrangement of the nuclear apparatus, while in epitheliocytes necrobiotic processes occur primarily in the cytoplasm and then in the nucleus with increase in the volume of epithelial cells and their cytoplasm is filled with vacuoles that contain a clear fluid. The nucleus moves to the periphery of the cell, sometimes vacuoles appear in it or the nucleus shrinks. Subsequently, the ultrastructural elements of the cell disintegrate and it overflows with water.

The analysis of the cellular composition of the cytograms has established that the acute atopic cheilitis induces destruction of epitheliocytes, accompanied by karyopyknosis and karyorhexis of the nucleus and homogenization of the cytoplasm. The horny scales have been found in much smaller numbers, compared to their cellular composition in cytograms of patients with a chronic course. They are mostly eosinophilic, polygonal and erose, without clear contours. The location of these elements of the epithelial cell-differon is scattered.

The cellular composition of the cytograms in the remission phase was characterized by the presence of single representatives of the bacillus flora, superficial and intermediate epitheliocytes. Superficial epitheliocytes had a cubic and rectangular or polygonal shape; the cytoplasm contained sporadic azure-positive granules. The nucleus was orbicular, sometimes oblong. Notably, the cells were tending to aggregation. The cytograms revealed that this class of cells had the signs of irritation, expressed by homogenization and vacuolation of the cytoplasm, as the manifestation of prolonged irritation of the cell by bacterial aggression, manifested by acute basophilia. In this case, the intermediate cells were normal and mostly without elements of cytopathology. The presence of numerous horny scales was noteworthy (fig. 2).

The findings of the complex cytological and microbiological analysis are consistent with the investigations of predecessors on the violation of microbiological and immunological links of colonization resistance and dysbiotic changes of the vermilion border, manifested by excessive insemination of St. aureus, St. epidermidis, St. pyogenes, Enterococus faecium and fungi of the Candida genus. Quantitative indicators of insemination increase with increasing severity and prevalence of lesions, the burden of the anamnesis by general somatic pathology [5, 6, 10, 14].

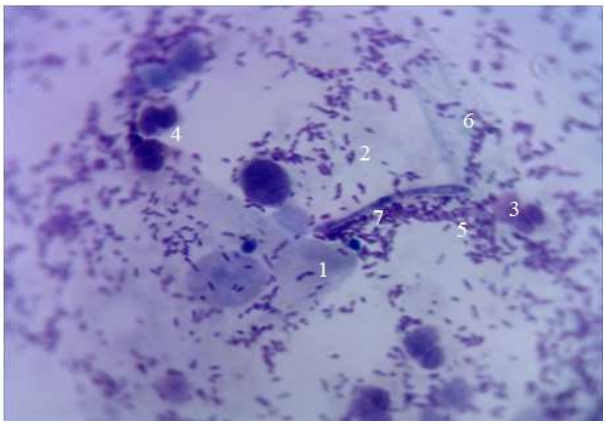

Fig. 1. Cellular composition of the vermilion border in exacerbated atopic cheilitis. Romanovsky-Gimze stain. 400×magnification.

1 – intermediate epitheliocyte; *2* – superficial epitheliocyte; 3 – lymphocytic infiltration; *4* – segmentonuclear leukocytes in the focus of inflammation; 5 – bacillus flora; *6* – coccal flora; *7* – pseudomycelium of Candida genus fungus.

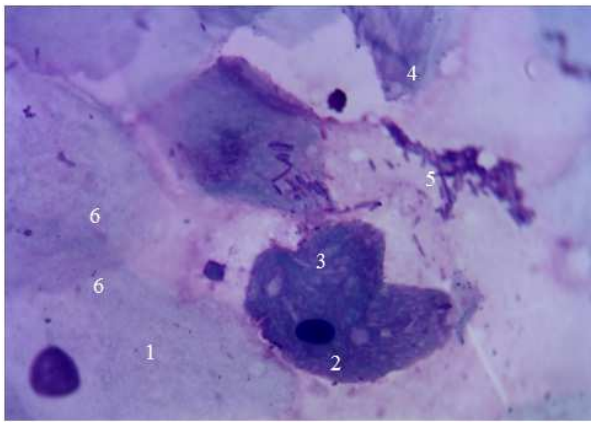

Fig. 2. Cellular composition of the vermilion border in atopic cheilitis at the remission phase. Romanovsky-Gimze stain. 400×magnification.

1 – intermediate epitheliocyte; *2* – superficial epitheliocyte; 3 – basophilic cytoplasm; *4* – horny scales; 5 – bacillus flora; *6* – azure-positive granules.

Noteworthy, the presence of small-size lymphocytes, optically dense nucleus with light rim of weakly basophilic cytoplasm on the periphery confirms the studies of Schmalz G. [13] on the role of sensitized lymphocytes in the development of this pathology [15].

Conclusion

Thus, the clinical course of atopic cheilitis has an impact on the nature of changes in the cellular composition of the vermilion border. The comprehensive analysis of the cytograms enables considering atopic cheilitis in the examined cohort, in the absence of adequate therapy, as a continuous self-destructive process. Its components (inflammatory-infiltrative and destructive) can regress under the influence of effective treatment and reactivate when the process is exacerbated under the influence of provoking factors, namely neurogenic and sensitizing. The findings of the study indicate the pathogenetic significance of destructive changes in epitheliocytes and violation of colonization resistance to the clinical course of atopic cheilitis.

References

1. Berezhnyi VV. Atopichnyi dermatyt u ditei: diahnostyka i likuvannia (lektsiia). Sovremennaia pedyatryia. 2018; 4 (92): 117-124. [in Ukrainian]
2. Besh ML. Atopichnyi dermatyt u ditei. Zdorove rebenka. 2012; 2 (37): 8-17. [in Ukrainian]
3. Gasyuk NV, Yeroshenko GA, Paliy OV. Suchasni uyavlennya pro etiolohiyu ta patohenez khvorob parodonta. Svit medicini ta biolohiyi. 2013; 2 (38): 203-207. [in Ukrainian]
4. Gasyuk NV. Kharakterystyka klitynnoho skladu chervonoi obliamivky pry atopichnomu kheiliti. Klinichna stomatolohii. 2016; 1 (15): 11-15. [in Ukrainian]
5. Drobotko LN, Strakhova SYu, Zhevneva MV. Atopycheskyi kheilyt u detei. Sovremennyi podkhod k terapyy. Klynycheskaia stomatolohyia. 2011; 4: 24-27. [in Ukrainian]
6. Kalliomaki M. Zastosuvannia probiotykiv uprodovzh pershykh 7 rokiv zhyttia: znyzhennia kumuliatyvnoho ryzyku rozvytku atopichnoho dermatytu v khodi randomizovanoho platsebokontrolovanoho doslidzhennia. Sovremennaia pedyatryia. 2016; 2 (74): 42-46. [in Ukrainian]
7. Kudriavtseva AV. Narushenye kozhnoho barera, kak vedushchyi faktor formyrovanyia mestnoho vospalytelnoho protsessa pry atopycheskom dermatyte. Vesnyk dermatolohyy y venerolohyy. 2017; 4: 82-89. [in Ukrainian]
8. Kulyhina VM, Stremchuk MV. Klinichni osoblyvosti ta faktory ryzyku atopichnoho kheilitu v ditei riznoho viku. Ukrainskyi stomatolohichnyi almanakh. 2014; 3: 69-75. [in Ukrainian]
9. Kulyhina VM, Stremchuk MV. Otsinka yakosti zhyttia ditei riznoho viku, khvorykh na atopichnyi kheilit, ta yikhnikh rodyn. Visnyk Vinnytskoho natsionalnoho medychnoho universytetu. 2014; 2 (18): 601-607. [in Ukrainian]
10. Strukova EY, Kenyksfest YuV. Potohenetycheskoe znachenye zolotystoho stafylokokka pry atopycheskom dermatyte. Fundamentalnie yssledovanyia. 2013. 7(3): 680-687. [in Russian]
11. Katayama I. Japanese guidelines for atopic dermatitis. Allergology International. 2017; 66: 230-247.
12. Müller F, Shimazaki Y, Kahabuka F, Schimmel M. Oral health for an ageing population: the importance of a natural dentition in older adults. Int Dent J. 2017;67(2):7-13.
13. Schmalz G. Release of prostaglandin E2, IL-6 and IL-8 from human oral epithelial culture models after exposure to compounds of dental materials. Eur. J. Oral. Sci. 2010; 108: 442-448.
14. Van Dyke TE, Kornman KS. Inflammation and factors that may regulate inflammatory response. J. Periodontol. 2008; 79: 1503-1507.
15. Xiao L. New paradigms in inflammatory signaling in vascular endothelial cells. Am. J. Physiol. Heart Circ. Physiol. 2014; 306: 3: 317-325.

Стаття надійшла 10.10.2019 р.