УДК 617-089.844/7

THE IMPORTANCE OF ADHESIVE MOLECULES IN THE DEVELOPMENT OF AFTOSIS STOMATITIS

Khabibova N.N.

Bukhara State Medical institute.

✓ ***Resume,***

The modern concept of the pathogenesis of aphthous stomatitis is based on the results of the interaction of factors of genetic predisposition and various trigger agents (infectious, immunological, allergic, food). Using the adhesion molecule (integrin (sVCAM-1) and selectins (P-, E-, L-), leukocytes migrate to the site of inflammation and an inflammatory infiltrate forms: adhesion (adherence) to the vascular endothelium in the site of inflammation; penetration through the epithelium ; movement in the direction of the focus of inflammation under the influence of chemotaxis. The above data on the role of soluble forms of adhesive molecules have been studied in some pathological conditions. At the same time, there are no reports of similar studies in dental practice.

Keywords: Aphthous stomatitis, inflammation, adhesion, infiltrate

AFTOZLI STAMOTITLARNI RIVOJLANISHIDA ADGEZIV MOLEKULALARNING AHAMIYATI

Xabibova H.H.

Buxoro davlat tibbiyot instituti.

✓ ***Rezyume,***

Aftoz stomatit patogenezining zamonaviy kontseptsiyasi genetik moyillik omillari va turli qo‘zg‘atuvchilar (yuqumli, immunologik, allergik, oziq-ovqat) o‘zaro ta’siri natijalariga asoslangan. Adgeziya molekulasi (integrin (sVCAM-1) va selinlardan (P-, E-, L-) foydalanib, leykotsitlar yallig‘lanishi va yallig‘lanish infiltrati shakllari: yallig‘lanish joyiga qon tomir endoteliyiga yopishish epiteliya orqali kirishi ximotaksis ta’siri ostida yallig‘lanish markazining yo‘nalishi bo‘yicha harakati aniqlangan. Adgeziv molekulalarni eriydigan shakllarining roli to‘g‘risidagi yuqoridagi ma’lumotlar ba’zi bir patologik sharoitlarda o‘rganilgan, shu bilan birga, stomatologiya amaliyotida aftozli stomatit patogenezining o‘rganishda muhim ahamiyatga ega.

Kalit so‘zlar: Aftozli stomatit, yallig‘lanish, adgeziya, infiltrat.

ЗНАЧЕНИЕ АДГЕЗИВНЫХ МОЛЕКУЛ В РАЗВИТИИ СТОМАТИТА АФТОЗА

Хабибова Н.Н.

Бухарский государственный медицинский институт.

✓ ***Резюме,***

Современная концепция патогенеза афтозного стоматита основывается на результатах взаимодействия факторов генетической предрасположенности и различных триггерных агентов (инфекционных, иммунологических, аллергических, пищевых). С помощью молекулы адгезии (интегрин (sVCAM-1) и селектинов (P-, E-, L-) происходит миграция лейкоцитов в очаг воспаления и образуется воспалительный инфильтрат: адгезия (прилипание) к эндотелию сосудов в очаге воспаления; проникновение через эпителий; перемещение в направлении очага воспаления под влиянием хемотаксиса. Вышеизложенные данные о роли растворимых форм адгезивных молекул изучены при некоторых патологических состояниях. В то же время сообщения о проведении аналогичных исследований в стоматологической практике отсутствуют.

Ключевые слова: Афтозного стоматита, воспаление, адгезия, инфильтрат.

The concept of the pathogenesis of aphthous stomatitis is based on the results of the interaction of factors of genetic predisposition and various trigger agents (infectious, immunological, allergic, food). The result of this is the activation of immuno-inflammatory processes that occur in the mucous membrane of the oral cavity (MOP) with the involvement of pro- and anti-inflammatory cytokines, adhesion factors, etc. Accumulation of activated T lymphocytes and macrophages is noted in the foci of SOPR, which leads to the initiation of the synthesis of mediators that enhance inflammation [1,2,3,4,5]. After the first cytokine response, a cascade of reactions occurs, leading to the preferential enhanced synthesis of tumor necrosis factor alpha (TNF a) and pro-inflammatory cytokines, which leads to a pathological immuno-inflammatory reaction [6,7,8,9.10]. An important role in the implementation of immune-mediated stages of inflammation is played by adhesion molecules, the main function of which is to maintain intercellular interactions, the migration of cells to the focus of inflammation, and the initiation of an immune response. There are 3 main families of adhesive molecules: selectins, integrins, immunoglobulins [11,12,13]. Selectins are expressed on the membranes of leukocytes (L-selectins), platelets (P-selectins) and endotheliocytes (P- and E-selectins). Integrins are expressed on leukocyte membranes, endothelial cells and provide leukocyte adhesion to endothelial cells and extracellular matrix proteins - fibronectin, collagen, laminin, vitronectin. The expression of cell adhesion molecules is induced by pro-inflammatory cytokines (in particular, IL 1, 6, 8, TNFα, IFNy), free radicals, lipopolysaccharides, leukotrienes, histamine, thrombin, complement components and many other factors [14.15].

The purpose of this study: to study the content of soluble cell adhesion molecules mediating the initial and final stage of leukocyte migration to the site of inflammation (sP-selectin and sVCAM-1), as well as some previously unexplored factors related to their level in serum blood of patients with CHRAS.

Material et methods

We examined 48 patients aged 20 to 55 years, the average age was 35.6 ± 3.0 (M ± o). The average duration of the disease ranged from 5.5 ± 3.4 years. suffering from chronic recurrent aphthous stomatitis (CHRAS). The diagnosis was made on the basis of a comprehensive examination, including the study of dental status and immunological testing of all patients with exacerbation of the disease. The content of soluble adhesion molecules s P-selectin and sVCAM-1 in the blood serum and the concentration of neopterin were determined by enzyme-linked immunosorbent assay (ELISA) using BioChemMak test systems (Russia). At the same time, the cytokine status was studied, which included the assessment of TNF-α content on the ROSH COBAS enzyme-linked immunosorbent analyzer using test kits from the same company. Data analysis was performed using the STATISTICAv. 6.0 "for WindowsXP Descriptive statistics of the feature included the arithmetic mean (M), minimum and maximum value, median (Me), and interquartile range [Q25-Q75]. When comparing the obtained results, the Mann-Whitney test was used due to the inconsistency of the analyzed data with the law of normal distribution. The relationship between the characters was studied using the Spearman (R) correlation analysis method. Differences were considered statistically significant at $p < 0.05$.

Research results and discussion

Clinical and laboratory blood tests in the examined patients with CHRAS retained: accelerated ESR 13 ± 6.13, mm / h, leukocytosis 8.93 ± 1.21 thousand, CRP 15.02 ± 7.87 mg / l. Wand nuclear shift 9.89 ± 2.38%. Analysis of the results of the studies presented in Table 1 indicated an increase in the concentration of soluble adhesion molecules of s P-selectin and sVCAM-1, neopterin and TNF in serum in patients with CHRAS.

Table 1

The content of sP-selectin, sVCAM-1, neopterin and TNF-a in serum in patients with CPAS

Indicators	Healthy faces n = 14	Patients with CHRAS n = 48
SVCAM-1 ng / ml	9,71±0,69	24,56± 1,57*
The content of sP-selectinang / ml	5,89± 0,81	13,29± 1,43*
The content of neopterinol / ml	4,96± 0,37	8,17± 0,72*
The content of TNF-APG / ml	43,16± 3,52	81,73± 7,65*

Note: * - significance of differences $P < 0.05$

The data obtained indicate that in patients with CPAS, an increased content of soluble adhesion molecules can affect the process of movement of leukocytes along the vascular bed, and then directly through the vascular wall into the tissue (focus of inflammation) to realize its effector potential. A confirmation of the above should also be considered amplification in patients with CPAS of a respiratory "explosion" of neutrophilic granulocytes, the number of which is increasing. The proinflammatory TNF cytokine, which are secreted in the inflammatory focus and ensure the expression of adhesive molecules, thereby mediating the migration of effector cells through the vascular wall and their infiltration of tissues, plays a crucial role in the production of membrane antigens. In this regard, it was of interest to try to detect the relationship between the sequence of adhesive reactions. A certain sequence of leukocyte emigration is due to the fact that the expression of various adhesive molecules does not occur simultaneously. Initially, selectins are expressed under the influence of inflammatory mediators. Already in the first minutes of action on the vascular wall of histamine, thrombin, bacterial endotoxins (lipopolysaccharides, LPS; lipopolysaccharide, LPS), phospholipid FAT (plateletactivationfactor, PAF), P-selectin is redistributed from its intracellular depot - granules of endothelial cells - body (palade) on the surface of the plasma membrane. After 1-2 hours, under the influence of complement fragments (C5a, Bb), leukotriene B4, and TNF-α, L-leukocytes are expressed, and as a result of the action of bacterial LPS, IL-1, TNF-α, TNF-β, IL-8 and other cytokines - E-selectins, as well as their ligands. Integrins, proteins of the immunoglobulin superfamily and addressins appear on the membranes of leukocytes and endotheliocytes much later. In this regard, the maximum neutrophil exit rate occurs in the first 2 hours and significantly decreases after 4-6 hours. Monocyte emigration begins with neutrophils, but reaches a maximum after 16-24 hours.

The interaction of selectins with their oligosaccharide ligands is not very strong (low affinity) and is easily destroyed by blood flow (reversible adhesion). Selectins attract white blood cells to the vascular wall and hold them for a while, release and reattach, which creates the effect of rolling along the vascular wall (rolling). Activation of integrins is accompanied by expression on the surface of endotheliocytes under the influence of TNF of adhesive molecules of the superfamily of immunoglobulins. All this provides a strong connection of leukocytes with the vascular wall, spreading them on the surface of the endothelium (irreversible adhesion), as a result of which they penetrate through the extended spaces between the endothelial cells of capillaries and venules (emigration of leukocytes). At the same time, neutrophils and monocytes squeeze between endothelial cells amoeba, releasing pseudopodia and secreting collagenase and elastase, which leads to the formation of holes in the basement membrane. Thus, the role of macrophages is mainly to neutralize cells in which viruses, some bacteria and fungi parasitize as well as cleansing the focus of inflammation from dead cells, including neutrophils, and the formation of anti-

inflammatory mediators that destroy (aryl sulfatase, histaminase, kininase, etc.) or eytralizuyuschih (heparin, chondroitin sulfate, proteases inhibitors antifosfolipazy, antioxidants, polyamines, lipoxins, IL-10, histamine, through H2 receptor) inflammatory mediators. Thus, the adhesion molecules of selectin, integrins, neopterin and TNF are modern markers of inflammation of CRS in CHRAS and can serve as criteria for predicting the severity and course of the disease.

LITERATURE:

1. Baranov A. A., Potapov A. S., Tsimbalova E. G. Modern technologies for the diagnosis and treatment of inflammatory bowel diseases in children. Vestn. RAMS. 2011; 6: 36-41.
2. Kozlov I.G., Gorlina N.K., Cheredeyev A.N. Contact receptors. Immunology., 1995; 6: 14-25.
3. Novikov VV, Karaulov A. V., Baryshnikov A. Yu. Soluble forms of membrane antigens of cells of the immune system. Immunology. 2007; 4: 249-253.
4. Pinegin B. V., Mayansky A. N. Neutrophils: structure and function. Immunology. 2007; 6: 374-382.
5. Mayansky D. N. Lectures on clinical pathology. M .: GEOTAR-Media. 2008.S. 15-78.
6. Papadakis K.A., Targan S. R. Role of cytokines in the pathogenesis of inflammatory bowel disease. Ann. Rev. Med. 2000; 51: 289-298.
7. vanAssche G., Rutgeerts FI Antiandhesion molecule therapy in inflammatory bowel disease. Inflamm. Bowel Dis. 2002; 8: 291-300.
8. Mac Donald T. T., Monteleone G. Adaptive immunity: Effector and inhibitory cytokine pathways in gut inflammation. In: S. R. Targan, F. Shanahan, L. C. Karp (eds.). Inflammatory bowel disease. Translating basic science into clinical practice. Chichester: Wiley-Blackwell. 2010. P. 82-91.
9. Song W. B., LvYn., Zhang Z. S., Li Yn., Xiao L. P., Yu X. P., Wang Y. Y., Ji FI. L., Ma L. Soluble intercellular adhesion molecule-1, D-lactate and diamine oxidase in patients with inflammatory bowel disease. World J. Gastroenterol. 2009; 15 (31): 3916-3919.
10. Goggins M. G., O, Connell M. A., Weir D. G., Kelleher D., Mahmud N. Soluble adhesion molecules in inflammatory bowel disease. Irish J. Med. Sci. 2001; 170 (2): 107-111.
11. Dymiska-Piekarska V., Kemona H. Does colorectal cancer clinical advancement affect adhesion molecules (sP-selectin, sE - selectin and sICAM-1) concentration? Thromb. Res. 2009; 1: 80-83.
12. Magro F., Araujo F., Pereira P, Meireles E., Diniz-Ribeiro M., Velosom F. T. Soluble selectins, sICAM, sVCAM, and angiogenic proteins in different activity groups of patients with inflammatory bowel disease. Dig. Dis. Sci. 2004; 49 (7-8): 1265-1274.
13. Adamska I., Czerwionka-Szaflarska M., Kulwas A., Mierzwa G., Bala G., Rosc D. Value of E-selectin and L-selectin determination in children and youth with inflammatory bowel disease. Med. Wieku. Rozwoj. 2007; 11 (4): 413-418.
14. Adamska I., Czerwionka-Szaflarska M., Kulwas A., Mierzwa G., Bala G., Rosc D. Adhesion molecules of immunoglobin super family in children and youth with inflammatory bowel disease. Pol. Merkur. Lecarski. 2009; 26 (152): 101-104.
15. Mayanskaya I. V., Shabunina E. I., Ashkinazi V. I., Tolkacheva N. I., Potekhin P. P. Leukocyte-modulating activity of blood serum in children with chronic inflammatory diseases of the digestive system. Q. the diagnosis pediatrics. 2009; 1: 28-32.

Entered 09.09. 2019