BOLALARDA OSHQOZON VA O'N IKKI BARMOQLI ICHAK YARASINI O'RGANISHNING IMMUNOGENETIK JIHATLARI

Komilova Baxmal Odilovna
Buxoro davlat pedagogika instituti tabiiy fanlar kafedrasi dotsenti
Shodiyeva Musharraf Sadirovna
Buxoro Davlat Tibbiyot instituti pediatriya kafedrasi assistenti

Annotatsiya: *HP bilan bog'liq patologiyasi bo'lgan 98 (53,8%) va gastroduodenal zonaning HP-salbiy patologiyasi bo'lgan 84 (46,2%) bolalar tekshirildi, ularda IL-4, TNF-a sitokinlarining tarkibi aniqlandi. Natijalar: o'rganilayotgan Th1-yordamchi sitokinlar ishlab chiqarishning ko'payishi H. pylori bilan bog'liq gastroduodenal patologiyada Th1 tipidagi immunitetning faollashishini ko'rsatadi. Shu bilan birga, qon zardobida sitokinlar kontsentratsiyasining ortishi patologik jarayonning dinamikasini yanada aniqroq aks ettiradi.*

Kalit so'zlar: *HP, pylor, qon, zardob, sitokin, patalogik, imunitet.*

https://doi.org/10.5281/zenodo.7238251

ИММУНОГЕНЕТИЧЕСКИЕ АСПЕКТЫ ИЗУЧЕНИЯ ЯЗВЕННОЙ БОЛЕЗНИ ЖЕЛУДКА И ДВЕНАДЦАТИПЕРСТНОЙ КИШКИ У ДЕТЕЙ

Комилова Бахмал Одиловна
доцент кафедры естественных наук
Бухарского государственного педагогического института
Шодиева Мушарраф Садировна
ассистент кафедры педиатрии
Бухарского государственного медицинского института

Аннотация: *увеличение продукции изученных цитокинов Th1-хелперов свидетельствует об активации иммунитета по Th1 типу при H. pylori ассоциированной гастродуоденальной патологии. При этом увеличение концентрации цитокинов в сыворотке крови более выражено отражает динамику патологического процесса. Выводы: одним из факторов риска, развития язвенного процесса слизистой оболочки гастродуоденальной зоны у обследованных детей, является увеличение содержания TNF-α в периферической крови.*

Ключевые слова: *дети, гастродуоденит, язвенный болезнь, иммунология, Helicobacter pylori.*

STATE OF IMMUNE RESPONSE MEDIATORS IN CHILDREN WITH GASTRITY

Komilova Baxmal Odilovna

Associate Professor of the Department of Natural Sciences of the Bukhara State Pedagogical Institute
Shodiyeva Musharraf Sadirovna
Bukhara State Medical Institute. Assistant of the Department of Pediatrics

Annotation: *98 (53.8%) children with HP-associated pathology and 84 (46.2%) with HP-negative pathology of the gastroduodenal zone were examined, in whom the content of cytokines IL-4, TNF-α was determined. Results: An increase in the production of the studied Th1-helper cytokines indicates the activation of Th1-type immunity in H. pylori-associated gastroduodenal pathology. At the same time, an increase in the concentration of cytokines in the blood serum more clearly reflects the dynamics of the pathological process.*

Key words: *children, gastroduodenitis, peptic ulcer, immunology, Helicobacter pylori.*

INTRODUCTION

The high prevalence of inflammatory diseases of the stomach and duodenum, their significant proportion in the structure of gastroenterological morbidity [1,2], recurrent and progressive course [3] determine the urgency of the problem of chronic gastroduodenitis in children. H. pylori infection (HP) is considered one of the main etiological factors of chronic inflammatory diseases of the stomach and duodenum in children [4]. At the same time, data on the role of this microbe in chronic gastroduodenitis in school-age patients are very contradictory and require further clarification [5-7]. Immunological mechanisms, including the role of cytokines, have been least studied in the pathogenesis of chronic gastroduodenitis, their diagnostic and prognostic significance has not been determined [11]. Being the initial link in the activation of the immune response, cytokines determine the effectiveness and type of immunological response to infectious and non-infectious agents, are directly involved in the development and regulation of local inflammatory and immune reactions [11]. The study of the profile of proinflammatory cytokines synthesized directly in the focus of inflammation, in conjunction with the features of the clinical course of gastroduodenitis, morphofunctional changes in the organs of the gastroduodenal system, indicators of local protection and taking into account the leading etiological factor of the disease (infectious, allergic) will expand knowledge about the pathogenesis of inflammatory diseases of the stomach and duodenum, which will improve their diagnosis and treatment.

The purpose of the study. To study the prognostic significance of proinflammatory cytokines in children with H. pylori-associated gastroduodenal pathology.

MATERIALS AND METHODS

182 children (79 boys and 103 girls) aged 7-18 years with inflammatory diseases of the stomach and duodenum were examined. Of these, 98 (53.8%) patients with HP-associated pathology and 84 (46.2%) patients with HP-negative pathology of the gastroduodenal zone. 28 (15.4%) of them were with peptic ulcer disease, 154 (84.6%) – with 48 ISSN 2181-7812 www.tma-journals.uz Clinical medicine with chronic gastroduodenitis (HCG). The clinical diagnosis was verified according to the classifications of YABDPC and CGD accepted in pediatrics and the classification of A.V. Mazurin (1984). The cytokine content was determined by the Cytokine

test kit (St. Petersburg, Russia). The content of human IL-4 and TNF-α was determined using a set of ELISA IL-4 and ELISA-TNF-α reagents by solid-phase enzyme immunoassay. The results of the immunological study of blood serum were compared with similar indicators obtained by the Institute's staff during the examination of children without inflammatory changes in the mucous membrane of the stomach and duodenum, who made up the control group and were conditionally accepted as normal. The obtained results were processed on a Pentium IV personal computer (Microsoft Office Excel 2012 software package). The methods of variational parametric and nonparametric statistics were used with the calculation of the arithmetic mean parameter (M), the mean square deviation (σ), the standard error of the mean (m), relative values (frequency, %). The statistical significance value in the comparative analysis of average indicators was evaluated by the Student's criterion (t). At the same time, the probability of error (p) was determined when checking the normality of the distribution (the kurtosis criterion) and the equality of the general variances F according to the Fisher criterion. The confidence level $P<0.005$ was taken as a static value.

RESULTS AND DISCUSSION

The content of interleukins in the blood serum depends on their entry into the blood and the involvement of systemic immune responses in the inflammatory response. The concentration of cytokines in the bloodstream is influenced by the duration of the disease and the frequency of relapses. When assessing the cytokine status of children aged 7 to 14 years, it was revealed that the level of interleukin-1ß was significantly higher, and in children with H. pylori "+" gastroduodenal pathology it exceeded the control by 2.2 times (respectively 47.9±0.96 and 21.6 ±0.86 pg/ml, $P<0.001$. and almost 1.3 times this indicator in children with GDP without HP (37.3±0.80, $P<0.001$) According to J. Bauditz (1999), M.M. D'ellios (2007), S. Futagami (1998), products of microbial origin lead to lymphoid infiltration of the gastric mucosa and the production of Th1 cytokines [8]. Based on the conditions of expression and the mechanism of action of IL-1ß, it is possible to justify the increased content of interleukin. On the one hand, this is a probable damage to the gastric and duodenal mucosa, on the other hand, a decrease in the influence of other adverse factors and participation in the reparative processes of the gastroduodenal mucosa, which is consistent with the data of R.A. Akdogan (2014). This is an important function, since the probability of recurrence of the disease depends on the quality of mucosal repair [9]. The increased level of IL-1ß in the blood serum in children with N. pylori "+" gastroduodenal pathology is explained by the fact that N. pylori plays an essential role in the development of acid-dependent diseases of the gastrointestinal tract. When this pathogen is exposed to the gastric and duodenal mucosa, IL-1ß is the first to be included in the body's defense response and plays a leading role both in the development and regulation of nonspecific protection and specific immunity, i.e., in response to infection with H. pylori, cytokine synthesis increases in the cells of the gastric mucosa. However, it is important to take into account the fact that with a prolonged inflammatory process, instead of limiting the growth of the pathogen, its own cells die, the risk of developing atrophic gastritis, metaplasia and stomach cancer increases. TNF-α is a pluripotent cytokine, which is mainly produced by monocytes and macrophages and performs the most important functions. During the initiation of inflammation, it activates the endothelium, increases the expression of adhesion molecules on endothelial

cells and promotes adhesion of leukocytes to the endothelium, activates leukocytes (granulocytes, monocytes, lymphocytes), induces the production of other pro-inflammatory cytokines that have a synergistic effect with TNF-α, in particular IL-1ß [10]. Analysis of TNF-α data showed the same dynamics. Its level in the blood serum of sick children was higher, with a maximum value at H. pylori "+" (52.4 ±083 and control 23.8 ±0.83 pg/ml, p <0.001)
According to the mechanism described after infection of the gastric mucosa, HP triggers a cytokine cascade, which primarily leads to increased expression of IL-1ß, and it is the first to activate neutrophils (increases chemotaxis and phagocytosis). Normally, neutrophils are the first to migrate to the focus of inflammation under the action of HP-induced chemoattractants and destroy bacteria by phagocytosis. However, bacterial infection of HP is able to change the direction of the immune response, which leads to the pathogen's departure from immunological supervision and the imperfection of the immune response, therefore, to the ineffectiveness of the work of the nonspecific link of immunity. Hyperproduction of IL-1ß can lead to inhibition of hydrochloric acid production in the stomach, which contributes to the colonization of HP. Prolonged cytokine hypersecretion causes depletion of the reserve capabilities of producing cells and subsequently immunodeficiency, which contributes to the formation of a focus of chronic inflammation. With an increased level of TNF-α, Th1 cells also activate macrophages, which, due to the production of bactericidal components (nitric oxide and oxygen radicals), destroy foreign antigens. Since the HP bacterium is an extracellular pathogen, therefore, the body's immune system in the "face" of macrophages should activate the humoral immune response, i.e. the formation of antibodies. Therefore, in this case, the activation of the cellular immune response is "defective" and contributes to the persistence of the pathogen. HP is able to inhibit the action of macrophages due to their neutralization by catalase and superoxide dismutase, which contributes to its survival, i.e. elimination of the bacterium does not occur. Thus, the study of the state of the immune system in children with gastroduodenal pathology, depending on infection, revealed the direction of immune shifts and their severity, which indicates an important pathogenetic role of immune mechanisms in the development and progression of changes in the state of the immune system of children with diseases of the digestive system. An increase in the production of the studied Th1 helper cytokines indicates the activation of Th1-type immunity in H. pylori associated gastroduodenal pathology. At the same time, an increase in the concentration of cytokines in the blood serum more clearly reflects the dynamics of the pathological process.

CONCLUSION

The results of the study showed that an increase in the level of IL-1ß is a prognostically unfavorable sign, which indicates the progression of gastroduodenal pathology. One of the risk factors for the development of ulcerative process of the mucous membrane of the gastroduodenal zone in the examined children is an increase in the content of TNF-α in peripheral blood.

LIST OF USED LITERATURE

1. Ким О.В., Шамсиев Ф.С., Гафарова Ф.М., Абдужабарова З.М., Шодиева М.С. Клинические особенности течения ВИЧ-инфекции у детей дошкольного возраста взависимости пути инфицирования,стадии заболевания,тяжести

иммуносупрессии и репликативной активности вируса// Педиатрия . -2019.- №3. - С. 92-94.

2. Пазилова С.А., Абдужабборова З.М., Шодиева М.С., Арипова Д.С. Факторы риска развития Helicobacter pylori позитивной и Helicobacter pylori негативной гастродуоденальной патологии у детей // Педиатрия-2019.- №3. - С. 99-103.
3. Пазилова С.А., Абдужабборова З.М., ШодиеваМ.С.распространен-ность Helicobacter pylori и Helicobacter pylori негативной гастродуоденальной патологии у детей// Педиатрия -2019.- №3. - С. 207-210.
4. Шахизирова И.Д. Абдухамидова С.Р.Шодиева М.С. Оптимизация терапевтической тактика при лямблиозах у детей// Педиатрия -2019. -№3. - С. 104-106.
5. Шодиева М.С., Хаитова Д.Ш. Морская губка. Бадяга – перспективы применения как лечебное средство (обзор литературы) // East European Science Journal -2019.- №4 (44) - С. 56-57.
6. Шодиева М.С., Комилова Б.О. Иммуногенетические аспекты Helicobacter pylori ассоциированной гастродуоденалъной патологии у детей// Российский журнал Гастроэнтерологии гепатологии. Колопроктологии -2019.- №5.- С. 59-65.
7. Шодиева М.С. Иммуногенетические аспекты Helicobacter pylori ассоциированной гастродуоденальной патологии у детей//Тиббиётда янги кун . -2020.- №2/1.(30/1). - С. 151-153.
8. Комилова Б.О., Шодиева М.С.Phyziological and Psychological Characteristics of the Student Depending on the Color of Eye Iris//American Journal of Medicine and Medical Sciences.- 2020. 10(2) -P. 121-123.
9. Shodiyeva M.S.Immunogenetic Aspects Helicobacter Pylori Associated Gastroduodenal Patthology in Children //The American Journal of medical sciences and pharmaceutical research .- 2020. August 20.- P. 58-63.