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Method of Complex Treatment of Chronic Recurrent Aphthous Stomatitis

Метод комплексного лечения хронического рецидивирующего афтозного стоматита

Abstract

Introduction. Chronic recurrent aphthous stomatitis (ChRAS) is manifested in the oral cavity in children, who have diseases of certain organs and systems (most often, the diseases of gastrointestinal tract).

Purpose of the study. To improve the complex treatment protocol of ChRAS, to reduce the periods of epithelialization of lesions, and to prolong the inter-recurrent period.

Materials and methods. The investigation was conducted among 20 children at the age from 12 to 15 years, who had clinical manifestations of ChRAS for two or three years (considering relapses four times a year as severe illness). Clinical, laboratory and statistical research methods were used in this study.

Results and discussion. In the current study, the complex method of treatment of ChRAS, including local and general therapy was developed. General therapy was aimed to treat disorders of gastrointestinal tract. Anesthetics, antiseptic treatment, anti-inflammatory therapy, and keratoplasty therapy were used for local treatment during the period of epithelialization of aphthae. The results of the proposed treatment method showed faster disappearance of edema of the oral mucosa, reduction of pain during eating, and a significant reduction of the time of epithelialization of mucosal lesions.

Conclusion. The developed complex method of treatment of ChRAS, including local and general therapy, let to reduce the painful period, significantly shorten the terms of epithelialization of the lesions of oral mucosa, and to achieve long remission of the disease.

Keywords: children, chronic recurrent aphthous stomatitis, local and general treatment.

Резюме

Введение. Хронический рецидивирующий афтозный стоматит (ХРАС) – заболевание, проявляющееся в полости рта у детей, которые болеют хроническими заболеваниями органов и систем, чаще всего желудочно-кишечного тракта.

Цель исследования. Улучшить комплексное лечение ХРАС с целью сокращения периодов эпителизации элементов и увеличения межрецидивного периода.

Материалы и методы. Обследование было проведено среди 20 детей в возрасте от 12 до 15 лет, которые имели клинические проявления ХРАС в течение двух или трех лет (с рецидивами четыре раза в год – тяжелое течение). В работе использованы клинические, лабораторные и статистические методы исследования.

Результаты и обсуждение. Разработан метод комплексного лечения ХРАС, который включает местную и общую терапию. Общее лечение направлено на коррекцию нарушений со стороны желудочно-кишечного тракта ребенка. Местное лечение в период эпителизации афты предусматривает обезболивание, антисептическую обработку полости рта, противовоспалительную терапию, кератопластическую терапию. Результаты предложенного способа лечения свидетельствуют о более быстром исчезновении отека слизистой оболочки полости рта, уменьшении боли во время еды и значительном сокращении времени эпителизации афты.

Заключение. Разработанный метод комплексного лечения ХРАС, включающий местную и общую терапию, позволил сократить болевой период, значительно уменьшить время эпителизации элементов поражения слизистой оболочки полости рта, добиться более длительной ремиссии заболевания.

Ключевые слова: дети, хронический рецидивирующий афтозный стоматит, местное и общее лечение.

INTRODUCTION

Chronic recurrent aphthous stomatitis (ChRAS) is one of the common diseases of the oral mucous membrane. This disease is manifested in the oral cavity in children who have diseases of certain organs and systems (most often diseases of gastrointestinal tract) [1, 10].

However, quite often ChRAS can be observed in the oral cavity in children without apparent pathological changes of their general somatic status. In such cases, appearance of lesions of the mucous membrane of the oral cavity can be a sign and a certain marker of initial formation of pathological conditions, and the development of functional disorders of internal organs and systems (in particular, presence of intestinal microbiome disorders, erosive lesions of stomach and/or various parts of intestine, etc.) [5–7].

Therefore, absence of a clearly defined cause-and-effect connection in the emergence and development of this pathology causes complexity, and sometimes impossibility of effective impact on the course of the disease and prevention of its repeated manifestations [9]. Because of this, chronic recurrent aphthous stomatitis is a disease that has sometimes severe, prolonged course, frequent relapses and low effectiveness of the classic local symptomatic treatment of erosive lesions [8, 10].

That is why treatment of ChRAS in children should be complex. Appointment of general treatment involves certain difficulties, particularly a need for counseling, and sometimes a necessity of full examination of a child by general specialists – a pediatrician, a gastroenterologist, an allergist, an immunologist, etc. [1, 4, 6, 7] due to the etio-pathogenetic underpinnings of the ChRAS development. One of the possible reasons for the appearance of lesions of oral mucosa is the development of an allergic

flora of the child's body. The consequences of the interaction of an antigen with an antibody is direct damage to cells that have fixed antigens. One of the first scientists who assumed the allergic nature of the development of ChRAS was one of the founders of the Kyiv School of Therapeutic Dentistry Professor Danilevsky M.F.

Children, suffering from ChRAS also have changes of local immunity of the oral cavity. These changes affect the course and the duration of exacerbations of chronic recurrent aphthous stomatitis, which in turn determines a need for integrated approach and development of the scheme for local treatment [4, 7].

■ PURPOSE OF THE STUDY

The purpose of the study was to improve a complex treatment of ChRAS and, therefore, to reduce periods of epithelialization of lesions and to prolong remission periods.

■ MATERIALS AND METHODS

Examination of 20 children aged between 12 and 15 years with clinical manifestations of chronic relapsing aphthous stomatitis with a course of two or three years (with relapses four times a year were considered severe illness) was performed. Clinical, laboratory and statistical research methods were used in this work.

The vast majority of patients with chronic diseases had chronic diseases of the gastrointestinal tract, liver and biliary tract.

Depending on the method of local treatment, patients were divided into 2 groups. The first group consisted of 15 patients, who were administered complex therapy including ionophoretic gel Solkoseril.

The 2nd group included 10 patients who received local therapy with anti-inflammatory and keratoplastic drugs.

The effectiveness of therapy was assessed by normalizing of the state of oral mucosa (pain and edema disappeared), and by reduction of terms of epithelialization of the mucosal lesions. Analysis of cytograms was carried out in accordance with the recommendations of Kimele E. (1984) [2]. In the analysis of the cytogram the indices of the ratio of cells oral mucosa were determined (index ratio – cell-epithelial) from the equation:

$$ISKE = V_k / k,$$

where V_k – percentage of epithelial cells,

k – percentage content of cell elements of the cytogram.

Patients were under dispensary supervision of a pediatric gastroenterologist and regularly underwent a comprehensive treatment of concomitant illnesses.

Local therapy of oral cavity in children, clinical and laboratory studies were conducted in clinics of the Chair of Pediatric Therapeutic Dentistry and the Prevention of Stomatological Diseases at the NMU named after O.O. Bogomolets.

■ RESULTS AND DISCUSSION

Local treatment involved eliminating or reducing inflammation of oral

Patients received daily treatment in the pediatric, therapeutic and physiotherapy departments aimed to achieve epithelialization mucosal lesions.

Treatment of ChRAS started with sanitation of the oral cavity. After anesthetization of the mucosal defects, oral cavity was irrigated with antiseptic solution (Chlorhexidine 0.2%).

Patients in the first group received combined treatment, which included anti-inflammatory and keratoplastic therapy in the form of ionophoresis gel Solkoseril. The duration of the procedure was 5 minutes (intensity 0.3 W/cm³ in steady state of generation). The number of sessions was determined depending on the state of oral mucosa (on average 5–8 sessions).

Treatment of the patients in group 1 continued at home, by administering mouth rinsing and oral baths with Rotocan solution (one teaspoon per glass of warm water 2–3 times a day) during clinical manifestations and within 5 days after the completion of lesion epithelialization. Also, irrigation of the oral mucosa with Inhalpt-N during the period of clinical manifestations was suggested.

Patients in 2 groups received symptomatic therapy.

Considering the presence of general diseases of the gastrointestinal tract, liver, all patients were consulted by general specialists to receive general treatment.

The status of patients in group 1 showed improvement after 2 treatment sessions. Swelling of the oral mucous membrane was decreased.

After 4 sessions, significant changes in the local status were observed. Pain around mucosal lesion appeared only while eating irritating food. Edema significantly decreased and was localized in areas of aphthae. Erosion surfaces were free from plaque, their bottom was bright red. Pain was insignificant during palpation of aphthae.

After 6 sessions there were no complaints, erosive surfaces significantly decreased in size, the bottom of aphthae were bright red. The average duration of epithelialization of erosions was 6.91 ± 0.18 days.

In the control group, where patients received symptomatic therapy (mouth rinsing with furacilin, lysozyme, vitamin A supplements), general condition of patients remained unchanged for 3 days after beginning of the treatment. Patients complained of pain in the oral cavity, which was aggravated when eating. The mucous membrane was swollen, and teeth imprints were observed on the cheek mucosa. Aphthae appeared painful when palpated, covered with bloom, and their size did not decrease. The tendency to improve the status of the patients in this group was evident only after 5 sessions of therapy.

Pain of aphthae was observed only after taking irritating food. Edema decreased and was only in the areas surrounding aphthae. The size of the erosions remained the same, they were covered with a white bloom.

On the 8th day of treatment, the clinical picture improved. Patients did not make complaints, while the surfaces of the aphthae were clean and significantly smaller in size. The mean period of epithelialization in the control group was 8.75 ± 3.92 days.

Thus, the results of the clinical observations revealed superiority of the



Fig. 1. Patient suffering from ChrAS at the first visit. Some ulcers on the mucous membrane of the oral cavity

the time of epithelialization of the lesions and in general reduction of the duration of ChrAS treatment.

As an example of practical use, we offer an excerpt from the patient's history of K., 15 years (Fig. 1). The child applied to the clinic with complaints of burning sensation, pain during eating and talking. There were some ulcers on the mucous membrane of the oral cavity. Relapse of the disease repeated 1 time in a quarter for 2 years. The patient had dysfunction of the gallbladder and was repeatedly ill with acute respiratory diseases. The patient was under dispensary supervision of a pediatric gastroenterologist and regularly underwent a course of integrated anti-relapse treatment.

Clinical examination showed that the mucous membrane of the mouth was swollen and pasty, without manifestations of hyperemia. On the mucous membrane of the cheeks, on the line of closure of teeth there were imprints of teeth. On the inner surface of the lower lip on the left there was an aphtha with size 0.7x0.9x0.3 cm. Palpation of aphtha caused pain. Submandibular lymph nodes were not palpable.

For a cytological study, cells from the surface of the aphtha were obtained. Polygonal epithelial cells with a light cytoplasm and a small nucleus, rounded epithelial cells with a dark-colored cytoplasm and large nucleus were found. Among epithelial cells there was a significant accumulation of phagocytic neutrophils, and lymphocytes. The cellular epithelial index was 4.68.

The individual algorithm for complex patient treatment included general and local therapies.

The general therapy of the gallbladder dysfunction according to the hypotonic-hypokinetic type (designated by the pediatric gastroenterologist) included:

- Cholergics (for stimulation of bile synthesis) – a suspension of ursodeoxycholic acid 10 mg / kg per day in 2 doses for 3 weeks;
- Choleretics (to stimulate the reduction of the gallbladder) – an extract of artichoke leaves on 1/4–1/2 teaspoonful 3 times per day for 3 weeks;
- Prokinetic domperidone (to restore the motor function of the biliary tract) at 10 mg 3 times per day for 15–30 min before eating for 10 days;

- Probiotic Linex forte (for the restoration of microbiome of the digestive canal) 1 capsule during meals for 14 days;
- Enterosorbent 1 tablespoon 3 times per day, 7 days to reduce endogenous intoxication 1.5–2 hours before or 2 hours after eating (taking medication).
- Diet for 1 month.

Mineral water (1 glass) with medium mineral content (at a temperature of 24 degrees) was prescribed 3 times per day; 20 minutes before meals in a month after of epithelialization of aphtha.

For the local treatment during the period of epithelialization of aphtha (while visiting the dentist) the following scheme was applied:

- Anesthetics (applications);
 - Antiseptic treatment of the mucous membrane of the oral cavity (rinsing by 0.2% solution of chlorhexidine bigluconate);
 - Anti-inflammatory therapy (irrigation's of oral mucosa with spray);
 - Keratoplastic therapy (phonophoresis of gel Solcoseryl in the 5–6 days after beginning of epithelialization) duration of 5 minutes, 8 sessions.
- The patient also continued treatment at home, applying locally:
1. Immunomodulatory medicine of bacterial and fungal origin Imudon (1 tablet after meals 4–6 times a day to resorb in the oral cavity, then do not take food, do not rinse for 1 hour) – three courses for 10 days with two 20-day breaks.
 2. Mouth rinse and mouthwashes using Rotocan solution (one teaspoon per glass of warm water 2–3 times a day) during clinical manifestations and during 5 days after epithelialization.
 3. Irrigation of oral mucosa with spray Tantum Verde 2 times per day during clinical manifestations.

For the period of treatment for hygienic oral care anti-inflammatory toothpaste of the combined action based on medicinal plants (echinacea of purpura, sage, chamomile, myrrh, rotium, peppermint) with fluorine (for two months) was prescribed.

The patient visited a dentist's clinic every other day.

At the second visit, the patient noted improvement in his well-being. The pain remained only when eating. The dimensions of the aphtha did not change, it was of the same shape, and its surface was covered with plaque. On the mucous membrane of cheeks on the line of closure of teeth there were imprints of teeth (Fig. 2).

At the third visit the patient's state of health was satisfactory. Pain was detected only when patient was taking food. Infiltration of the oral mucosa around aphtha decreased and the mucous lesion remained of the same shape and size, its bottom was flat and covered with fibrinous plaque. Treatment was continued (Fig. 3).

At the fourth visit (two days later) the patient still complained about the presence of ulcers. The mucous membrane of the lower lip was less swollen and smooth. The surface of aphtha was cleared of plaque; its depth was reduced. There was a little pain during palpation of aphtha. The cheek's mucous membrane did not have any imprints of teeth (Fig. 4).

Fifth visit. Complaints about pain when patient was taking solid food.



Fig. 2. Patient suffering from ChrAS at the second visit. On the mucous membrane of the cheeks on the line of closure of teeth there were imprints of the teeth



Fig. 3. Patient suffering from ChrAS at the third visit. Infiltration of the oral mucosa around aphtha decreased, its shape and size were the same, while its bottom is flat and covered with fibrinous plaque



Fig. 4. Patient suffering from ChrAS at the fourth visit



Fig. 5. Patient suffering from ChrAS at the fifth visit. Aphtha diminished in sizes up to $0.2 \times 0.2 \times 0.2$ cm, its bottom was flat, bright red, clean



Fig. 6. Patient, suffering from ChrAS at the sixth visit. The bottom of the lesion was clean, epithelialization areas were marked

its bottom was flat, bright red, and clean. To improve epithelialization, Solcoseryl gel (keratoplastic preparation) by phonophoresis was introduced to local treatment scheme [12] (Fig. 5).

Sixth visit. There were complaints on pain after mechanical irritation of aphtha. The mucosal lesion diminished to $0.1 \times 0.1 \times 0.1$ cm, its bottom was clean, with marked epithelialization areas (Fig. 6). A re-cytological study was performed.

The results of the cytological study of the surface of the aphtha showed that the number of epithelial cells, especially from the upper layers, increased significantly. Among the neutrophilic leukocytes, unmodified forms prevailed, and the number of macrophages and phagocytes decreased. The cellular epithelial index was 2.82, indicating a good epithelialization of the lesion. The treatment continued.

■ CONCLUSION

The developed method of treating ChRAS, including local and general therapy, allowed to reduce the patient's unpleasant sensations in a shorter time, significantly shorten the terms of epithelialization of the oral mucosa lesions, and to achieve a long remission of the disease.

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Определение RBP (ретинол-связывающего белка) и KIM-1 (молекулы повреждения почки) с целью диагностики повреждения почек у детей с наследственными синдромами

Determination of RBP (Retinol Binding Protein) and KIM-1 (Kidney Injury Molecule) for Diagnostics of Kidney Injury in Children with Hereditary Syndromes

Резюме

В статье представлены данные по определению RBP и KIM-1 и их роли у пациентов с наследственными синдромами с поражением почек. Проведен сравнительный анализ концентрации сывороточного и мочевого RBP и KIM-1 в группах пациентов с наследственными синдромами и группе условно здоровых детей. Изучена корреляция RBP и KIM-1 с уровнем сывороточного креатинина и расчетной скоростью клубочковой фильтрации (рСКФ).

Ключевые слова: RBP, KIM-1, наследственный нефрит, тубулопатии, сыворотка крови, моча.

Abstract

The data on determination of RBP and KIM-1 concentration in patients with hereditary syndromes with renal injury were presented in this article. These markers were measured in serum and urine. Comparative analysis of RBP and KIM-1 concentration in the serum and urine samples in the groups of patients with hereditary syndromes and healthy children was carried out. The correlation of RBP and KIM-1 with creatinine level and glomerular filtration rate (GFR) was studied.

Keywords: RBP, KIM-1, hereditary nephritis, tubulopathy, serum, urine.

■ ВВЕДЕНИЕ

Для педиатров наибольший интерес из наследственных синдромов с поражением почек представляют наследственный нефрит и тубулопатии. Наследственный нефрит – заболевание, связанное с генетическим дефектом коллагена IV типа базальных мембран, клинически проявляющееся гематурией, нейтрофильной тугоухостью и аномали-