

Results of Anti-Recurrent Measures in the Active Course of Chronic Parenchymatic Parotitis in Children

Metody zapobiegania nawrotom w trakcie zaostrzenia przewlekłego śródmięszkowego zapalenia przyusznicy u dzieci

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SUMMARY

Aim: To establish the effectiveness of anti-relapse measures in the active phase of chronic parenchymal mumps in children in time of remission.

Materials and Methods: The material for writing this work was the results of a survey in remission for 5 years of 38 children with active chronic parenchymal mumps. General clinical, special and additional research methods were used to establish the effectiveness of anti-relapse measures.

Results: According to the generalization of scientific information, it was found that for dynamic monitoring of the course of mumps are quite informative ultrasound diagnosis and sialography, cytological and microbiological study of parotid liquid. Preventive measures, which were carried out twice a year, allowed for a five-year period in 24% of children to achieve recovery, in 76% to improve the condition, and the number of exacerbations decreased by 14 times compared to the first year of observation.

Conclusions: To monitor the effectiveness of anti-relapse measures in the active course of chronic parenchymal mumps in remission, it is necessary to study the qualitative properties of the secretion of glands, its cellular composition and the nature of the microbial composition. Quite valuable information is ultrasound diagnostic and sialography, which together allows to establish the severity of violations of their anatomical structures, the quality of specialized care and timely measures to prevent exacerbations, which has a positive effect on the functional activity of the parotid salivary glands.

Key words: children, chronic mumps, anti-relapse measures

Słowa kluczowe: dzieci, przewlekła świnka, metody zapobiegania nawrotom

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INTRODUCTION

Despite the significant scientific achievements of domestic and foreign authors, which are covered in periodical scientific literature, the number of different nosological forms of sialadenitis is constantly growing. Active long-term study of its etiology, the establishment of leading chains of pathogenesis, the use of modern diagnostic technologies and modern pharmacological drugs do not always allow to effectively influence on its clinical course and some consequences. This is due to the complex anatomical structure of the large salivary glands and their multifaceted functional activity, as well as its variable structure and specific reactions to external and internal irritants [1-4].

At the same time, chronic parenchymal mumps occupies a prominent place among all chronic forms of sialadenitis. It

is not possible to establish the cause of its occurrence despite the existence of a significant number of evidentiary views, theories and concepts regarding its origin, because quite often in-depth examination of children with special methods of examination reveals signs of latent chronic inflammation in the parotid salivary gland [5-7].

Currently, the prevailing opinion is that all changes in it can be realized only under conditions of reduction of its functional activity. Reducing the normal level of salivation leads to disruption of the digestive process, as well as deterioration of self-cleaning of the oral cavity, which, in turn, leads to the formation of a favorable situation for the impact of hard tissues of the tooth, periodontium and mucous membranes. The amount of oral fluid varies in a fairly wide range and largely

depends on age, seasonality, the presence of concomitant somatic diseases, the nature of the regulatory effects of the central and autonomic nervous system, which also occurs in the presence of chronic pathological process in the parotid salivary glands [8-10].

Due to the peculiarity of the etiology and pathogenesis of chronic parenchymal perotitis, its treatment is quite long, practically have a significant difficulty and mainly depends on the form, stage, phase of the disease. Great importance is attached to local drug treatment, but, unfortunately, anti-relapse measures in relation to such patients do not receive adequate attention from doctors, which negatively affects the frequency of exacerbations and contributes to the progression of morphological disorders directly in the glandular tissues [11-13]. This scientific work is devoted to the partial solution of this question.

AIM

To establish the effectiveness of anti-relapse measures in the active phase of chronic parenchymal mumps in children in time of remission.

MATERIALS AND METHODS

In scientific development were involved of 38 children aged between of 2 to 16 years with active chronic parenchymal mumps in remission. In this group of patients the frequency of exacerbations ranged from 3 to 11 times a year, and was accompanied by deterioration of the general condition, fever from 37.5°C to 38.0°C, significant swelling of soft tissues in the anatomical projection of the parotid gland, a decrease in the volume and by changing the qualitative properties of the secret.

At the initial examination after the abatement of acute inflammation to establish the severity of anatomical changes in the structural elements of the salivary glands were performed its ultrasound examination and sialography with contrast of the inflow system and acinuses with 76% solution of triombrast according to classical methods. X-ray examination was performed on both dental and stationary devices in direct and lateral projections.

In order to study the cellular composition of the secretion, it was collected, smears were made with subsequent staining according to Romanovsky-Gimse. Qualitative and quantitative parameters of cytograms were studied in 10 fields of view with the conversion of the number of cellular elements per 1 field of view [8].

To establish the species composition of microorganisms in the parotid secretion used the order of the Ministry of Health of Ukraine for №236 from 04.04.2012, taking into account the recommendations of the European Association of Clinical Microbiology and Infectious Diseases. Visually and palpably determined the condition of the parotid glands, the mouth of the excretory ducts, the volume and nature of the secretion. All types of research were conducted before and after treatment and prevention measures and on the basis of comparison determined their effectiveness and made a forecast for the future for each patient.

RESULTS

The clinical characteristics of the remission period are presented on the basis of generalization of anamnestic data and examination of patients a month after the elimination of exacerbation of the disease, before each treatment and prevention measures.

At this time, out of 38 patients, 30 (79%) had no complaints. On visual inspection, the parotid glands were within the anatomical location, palpably soft, painless. In 8 children (21%) who had complaints of recurrent pain in the parotid and masticatory area, there was a weak swelling and single foci of compacted glandular tissue were identified. The mucous membrane of the oral cavity in all had a pale pink color and was well moisturized. The reaction of regional lymph nodes was detected in 16 children (42%).

On examination of the oral cavity, a slight swelling of the mucosa around the orifice of the excretory duct of the affected gland was noticeable in 19 people (50%), and in 12 of them it gaped and a hyperemic border of the mucosa was observed around it. When massaging the glands, only in 7 patients (18%) from the main duct were secreted a sufficient amount of clear secretion with single, small whitish inclusions, and in the other 31 - (82%) it was of high viscosity and contained a significant number of flakes. inclusions

Diagnostic ultrasound examination, which was performed on 29 children (74%) in all cases found a seal of the parotid gland, and the parenchyma had a heterogeneous structure due to the presence of sialectases of different sizes, shapes and quantities. In addition, hypochoic inclusions alternated with echo-compacted areas (Figure1).

The study of the cellular composition of the mumps fluid in 31 patients (82%) found that the cercket had a significant number of inclusions against the background of a protein substrate of moderate density - accumulations of leukocytes both with the kept form, and destroyed, lymphocytes, macrophages, coccal microorganisms were defined (Figure 2).

In the cytograms of 7 children who had small and single inclusions in the secretion, on the background of limited areas

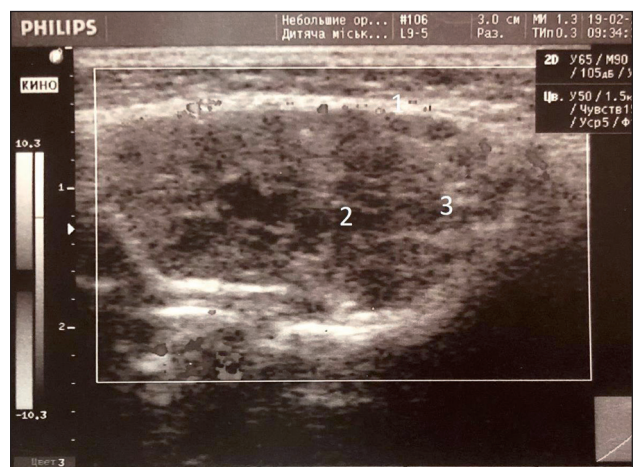


Figure 1. Ultrasound image of the left parotid gland. The echo-compacted capsule (1) is defined, in parenchyma existence of moderate quantity of sialectases of various form in the sizes from 3 to 4 mm (2) is traced, among them single hyperechogenic sites (3)

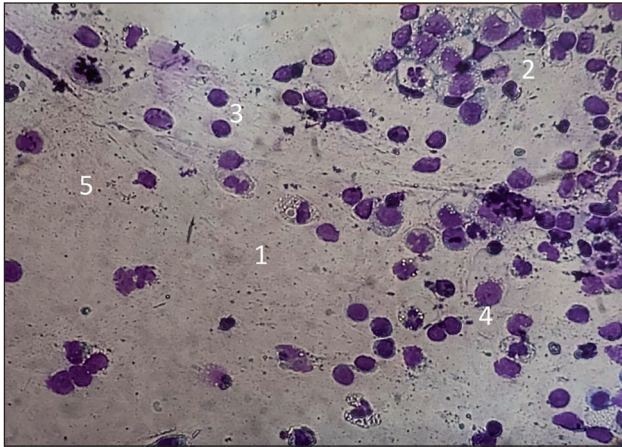


Figure 2. Micrograph of a smear of mumps secret. Against the background of a protein substrate of moderate density (1) is determined by the accumulation of leukocytes (1), lymphocytes (2), macrophages (3) and coccal microorganisms (4)

of protein substrate, the presence of only single neutrophilic leukocytes and lymphocytes.

Bacteriological study of mumps secretion, which was conducted in 21 patients (55%) allowed to establish the presence of coccal microflora in all, and it was represented by a monoculture: in 15 patients (71%) hemolytic and non-hemolytic streptococci and in 6 patients (29%) coagulonegative staphylococci. Hemolytic streptococci (11 observations 73%) had hemolytic and fibrinolytic activity. Non-hemolytic streptococci and coagulonegative staphylococci had no pathogenic factors. It was found that during this period of the disease microorganisms were determined in concentration of $5 \cdot 10^6$ - $5 \cdot 10^5$.

Given the fact that in 14 patients (37%) during the first year there were 7-11 exacerbations of the disease, they underwent sialography to specify the severity of structural changes in the duct system and gland parenchyma. The sialograms of 8 patients revealed the presence of diffuse and separate sialectases, which were combined with uneven expansion of the main duct of the parotid gland (Figure 3).

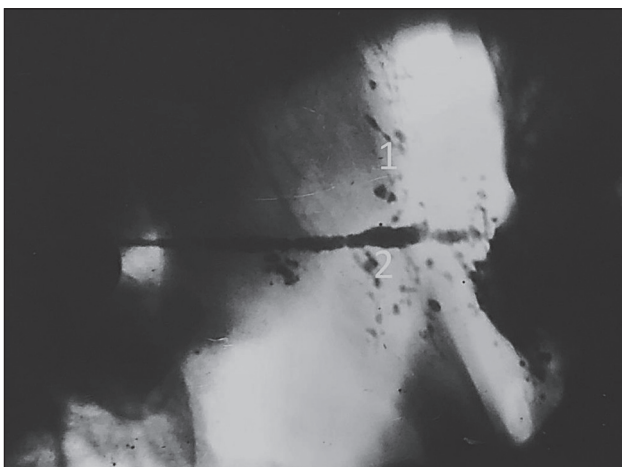


Figure 3. Sialogram of the right parotid gland in lateral projection. The uneven distribution in a parenchyma of a gland of sialectases in the size from 1 to 2 mm (1) and insignificant expansion of the main output channel (2) is defined

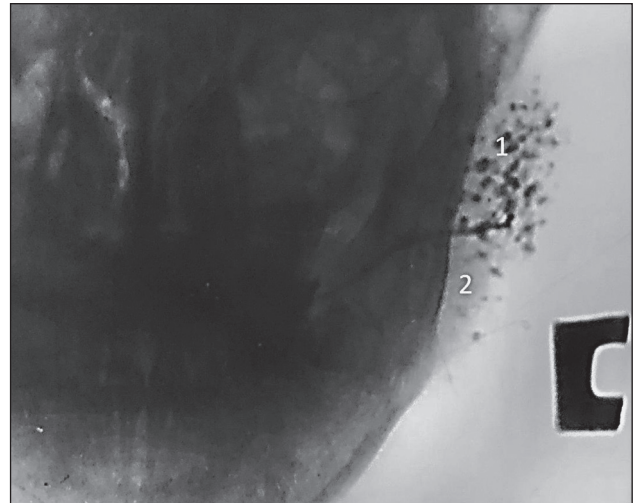


Figure 4. Sialogram of the right parotid gland in direct projection. In the upper pole of the parotid gland is determined by the accumulation of sialectases, ranging in size from 1 to 3 mm (1), and in the lower lobe they are single (2)

Sialography, which was performed on 3 children revealed a significant number of evenly accumulated sialectases of different sizes in the parenchyma of the whole gland, or in its single lobes (Figure 4).

X-ray examination of parotid glands with artificial contrast, which was also performed in 3 patients with clinical manifestations of unilateral lesions, revealed that they had the presence of sialectases in symmetrical glands, but their number and location were individual (Figure 5). It should be noted that more frequent and active exacerbation of the disease occurred with a significant number of them.

Taking into account our personal long-term experience and data given in scientific periodicals and dedicated to measures aimed at preventing exacerbation of chronic parenchymal mumps, we have chosen the best option for the scope of treatment and prevention measures aimed at creating conditions that reduce the number of exacerbations and prolong the remission period. [6, 11, 12]:

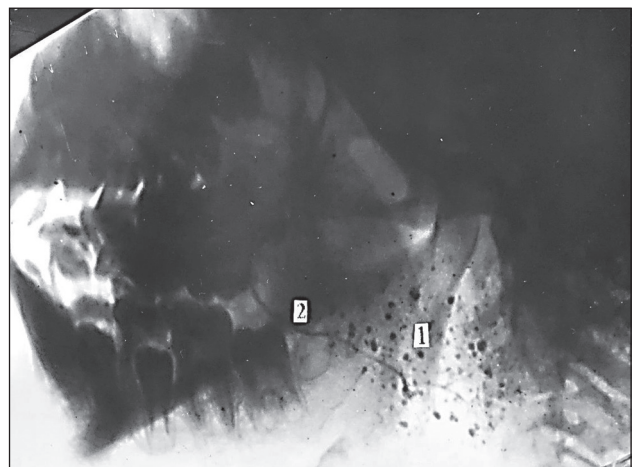


Figure 5. Sialogram of the left parotid gland without clinical manifestations of chronic inflammation in lateral projection. A moderate number of sialectases with a size of 1 to 2 mm, located throughout the parenchyma (1), the main excretory duct has a bend (2)

- At each of 4 visits per month, three instillations of 1% lysozyme solution into the ductal system of the glands were performed with an interval of 5 minutes and their subsequent massage to dilute the secretion, improve its rheological properties and increase the level of immunological potential.
- After this procedure, the introduction of sea buckthorn oil once a week, only 4 times a month, to create favorable conditions for the regeneration of the epithelial lining of the structural components of the gland and improve their functional activity.
- Electrophoresis with 3% KJ solution according to the standard method №15 to prevent the progression of dystrophic changes in the gland and hyperplastic processes in the intraglandular lymph nodes.
- Conducted sanitary and educational work with children and their relatives, provided the necessary recommendations for the care of the oral cavity and involved, if necessary, specialists of related profiles.

After the initial treatment and prevention course, all children had no complaints. On palpation, the glands were within their anatomical location, were soft in 35 people (92%) and 3 people (8%) identified limited single tuberous areas in separate lobes of the gland. The oral mucosa is sufficiently moist, of normal color in all subjects, including around the orifice of the excretory ducts, which gaped only in 4 of 12 cases, and single flaky inclusions in the mumps were found in only 6 patients out of 31 who had these manifestations before carrying out a complex of procedures.

When studying the cellular composition of cytograms of mumps secretion at this time of observation found a significant decrease in the formed elements of the blood of the inflammatory series and in all smears were seen in small numbers separately located neutrophils, lymphocytes, macrophages and coccal microorganisms on a background of loose protein substrate (Figure 6).

Microbiological examination of secretion in 21 patients who underwent this at the beginning of preventive measures, only in 4 observations were sown with non-hemolytic streptococcus and in 2 cases – coagulonegative strains of staphylococcus.

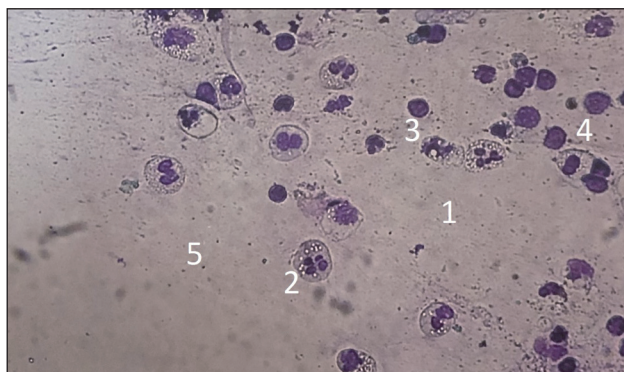


Figure 6. Micrograph of a smear of mumps secret at the end of the anti-relapse course. Against the background of a loose protein substrate (1) are determined in small numbers scattered neutrophils (2), lymphocytes (3), macrophages (4), single cocci (5)

In all cases, their quantitative parameters did not exceed the level of $5 \cdot 10^5$.

These measures were performed twice a year - in spring and autumn, and the assessment of their effectiveness was determined because of generalization of the results of anamnestic data, clinical manifestations, study of the cellular composition of mumps and its microbiota. To control the nature of the disease in atypical cases, additional ultrasound and sialography were performed repeatedly and upon completion of preventive measures.

It should be noted that during the first year of patient care the number of exacerbations decreased by 8 times, and during the 5-year period by 14 times. Due to the positive clinical dynamics under conditions of normalization of the functional activity of the parotid salivary glands 9 children (24%) were deregistered during this time due to the recovery, and significant improvement was observed in 29 children (76%).

DISCUSSION

In acute forms of sialadenitis of viral and bacterial origin there is almost no doubt about the list of diagnostic tests that allow you to determine the scope of treatment, the choice of pharmacological drugs, and, accordingly, to complete their treatment within the term of 7-10 days. In the presence of chronic inflammation in the parotid glands, it is necessary to conduct a comprehensive differential diagnosis with the involvement of modern technologies [4, 6, 7]. If in clinical practice the treatment measures used in the exacerbation of the chronic process in the gland are presented in periodicals thoroughly and carefully [11-13], then regarding the implementation of rehabilitation measures, a significant number of issues remain unresolved. Therefore, children with chronic parenchymal mumps, which often recur, especially in the active course, in the duct system and acinar apparatus there are pronounced functional and morphological disorders [4, 6]. This requires a clear tactical approach to the formation of an algorithm for accompanying these patients in remission, which would significantly improve their quality of life. Due to the comprehensive solution of urgent needs to provide appropriate specialized care for these children and the long-term positive results, we strongly recommend more widespread use of the presented developments directly in outpatient settings and consider this approach quite promising.

CONCLUSIONS

The use of pathogenetically directed anti-relapse measures in children with active chronic parenchymal mumps during remission twice a year can achieve a prolongation of remission and a reduction in the number of exacerbations during the first year by 8 times and in five years term by 14 times. The study of the cellular composition of mumps and its microbial composition as diagnostic and prognostic tests allows to determine with a high degree of probability the possibility of manifestations of the disease and the prospect of remission. Involvement of ultrasound diagnostics and sialography for dynamic monitoring of the course of chronic inflammation in

the parotid glands at all stages of observation allows to obtain a high quality image of the duct system and parenchyma. These non-invasive research methods provide comprehensive information that contributes to the rational planning of the scope of conservative therapy and, accordingly, to improve the quality of specialized medical care, which allows to prolong the remission of the disease.

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The Authors declare no conflict of interest

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