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Early Diagnosis Of Secondary Destructive Parotitis As Prevention Of A Purulent-Septic Infection.

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ABSTRACT

the Authors examined and treated 287 patients with various forms of secondary destructive parotitis. Standard and laboratory methods were used, the metabolic component of homeostasis was evaluated. The working classification of acute destructive parotitis with the release of uncomplicated and complicated variants of the inflammatory process is proposed. By 103 patients with the acute destructive parotitis, the disease was in the form of monoesters with the formation of multiple small abscesses. Symptoms of endogenous intoxication syndrome were clearly identified, but were generally mild. Changes in the indicators of metabolic processes, hemostasis and immunity did not go beyond the limits of possible physiological fluctuations. The results of the study of the state of metabolic processes by 62 patients with phlegmonous form and 122 patients with acute destructive parotitis indicate a significant reduction in total serum protein (8%) in the combination of acute destructive parotitis with pathology from the pancreas. Two main States of life support systems are identified: unstable compensation (subcompensation) and decompensation. The program of early detection and differential diagnosis of acute destructive parotitis, the implementation of which is not only therapeutic, but also preventive.

Keywords: secondary destructive parotitis, clinical manifestations of the disease, working classification, endogenous intoxication syndrome.

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INTRODUCTION

According to the scientific literature, sialoadenitis accounts for about 5% of all diseases of the maxillofacial region [1, 2]. They account for 30 to 45% of all diseases of the salivary glands. Parotid salivary glands are involved in the inflammatory process more often than submandibular and sublingual [1, 3].

Many researches are devoted to acute and chronic parotitis [1]. However, a number of issues of etiology, pathogenesis and diagnosis of secondary destructive parotitis have not been sufficiently studied so far. This is due to the great complexity of the studied problem, the nature of pathological manifestations of the disease, the diverse influence of the functions of the salivary glands on the body [3, 5].

Of particular note is the involvement of the parotid salivary gland in the process due to surgical diseases of the abdominal cavity. This pathology, according to the results of some authors' studies, is difficult to predict, leads to the most severe outcomes of the disease, up to fatal outcomes. Undoubtedly, such statistics are due to the severity of abdominal intervention and the general somatic status of the patient. In general, the pathology of the parotid salivary gland, caused by abdominal surgical pathology, is from 0,1% [4].

Unfavorable dynamics of the pathological process in the parotid salivary gland and high mortality are largely due to the severity of the underlying disease, for example, in acute pancreatitis combined pathology leads to the death of 40-70% of patients [2]. Early diagnosis and prevention of acute pathology of the parotid salivary gland is the basis for reducing the development of secondary destructive parotitis.

The aim of the study was to improve the diagnosis of secondary destructive parotitis by developing a program for early detection of acute pathology of the parotid gland.

MATERIAL AND METHODS

Examination of patients was carried out in the conditions of specialized hospital – Department of maxillofacial surgery № 1 of Voronezh regional clinical hospital № 1. The basis of this work was the examination and treatment of 287 patients aged from 28 to 86 years old with various forms of acute destructive parotitis, who were in hospital from 1995 to 2015.

Along with the standard clinical study (analysis of complaints, history data, assessment of the general condition and local manifestations of the disease), a complex of special laboratory studies was carried out to assess the state of the homeostasis system (metabolism, immune status and cellular composition of the blood.

The indices of blood cell composition included determination of the following parameters:

- Red blood cells,
- Hemoglobin,
- Leukocytes,
- Eosinophils,
- Stab neutrophils
- Segmented neutrophils,
- Lymphocytes,
- Monocytes,
- ESR.

Indicators of metabolic processes in patients with acute secondary parotitis were evaluated by the following indicators:

- Total serum protein
- Blood glucose,
- Urea,
- Creatinine,
- Cholesterol,

- Free bilirubin,
- Aspartate transaminase,
- Alanine transaminase,
- B-lipoproteins.

Evaluation of the immune status and coagulation parameters included:

- Lymphocytes,
- The absolute number of lymphocytes,
- Phagocytic index,
- Circulating Immune Complexes,
- T-E-Rosetting cell,
- B-E-Rosetting cell,
- T-active,
- Immunoglobulin G,
- Immunoglobulin M,
- Immunoglobulin a,
- Hematocrit,
- Thrombin time,
- Prothrombin index,
- Fibrinogen.

By patients with the background pathology, additional studies were performed in accordance with the order of care for urgent patients: chest radiography, electrocardiography, ultrasonic indication of the liver and gallbladder, pancreas, kidneys, etc.

Express studies (scale Apache II) were performed at admission of patients to the hospital, the next day after the first and second operations, during the stabilization of clinical manifestations of the disease and before discharge from the hospital after treatment.

RESULTS AND DISCUSSION

Of the 286 patients in 75% of cases were determined and related pathology. Quantitative characteristic of background pathology by patients with secondary destructive parotitis is shown in table 1.

Clinical manifestations of destructive parotitis revealed a large number and variety of combinations of local and general signs of the disease, depending on the form of parotitis. The working classification of acute destructive parotitis in accordance with the forms of the disease and the presence of local and general complications is presented in Fig. 1.

Table 1: Quantitative characteristics of background pathology in patients with acute destructive parotitis

Nature of background pathology	Number of sepsis patients	
	Abs.	%
1. Diseases of cardiovascular and respiratory systems (coronary heart disease, hypertension, post infarction cardio sclerosis, chronic pneumonia, bronchial asthma)	75	35,0
2. Diseases of the kidney (renal stone disease, pyelonephritis)	56	26,0
3. Diseases of digestive organs (gastric ulcer, duodenal ulcer, chronic calculous cholecystitis, hepatitis, liver cirrhosis, chronic pancreatitis, chronic colitis, chronic alcoholism and others)	38	17, 7
4. Diabetes mellitus type	46	21,3
Total	215	100

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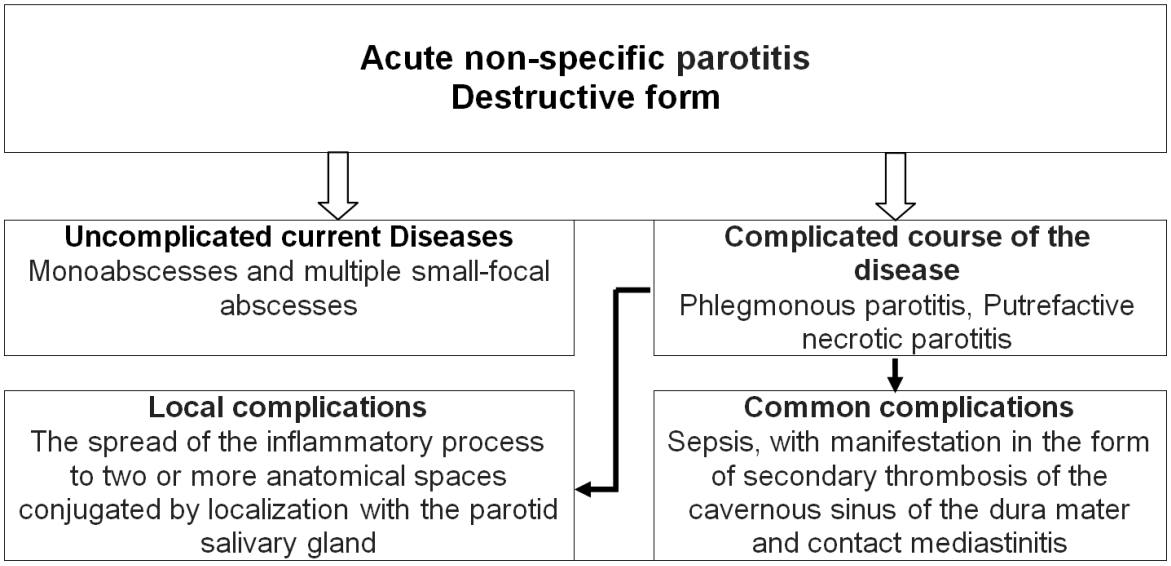

Fig 1: Working classification of acute destructive parotitis

The state of homeostasis by patients with an abscess form of destructive parotitis. In 103 patients with acute destructive mumps, the disease was in the form of monoesters and with the formation of multiple small abscesses. This is one of the favorable forms of the disease, which is characterized by a localized form of infection.

When applying for monastesse was characterized by asymmetry of the face due to the presence of inflammatory edema and infiltration in the parotid-masticatory region.

Symptoms of endogenous intoxication syndrome were already clearly identified, but were generally mild. The results of the study of the parameters of the cellular composition of blood in patients with an abscess form of acute destructive parotitis noted leukocytosis, cell polymorphism was determined, ESR increased to 45-50 mm an hour. There was a decrease in the number of red blood cells, an increase in rod and segmented neutrophils, monocytes.

The results of the study of the state of metabolic processes by patients with an abscess form of acute destructive parotitis showed a decrease in the content of total serum protein, and an increase in glucose and transaminases.

Nevertheless, the indicators of metabolic processes in general did not exceed the limits of possible physiological fluctuations.

In the study of the immune system remained lymphocyte content at an acceptable level, while reducing the content of T-lymphocytes increased the Level of b-lymphocytes.

Changes in indicators of the coagulation system showed a significant increase of hematocrit and fibrinogen content.

The state of homeostasis by patients with phlegmonous form of destructive parotitis. Clinical and laboratory manifestations were studied by 62 patients with phlegmonous form of acute destructive parotitis. It should be noted that by 5 patients the disease was combined with pancreatic necrosis, showing clinical signs for 10-12 days from the date of surgery on the pancreas. By 40 people, the inflammatory process was localized within the parotid-masticatory area, and by 22 patients went beyond its boundaries, spreading to neighboring cellular spaces. In this regard, the clinical manifestations of the disease were characterized by significant differences and largely depended on the volume and nature of the acute inflammatory process. The

complexity of the diagnosis was mainly associated with the development of somatic pathology (therapeutic and surgical diseases of the gastrointestinal tract).

The general condition of the patients with phlegmonous form of acute destructive parotitis at admission was regarded as moderate or severe.

Data on studies of blood cell counts by patients with phlegmonous form of acute destructive parotitis indicated a significant shift in the majority of indicators of blood cell composition.

The results of the study of the metabolic processes' state were characterized by a significant decrease in total serum protein (8%), when the disease is combined with pathology from the pancreas, the level of amylase increased by an average of 3-4 times. The remaining indicators remained within the limits of possible physiological fluctuations.

The decrease in the immunological activity of the organism was determined. There was a decrease in the concentration of T - and b-lymphocytes by 23 %, an increase in the level of circulating immune complexes by 67 %, and phagocytosis was lower than the control level by 13 %, and an increase in the number of Wright.

In the study of hemocoagulation system was characterized by hypercoagulation, without clinical signs of DIC, increased hematocrit, prothrombin index and fibrinogen content. Indicators of blood coagulation have been personalized for patients with surgical diseases of the gastrointestinal tract.

In general, deviations of homeostasis indices pointed to the subcompensated state of life support systems.

Clinical and laboratory characteristics of the putrefactive-necrotic form of destructive parotitis complicated by sepsis. Of 122 patients with acute destructive parotitis, 14% of the disease was characterized by a predominance of alterations in the local inflammatory reaction and the development of common complications. Complaints of a local nature were basically identical to those in purulent form.

The general infectious syndrome was clearly expressed, patients with the presence of background pathology also presented complaints due to concomitant diseases.

From the data of the study follows that by patients sepsis preceded in a severe form. Five patients developed secondary thrombosis of cavernous sinus with the formation of orbit phlegmon against the background of sepsis, and four patients were diagnosed with contact anterior mediastinitis.

With the complication of sepsis, the most characteristic signs were predominance in the clinical picture of symptoms of general infectious syndrome, pronounced feverish reaction (t of the body reached 400 or more), hyperpyrexia, chills, heavy sweat, muscle and joint pain, chest pain, shortness of breath.

The findings showed that the rotten-necrotic form of the disease was characterized by a decrease in the content of erythrocytes, lymphocytes and hemoglobin due to an increase in the number of leukocytes, neutrophils. In addition, ESR was also increased by almost 5 times compared to the physiological norm.

Increased deficiency of total serum protein, glucose levels increased by 14% compared with normal values, as well as increased urea and transaminases.

The results of the immunity study showed the development of immunodeficiency in patients by reducing the absolute number of lymphocytes by 42%, the concentration of T- lymphocytes decreased by 9%, and B-lymphocytes – by 46%.

Study of hemostasis system showed that the rotten-destructive form of parotitis, except for a pronounced hypercoagulable state, tended to the development of DIC.

Systematization and analysis of homeostasis indices allowed to distinguish two main States of life support systems and to predict their development: unstable compensation (subcompensation) and

decompensation. The state of subcompensation was characterized by the presence of distinct signs of decline in the functioning of one of the life support systems, at the maximum voltage of others. The state of decompensation was typical of the syndrome of hippocastanaceaes' development, due to a combination of volume, hemodynamic, metabolic and immunological disorders.

By 8 patients (all older than 60 years) with the presence of background pathology of three or more vital organs and systems, despite intensive therapy, as a result of generalization of the inflammatory process, occurred a fatal outcome.

Thereby, it is possible to show clearly the correspondence of the clinical picture of acute destructive parotitis with characteristic deviations in the studies of peripheral blood, indicators of metabolic processes, immune system and hemocoagulation. In general, the clinic of destructive form of parotitis was manifested by pronounced local changes, intoxication, allowing to evaluate the state as a subcompensation and decompensation, which corresponds to the picture of pronounced changes in the indicators of general homeostasis. In this regard, it is possible to distinguish three personalized versions of changes in the system of homeostasis:

- non-specific changes in bacterial macroorganism and inflammatory response in the case of uncomplicated forms;
- non-specific changes accompanied by limiting stress of protective and adaptive mechanisms, with a clear tendency of exhaustion of one of the systems (blood circulation, metabolism or immunity);
- severe combination pattern of hypocrisy, immunodeficiency syndromes, severe metabolic and immunological disorders in case of septic complication.

The authors developed a program for early detection and differential diagnosis of secondary forms of destructive mating, the sequence of stages of which is shown in Fig. 2.

At the first stage, in the conditions of polyclinic, studing of complaints, anamnesis collection, clinical examination, including instrumental. According to the clinical picture, the nature of the parotid gland removed from the duct and the assessment of the general condition of the patient, it was possible to establish the presence of serous or destructive form of acute parotitis.

At the second stage (in the hospital of the clinic) all patients underwent primary laboratory tests, chest radiography, ECG.

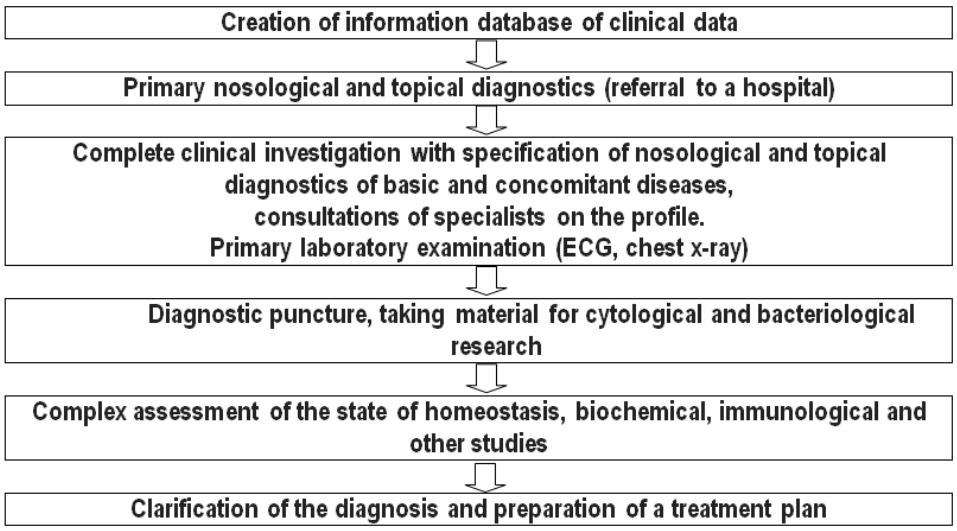

Fig 2: Algorithm of diagnostics of acute destructive parotitis (policlinic-hospital)

Additional research, with the involvement of specialists of the relevant profile (neurologists, endocrinologists, allergists, cardiologists, therapists and other doctors) was carried out in the presence of an

established comorbidity on the indications. Due to the obtained data, the nosological form of the disease, the plan of surgical and medical treatment were determined.

As can be seen from the presented data, for each of the forms of acute destructive parotitis were characterized by well-defined clinical and laboratory indicators with high reliability providing early detection and diagnosis of forms of the disease. The introduction into practice of the developed algorithm allowed to increase significantly the efficiency of diagnostics and to provide early detection of the disease and its forms within 1-2 days after hospitalization.

The implementation of the developed diagnostic algorithm is preventive in nature, which allowed not only to establish the nosological form of the disease, but also to determine the nature of the inflammatory reaction, the presence of common and local complications, to develop indications for surgical treatment and to vary its volume and justify the conduct of medical therapy.

SUMMARY

1. Secondary destructive parotitis in the structure of inflammatory diseases of the maxillofacial region is 5%, and among patients with diseases of the salivary glands occurs in 15% of cases.
2. Examination of patients should be carried out according to the regulated program, which includes the analysis of clinical, radiological and morphological studies; objectifying the diagnosis and evaluation of the systemic homeostatic response of the body.
3. Clinical and laboratory manifestations of secondary destructive parotitis dictate the expediency of the allocation of the diseases' main forms, which are characterized by certain clinical and laboratory data.
4. Given the real threat of the spread of the acute inflammation, the development of local and general complications, treatment of secondary destructive parotitis should be carried out only in a specialized maxillofacial hospital.

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