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CLINICAL AND MORPHOLOGICAL CHARACTERISTICS OF THE COURSE OF PURULENT SIALADENITIS AGAINST THE BACKGROUND OF ENDOCRINE PATHOLOGY

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Sialoadenitis is a fairly common pathology in the practice of dentists and maxillofacial surgeons. In patients with diabetes mellitus, the disease is often diagnosed for the first time in a surgical clinic; sialoadenitis is diagnosed and, in case of decompensation of the endocrine system, a septic state. Acute parotitis with abscess formation was observed in deceased patients. Microscopically: the presence of abundant cellular inflammatory infiltration with a predominance of neutrophilic leukocytes. Inflammatory infiltration spread diffusely to most of the parenchyma, and in places was focal, forming microabscesses. In the thyroid gland, most follicles were enlarged and filled with colloid. Pathomorphological examination of the thyroid gland: macrofollicular colloid goiter. In the presence of background diseases of the endocrine system, such as hyperthyroidism and diabetes mellitus in particular, patients with inflammatory diseases of the salivary gland (sialoadenitis) should be classified as a risk group, since in some cases they require early hospitalization in the maxillofacial surgery department.

Key words: salivary gland, sialadenitis, endocrine glands, thyroid gland, pancreas, diabetes mellitus, acute purulent inflammation, morphology.

М.Г. Скікевич, Л.І. Волошина, І.І. Старченко, К.П. Локес, Д.С. Аветіков КЛІНІКО-МОРФОЛОГІЧНА ХАРАКТЕРИСТИКА ПЕРЕБІГУ ГНІЙНОГО СІАЛОАДЕНІТУ НА ТЛІ ЕНДОКРИННОЇ ПАТОЛОГІЇ

Сіалоаденіт є досить поширеною патологією в практиці стоматологів. У хворих на цукровий діабет хвороба часто діагностується вперше в хірургічній клініці; діагностується сіалоаденіт, а при декомпенсації ендокринної системи часто спостерігається септичний стан. У померлих пацієнтів клінічно виявили гострий паротит з утворенням абсцесів. Мікроскопічно: наявність ясного клітинного запального інфільтрату з переважанням нейтрофільних лейкоцитів. Запальний інфільтрат дифузно поширювався на більшу частину паренхіми, місцями був вогнищевим, утворюючи мікроабсцеси. У щитовидній залозі більшість фолікулів були збільшені та заповнені колоїдом. Патоморфологічне дослідження щитовидної залози: макрофолікулярний колоїдний зоб. За наявності фонових захворювань ендокринної системи, зокрема гіпертиреозу та цукрового діабету, до групи ризику слід віднести хворих із запальними захворюваннями слинних залоз, оскільки вони потребують ранньої госпіталізації у відділення щелепно-лицевої хірургії.

Ключові слова: слинна залоза, сіалоаденіт, залози внутрішньої секреції, щитовидна залоза, підшлункова залоза, цукровий діабет, гостре гнійне запалення, морфологія.

The work is a fragment of the research project "Algorithm of complex treatment of inflammatory processes and prevention of the formation of pathological scars of the scalp and neck after planned and urgent surgical interventions", state registration No. 0124U000093 and "Integrative approach to rehabilitation of patients with dental and jaw anomalies and deformations", state registration No. 0122U202088.

The salivary glands (SG) are very important in the human body. They produce saliva, biologically active substances, and maintain the homeostasis of the oral cavity and gastrointestinal tract. The chemical and physical properties of saliva change dynamically in the course of physiological and pathophysiological processes [1, 2, 3].

The list of SG diseases is quite extensive. It contains malformations, traumatic injuries, inflammatory processes of both viral and bacterial nature, dystrophic lesions, salivary stone disease, as well as benign and malignant neoplasms [4, 5].

At the dentist's appointment, patients with pathology of large SG make up 11.7 % of the total number of patients, while inflammatory pathology of SG is more often diagnosed. Patients with acute and chronic sialadenitis range from 42.0 % to 54.4 %, sialadenosis accounts for 6 %–12.2 % of non-tumor pathology of SG.

Patients with salivary gland diseases make up 2.3–5.2 % of the total number of people who were hospitalized during the year in specialized inpatient departments [9, 12]. At the same time, diseases of the salivary glands are rarely cause of death. The risk of an adverse outcome of inflammatory diseases of the salivary glands increases significantly in the presence of concomitant diseases, including diabetes mellitus [6, 7, 10].

Diabetes mellitus (DM) is the most common endocrine disease. Numerous clinical and epidemiological studies conducted in recent decades have established a close relationship between both types (DM) and thyroid diseases (thyroid diseases).

Changes in the amount and viscosity of saliva are recorded mainly in endocrine-metabolic diseases. In this regard, diabetes occupies one of the first places. The occurrence of sialadenitis is stimulated by local

causes that contribute to the development of the lymphogenic route of infection and ascending infection in the parotid gland. Such factors include smoking, poor oral hygiene, periodontal disease, increased importance of anaerobic flora of the oral cavity, etc.

The purpose of the study was to establish the features of the clinical course of purulent sialadenitis against the background of a combination of endocrine pathology and to study the morphological features of the architectonics of the parotid gland, thyroid gland and lungs.

Material and methods. For the period from 2020 to 2024, five patients with sialoadenitis were diagnosed on the background of concomitant endocrine pathology in the Department of Maxillofacial Surgery in the Poltava Regional Clinical Hospital.

Patients with inflammatory diseases of the salivary glands upon admission to the maxillofacial department of the Poltava Regional Clinical Hospital were examined urgently: clinically, in the laboratory (clinical blood test, urine, biochemical blood test, coagulogram, blood group, blood glucose level), electrocardiogram, ultrasound of the parotid salivary glands, computed tomography if necessary. During the stay in the maxillofacial department, the volume of the affected parotid salivary gland, the characteristics of blood circulation were determined with the help of ultrasound; the size and echostructure of the thyroid gland. 5 patients were examined by consultants: an urgent therapist, an endocrinologist, a resuscitator, a cardiologist and other specialists.

The material for the pathoanatomical examination was collected by autopsy from 3 organs: parotid salivary glands, thyroid glands and lungs in 2 pieces. The study was conducted at Poltava State Medical University at the Department of Pathological Anatomy and Forensic Medicine. Samples of the material of the parotid gland and other organs were recorded in a 10 % solution of neutral formalin. Paraffin blocks were made, from which thin sections were obtained. Semi-thin sections were made from the blocks, which were stained with hematoxylin and eosin. The study of micropreparations was carried out using a light microscope: Obj.10^x, ok. 10^x.

Results of the study and their discussion. In the presence of this pathology, patients were hospitalized with complaints of swelling of the parotid salivary gland, which was accompanied by dryness in the oral cavity, pain when swallowing, weakness, and deterioration of general well-being. From the anamnesis of patient P., who was hospitalized, it is known that the disease progressed gradually, the state of health deteriorated significantly about 4 days ago, when swelling of the legs, nasal voice appeared, body temperature ranged from low-grade to high. He was diagnosed with type 1 diabetes mellitus three years before seeking treatment in the Department of Maxillofacial Surgery. The patient noted gradual weight loss.

Diagnosis at hospitalization: acute sialadenitis of the left parotid salivary gland. The patient was examined clinically and instrumentally in full. According to the results of spiral computed tomography, signs of a neoplasm were found at the level of the angle of the lower jaw on the left; multifocal lung lesions (abscesses); lymphadenopathy of the neck and mediastinum; significant enlargement of the thyroid gland.

Clinical blood test: RBC – 4.04*10¹² l; HGB – 115 g/l; ESR – 28 mm/h;

WBC – 15.66*10⁹/l;

leukocyte formula: band-nuclear leukocytes – 10 %;

NEUT segmented – 75 %; EO – 2; LYM – 13 %.

Blood glucose – 12.1 mmol/l.

Biochemical blood test: total protein – 52.9 g/l;

total bilirubin – 19.4 μmol/l; direct – 12.1 μmol/l; indirect – 7.3 μmol/l; creatinine – 7 μmol/l; urea – 5.3 μmol/l; ALT – 17.6 U/l; AST – 13.4 U/l; amylase – 123 U/l.

During ultrasound examination, the structure of the thyroid gland is isoechogenic, heterogeneous due to multiple hypoechoic areas up to 2 mm in size. The capsule is not pronounced. Isthmus – 1.5 cm. Lymph nodes are located on the lateral surface of the neck.

Right lobe: volume – 40.9 cm³; 4.7*3.5*5.3*0.47

Left lobe; volume – 31.2 cm³; 4.2*3.3*4.8*0.47

In the gland, blood flow has not increased.

In the projection of the left parotid salivary gland, the formation of a hydrophilic, cellular structure of 5.0 * 3.4 cm is localized, an increase in blood flow is not observed.

The patient received full treatment (antibiotic therapy, anti-inflammatory drugs, analgesics, infusion therapy) aimed at supporting the activity of vital organs and systems and etiopathogenetic in relation to the underlying disease. However, the therapeutic measures carried out did not achieve the desired effect. The patient died 3 days after hospitalization.

Final clinical diagnosis: acute sialadenitis of the left parotid SG. Bilateral polysegmental abscess pneumonia. Sepsis. Secondary dyshormonal cardiomyopathy, sinus tachycardia. Cachexia against the background of progressive hyperthyroidism.

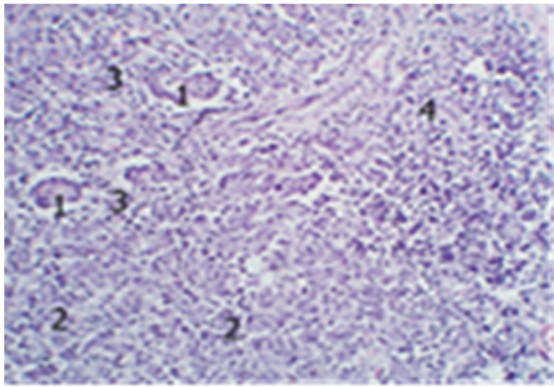


Fig. 1. Structure of the left parotid salivary gland. Micropreparation. Staining with hematoxylin and eosin. Rev.10x, approx. 10x. 1 – intralobular ducts; 2 – terminal departments; 3 – diffuse inflammatory infiltration; 4 – focal inflammatory infiltration.

leukocytes and macrophages, individual interalveolar septa were destroyed, some, on the contrary, were markedly thickened. The blood vessels were of considerable fullness of blood, and in the immediate vicinity of them there were quite often clusters of siderophages (Fig. 3). The presence of the latter, as you know, indicates the presence of pulmonary heart failure during life, which could be a consequence of dyshormonal cardiomyopathy.

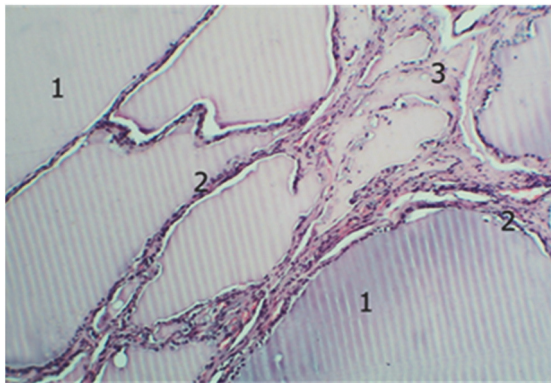


Fig. 2. Structure of the thyroid gland. Micropreparation. Staining with hematoxylin and eosin. Rev.10x, approx. 10x. 1 – follicles filled with colloid; 2 – follicular epithelium; 3 – stroma of the gland.

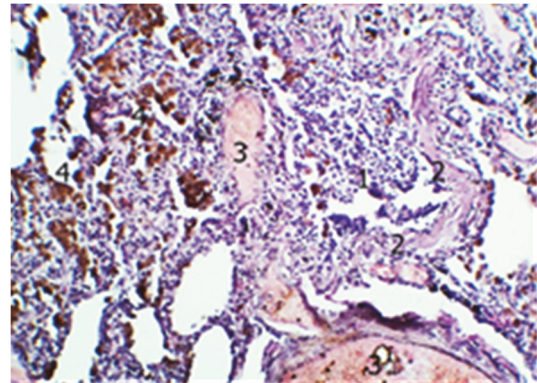


Fig. 3. Structure of the lungs. Micropreparation. Staining with hematoxylin and eosin. Rev.10x, approx. 10x. 1 – cellular inflammatory infiltration of the lumen of the alveoli; 2 – interalveolar membranes; 3 – blood vessels with fullness of blood; 4 – siderophages

On the part of other organs and systems, changes inherent in intoxication and type 1 diabetes mellitus were detected.

The totality of the data obtained during the pathomorphological examination made it possible to formulate a pathological diagnosis [6, 8, 11]. Underlying disease: Acute left-sided sialadenitis with abscess formation. Underlying disease: diabetes mellitus. Diffuse macrofollicular colloidal goiter. Clinical classification of the size of the thyroid gland (goiter) –stage 2.

Complications of the underlying disease: Cachexia. Sepsis, septicemia (culture: *Klebsiella pneumoniae*, *Staphylococcus aureus*), multiple lung abscesses, septic spleen (weight 400 g). Bilateral hydrothorax (500 mL). Cerebral edema. Pulmonary edema. Venous plethora and parenchymal dystrophy of internal organs.

The immediate cause of death of the patient should be considered intoxication. The final clinical and pathological diagnoses coincided.

Therefore, the establishment of the underlying disease and its complications during the patient's stay in hospital treatment did not cause difficulties. At the same time, late hospitalization should be noted. It took place at a stage when the patient was already in the midst of generalization of the inflammatory process.

The severity of the underlying disease, the rapid development of complications were due to the presence of a combined background pathology – diabetes mellitus and diffuse macrofollicular colloidal goiter.

It has been proven that the presence of diabetes mellitus as an underlying disease contributes to a severe, sometimes atypical course of diseases based on purulent inflammatory processes [4, 9, 10]. There is also evidence in the literature of decreased immunity in patients with hyperthyroidism [7, 9, 11]. Immunological reactivity in diabetes changes, and this leaves an imprint on the relationship between the infectious agent and the microorganism.

Mortality in the development of abscesses and cellulitis in patients with diabetes is in the range of 10–15 % of all patients, which is 3–4 times higher than mortality in a similar age group of patients without diabetes. Among patients with purulent mumps, diabetes mellitus occurs in up to 60 % of cases.

When the patient does not know that he has diabetes, or due to the severity of the condition, it is difficult to collect anamnesis, the surgeon finds himself in a difficult position. In such situations, the diabetic alertness of the doctor helps.

In the treatment of purulent foci in soft tissues, a wide dissection, evacuation of purulent masses, careful revision of cavities, drainage of pockets and leaks are recommended. Even the serious condition of the patient cannot be a contraindication for radical surgical debridement of the wound with necrectomy and drainage of the purulent focus.

The effect of conservative treatment of sialadenitis is insufficient often. There is a tendency to frequent exacerbations of the chronic process and progression of the inflammatory process in the SG. This course of the disease may require surgical intervention. Patients who have inflammatory pathology of the salivary glands against the background of diseases of the endocrine system should be considered a special risk group. They are shown timely inpatient surgical treatment of inflammatory diseases of the SG. This will avoid complications that can threaten the lives of patients.

Conclusions

1. It has been found that in about 20 % of all patients with diabetes mellitus, the disease is first diagnosed in a surgical clinic. The severity of the clinical manifestations of surgical infection and the approach to its treatment are largely determined by the degree of decompensation and the severity of late complications of diabetes.

2. Correction of carbohydrate metabolism consists in transferring patients to insulin treatment and regular determination of glycemic levels.

3. The inflammatory process causes complex hormonal and metabolic reactions in the body has been confirmed.

4. Patients with diabetes are more often diagnosed with a septic condition. The development of sepsis in patients causes decompensation of diabetes mellitus and the development of a “mutual burden syndrome”.

5. Thyrotoxicosis and diabetes mellitus are most likely combined due to a partial coincidence of etiopathogenetic mechanisms in the occurrence and development of each of the diseases.

6. We have good results of conservative treatment of SG in dental clinics. In the presence of underlying diseases of the endocrine system patients with inflammatory diseases of SG should be classified as at risk, because they require early hospitalization in the maxillofacial surgery department.

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