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Main Diagnostic Aspects in Pathological Conditions of the Salivary Glands of Different Genesis

Jumaev L.R., Allaeva A.N., Pulatova Sh.K.

Bukhara State Medical Institute
Department of Surgical Dentistry

Abstract: *Currently, despite the progressive development of surgical dentistry and maxillofacial surgery, the problem of diagnosing inflammatory diseases of the major salivary glands (SG) is still relevant._According to numerous data of foreign and domestic researchers, medical errors in the diagnosis of sialadenitis reach 70%, in the future they lead to the development of various complications. This situation can be explained by the fact that various SF diseases have similar clinical symptoms, and differential diagnosis requires extensive clinical experience and special equipment.*

Key words: *inflammatory diseases of the salivary glands, sialography, hyposalivation, xerostomia, cytological studies*

Relevance. Differential diagnosis of diseases united by a common symptom of hyposalivation is quite complicated, primarily due to a variety of reasons affecting the regulatory processes of salivation. As a rule, the salivary glands are affected a second time against the background of diseases of internal organs, and early signs of pathology of the salivary glands remain unnoticed for a long time [7]. Violations of the function of the salivary glands quite often develop against the background of endocrine pathology [11, 12, 3].

The use of general clinical research methods related to general methods, such as questioning, examination, palpation, laboratory research methods are a simple and sufficiently informative diagnostic method that helps to determine not only the presence of a pathological process, but also a number of concomitant diseases.

Private methods can help in establishing the final diagnosis. These include: probing of the excretory ducts, sialometry, overview radiography of the pancreas, sialography, cytological studies of the secretion of the pancreas.

The goal is to determine the most informative and accessible methods of examination of patients with various diseases of the salivary glands based on a thorough analysis of the specialized literature.

Analyzing data for 20 years, Shchipsky A.V. et al. (2014), showed that at the stage of preliminary diagnosis, the frequency of diagnostic errors in diseases of the salivary glands is 70-80%. The reason for this in most cases is that the doctors of the district level do not know the methods of diagnosis and treatment of these diseases. As one of the opportunities to improve the quality of diagnosis of diseases of the pancreas, they have created an application system that can bring the experience of leading specialists closer to each doctor. For this purpose, an automated system for differential diagnosis of chronic diseases of the salivary glands "Sialodiagnostics-2000" was created at the Department of Maxillofacial Traumatology of the Moscow State Medical and

Dental University [35]. It is an intelligent expert software product for complex differential diagnosis of sialodochitis, salivary stone disease, Sjogren's syndrome, tumors of the salivary glands, parenchymal and interstitial sialodenitis. The program takes into account: anamnesis, previous and concomitant diseases, local changes, data from sialosonography, sialometry, cytological examination of salivary gland secretions, clinical and biochemical blood analysis, immunography data, survey radiography, conventional and digital subtraction sialography, dynamic sialoscintigraphy, computer sialotomography, biopsy of small salivary glands. The program runs on a standard Windows-based Pentium personal computer.

X-ray examination of salivary glands and their ducts is widely used for the purpose of topical diagnosis of concretions, clarification of the structure of the gland, patency of the ducts, etc. Contrast radiography (sialography) makes it possible to determine, in addition to the state of large and small ducts of the salivary glands, morphological changes in the parenchyma of the gland and the degree of violation of their functional activity. So, with mixed tumors of the salivary glands, sialography allows you to establish the presence of filling defects due to the displacement of small and large ducts of the gland by the neoplasm, which are located on its surface. At the same time, the ducts have a normal structure and retain a consistent branching. With malignant neoplasms on sialograms in the preserved part of the gland, the ducts are traced and have the right direction, however, in tissues infiltrated by the tumor, the contours of the ducts are indistinct, often end blindly and break off. At the location of the tumor, the defect of filling the gland is clearly determined with a significant accumulation of contrast agent in the form of spots with uneven contours at the site of the defect [5].

Sialography allows you to obtain data on the state of the gland and its ducts (morphological changes in the parenchyma — the appearance of cavities, tumor—like formations, expansion or narrowing of the ducts, etc.), and by the rate of contrast removal - to judge the functional ability of the gland.

For a more detailed study of the submandibular salivary gland, a method of so-called double contrasting is proposed. Its essence lies in the simultaneous introduction of iodolipol into the ducts of the submandibular salivary gland, and oxygen into the surrounding tissues in the submandibular region. The double contrast method makes it possible to identify pathological changes both in the gland itself and in the surrounding tissues.

CS in their activities reflect many pathological processes occurring in the body. These changes can manifest themselves in the form of the development of chronic sialadenitis or sialadenosis of the parotid or submandibular glands against the background of somatic disease [32, 29].

With a prolonged course of Sjogren's disease (BS), there is a progression of dental signs of the disease, as well as the development of lymphomas in the salivary glands in 13.8% of patients. In parallel with the increase of xerostomia, the defeat of the gastrointestinal tract, interstitial changes in the lungs, tubulointerstitial kidney damage with the development of chronic renal failure progresses, the frequency of peripheral nervous system damage increases. BS is characterized by a slow progression of glandular and extra-glandular manifestations of the disease (with the exception of patients with destructive forms of vasculitis). QMS is a prognostically unfavorable manifestation of BS: the 20–year survival rate of patients with BS with QMS is 41.9% compared to 81.3% of patients without QMS. SMC is associated with the ulcerative–necrotic form of destructive vasculitis and the development of lymphomas. Independent risk factors for death in BS are generalized lymphadenopathy, splenomegaly, cryoglobulinemic purpura, polyneuropathy, a significant increase in the parotid glands, anemia, cryoglobulinemia, thrombocytopenia, leukopenia and a decrease in C3/C4 complement fractions [9, 10].

It should be noted that for an objective assessment of clinical and laboratory manifestations and the degree of progression of BS, it is necessary to include patients who meet strict criteria for autoimmune disease in scientific research, which will exclude patients with a similar symptom complex of dry mouth and eyes. In a long-term prospective study in patients with BS, there is a steady progression of glandular and extra-glandular signs with the development of lymphomas and life-threatening manifestations of the disease, which dictates the need for earlier diagnosis and the initiation of pathogenetically justified therapy immediately after diagnosis [8].

Significant differences in the frequency of salivary gland diseases observed in clinics, as well as in epidemiological studies, are due to the fact that different diagnostic criteria are used to identify these diseases. There are no generally accepted diagnostic criteria. The revised criteria are most often referred to in the literature by Japanese (1999), American (1994), the Institute of Rheumatology of the Russian Academy of Medical Sciences (2001) and European criteria (2002).

When diagnosing salivary stone disease in case of exacerbation of sialadenitis, it is necessary to detect a salivary stone. Radiation diagnostic methods are the most effective and affordable ways to detect concretion. Echosialodiagnostics of a stone is an uninformative method, especially in the presence of a small stone size [4, 22, 13].

To detect a decrease in lacrimation, the Schirmer test is used – a decrease in lacrimation after stimulation with ammonia (< 10 mm / 5 min.). The presence of dry keratoconjunctivitis is confirmed by staining the conjunctival and corneal epithelium with bengal pink and fluorescein, which makes it possible to identify surface erosions, foci of epithelial dystrophy, as well as a decrease in tear film rupture time on the cornea <10 s during biomicroscopy [26].

For the diagnosis of parenchymal sialadenitis, sialography is used – radiopaque examination of the salivary glands in order to identify anatomical changes. The test may not be used as a diagnostic criterion, but it is necessary to assess the degree of salivation reduction, for differential diagnosis and monitoring of therapy [34].

Ultrasound examination (ultrasound) and magnetic resonance imaging (MRI) are used in the diagnosis of lesions of the salivary glands in the pathology of this organ. Ultrasound of the salivary glands can be performed in patients in whom, for one reason or another, it is impossible to perform sialography in order to objectify pathological changes. Ultrasound examination should be more widely used for dynamic monitoring of the state of the salivary glands in diseases of the salivary glands, as it allows you to control changes occurring not only in the parenchyma, but also to visualize the state of intragastric lymph nodes (unlike sialography). MRI is the best method for diagnosing the development of tumor lesions in the lacrimal and salivary glands [1]. Given the high incidence of tumor lesions in the large salivary and lacrimal glands, ultrasound and MRI studies are necessary for these diseases. If the development of a tumor lesion is suspected during ultrasound and MRI in the large salivary and lacrimal glands, a biopsy of the glands should be performed for the purpose of histological confirmation of the diagnosis. It should be noted that changes in the salivary/lacrimal glands obtained during ultrasound and MRI at the stage of early development of a tumor lesion are indistinguishable from intense lymphoid infiltration in BS/SS. Given the high sensitivity of the methods, they are less informative compared to sialography in the differential diagnosis of lesions of the salivary glands in various conditions, since minimal changes in the parenchyma of the glands, similar to the changes observed in the pathology of LV, will be detected in other conditions (diabetes mellitus, various variants of xerostomia, etc.) [6, 33, 27, 30].

Doppler ultrasonography should be used to clarify the nature of internal organ damage: the presence of intra-abdominal lymphadenopathy, hepatosplenomegaly, pancreatitis, thyroiditis, cholelithiasis and urolithiasis [2, 23].

High-resolution computed tomography is used to diagnose lesions of the lungs and abdominal organs in the case of LV disease, necessarily in cases of the development of LPZ in these diseases [14].

L.R. Zhumaev, M.I. Azimov (2011) note that saliva is of great importance in maintaining the normal state of the initial gastrointestinal tract, into which leukocytes from peripheral blood vessels enter through diapedesis through the mucous membrane of the oral cavity and the epithelium of the gingival furrow. Basically (98-99%), these are neutrophil granulocytes and a small number of monocytes, medium and small lymphocytes. According to these authors, the number of leukocytes released in the oral cavity per day is about 1-1.2 million, and these cells with their phagocytic activity create a protective barrier and participate in the system of nonspecific local protection of the oral cavity. Using a test containing nitrosine tetrazolium in saliva neutrophils, the authors confirmed that saliva contains functionally complete leukocytes [15].

Pronounced bactericidal properties of oral fluid are provided by immunoglobulins, lysozyme, leukocytes and other enzymes [16]. Saliva contains protein, non-protein components, more than 50 enzymes, a large number of trace elements, specific and non-specific factors of antimicrobial and

antiviral protection. According to L.R. Zhumaev and Z.K. Rakhimova, among the specific factors of protection of the oral cavity in the oral fluid, immunoglobulin A is dominant, the second is M, formed locally. From 50 to 250 mg of immunoglobulin A is secreted with saliva per day, the content of IgG and IgM in saliva is significantly lower. The ratio of IdA: IgG: IgM in saliva is approximately 20:3:1 [17, 18].

It has been established that SIDA plays a significant role in antiviral and antibacterial immunity. It protects the body from the penetration of viruses into the blood, neutralizing them at the entrance gate of infection, prevents the attachment of bacteria to epithelial cells due to its antiadsorption properties [19].

Secretory immunoglobulins are known to play an important role in protecting the oral mucosa against bacteria and viruses. The amount of SIDA in saliva is a factor determining the possibility of occurrence and the nature of the course of pathological processes. In particular, SIDA prevents the development of inflammatory diseases of the mucous membrane, oral cavity. Deficiency of immunoglobulins leads to the occurrence of various diseases. I.Y. Karpuk (2018) notes that the frequency and severity of periodontitis and gingivitis increases with a lack of sIdA, the concentration of which normally in saliva is 0.14-0.55 g/l [21]. In periodontal diseases, the content of IDA in whole saliva may be increased, but the amount of saliva is not increased.

H.P. Kamilov and co-authors (2019) found that in saliva and blood serum in patients with periodontitis during treatment, the level of IdA is marked by significant variations: the average differences between the groups of healthy and sick could not be detected. The authors conclude that the intensity of salivation increases during treatment, and, in this regard, the amount of sIdA released with saliva per unit of time increases [20].

In the age period from 1-2 years to 11-12 years, the content of sIgG and SIDA in saliva increases several times. A significant stepwise increase in the concentration of immunoglobulins (sIdA, sIgG) was found in children aged 3-9 years. This is an ontogenetic pattern of the development of the local immune system of the oral cavity in children.

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