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Mucocele of Maxillary Sinuses

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Abstract: The study is devoted to such nosology as the mucocele of the maxillary sinuses. We will consider such issues as pathogenesis, differential diagnosis and the options for surgical treatment. We shall also share our own observations on this disease during the analysis of the clinical case which took place on the basis of the second hospital in the city of Belgorod. We consider it is necessary to provide the information on this topic for all doctors.

Key words: Maxillary sinuses mucocele, nosology, differential diagnosis, pathology, analysis

INTRODUCTION

Despite its relative rarity this pathology is a relevant one. At that practitioners may experience a number of difficulties in diagnosis and choosing a right method of maxillary sinuses mucocele surgical treatment. In this regard, we consider it is necessary to give an overview of the literature data on the subject.

METHODS

We analyzed the information on this disease in various periodicals. We also analyzed the clinical case with the description of tactical errors during a pre-hospital stage and the substantiation concerning the choice of this type of surgery. Also the analysis of interaction options was performed between otolaryngologists and the doctors of related specialties.

MAIN PART

According to Lalwani, mucocele is the result of the natural sinus fistula obstruction, leading to an accumulation of secretions and the gradual expansion of a sinus. Mironov believes that this is a rare disease, occurring among women and men. Men have it more often in the range between 15 and 25 years. Rarely mucoceles of the Paranasal Sinuses (PNS) is found among persons under 10 years of age and after 45 years of age. Most frequently SNP mucocele is localized in the frontal sinus (80% of cases) then in the lattice maze (about 15%) or at the border between them. Very rarely mucocele is localized in the sphenoid and maxillary sinuses. The mechanism of mucocele development is in the clogging of SNP junction followed by the excessive accumulation of continuously formed non-inflammatory secretion. Then, there is a moment when the fluid compressed in the sinus begins to make some pressure on the mucous membrane and bone walls of a sinus. Thus, the latter ones begin to atrophy, become thin and partly dissolve.

Clinical picture: Pukhlikov indicates that a cyst shaped elongation of a maxillary sinus is revealed by the gradual development of a facial asymmetry: the increase of swelling in the front and top wall, the displacement of an eyeball. Depending on the extension area, patients complain of headaches, pressure and pain in an affected sinus which is felt by an eye, teeth, nasal breathing difficulty through the appropriate half of a nose, due to the displacement of a lateral nasal wall to a septum.

Diagnostics: Thompson indicates in his study that Multislice Computed Tomography (MSCT) is important to diagnose this nosology. On MSCT, we can see the main anatomical structures of mucocele as well as its location relative to the adjacent bony structures that may provide an invaluable help in the planning of surgical intervention volume. Kao *et al*. (2006) believes that MSCT may show a homogeneous mass lesion of a certain diameter. Bone destruction is not a characteristic feature of mucocele but we may observe the expansion and reconfiguration of a sinus. According to Lee *et al*. (2009), Magnetic Resonance Imaging (MRI) is a more informative method of research to determine mucocele relations with adjacent tissues and allows to distinguish it from other soft tissue tumors. The signal intensity in T1WI and T2WI modes depends on the viscosity of a cyst contents. Also Kao (2006) informs us that in T2WI mode mucocele is characterized by a hyperintense signal due to a high water content. Over time, the intensity may be reduced due to the gradual compression of mucocele content. Unlike T2WI mode, T1WIs has an initially low signal

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intensity but over time at the absorption of water and protein concentration increase the viscosity of mucocele contents and a signal becomes from an izointensive a hyperintensive one.

From the observations by Obeso *et al*. (2009) and Fukuda *et al*. (2010) one may conclude that a histological study allows to differentiate this pathology with cancer and other diseases of the maxillary sinuses. Histologically mucocele of accessory sinuses have the signs of mucosa within the upper respiratory tract. At that a cyst membrane consists of a single-layer, multi-row, ciliated, columnar epithelium. Although, metaplastic changes are rare, the signs of squamous metaplasia may be observed during a chronic process. Also, the formation of bone tissue in the area adjoining to the cyst epithelium is possible. These research methods may help to differentiate mucocele from cholesteatoma, hematosinus, the proliferation of fibrous or granulation tissue. We may also identify the tissues related to a central nervous system at intracranial hernias.

Differential diagnosis: Pukhlikov believes that the diseases which have a number of similar clinical signs with the paranasal sinus mucocele are presented primarily by cerebral hernia, malignant tumors and inflammatory diseases. So, it is necessary to understand the difference between mucocele and retin cyst. Retin cyst is developed due to the blockage of a mucous gland output opening located in a maxillary sinus wall. The difference is in the lack of inner epithelial lining during mucocele.

PNS mucoceles have much in common with meningoceles (a type of tumor, its location, consistency). The diagnosis is facilitated by the fact that mucocele occurs most often in adults and among children no earlier than at the age of 10-11 years that is within the period when the accessory nasal cavities is the place of mucocele occurrence are formed to a greater or lesser extent. Encephaloceles being innate are found mainly in childhood when the sinuses, especially the frontal one are not developed yet. The symptoms characteristic of naso-orbital encephalocele, include the absence of tumor stress, the transmission of brain pulsations, the changes in tumor volume during breathing, the swelling of a tumor at straining or pressure, the symptoms of brain compression-slow pulse, convulsions, coma, etc., i.e., the signs indicating the relation of tumor with brain.

From the observations made by Kutursky and Likhachev, the acute sinusitis, unlike mucocele occur rapidly. During mucocele an acute course is observed only in cases of joining to the basic process of secondary infection. The cases especially difficult to diagnose are the cases with residual effects after a sinusitis. However, pain, noted in puncture and often remaining after the liquidation of periostitis and subperiosteal abscesses acute period as well as data of the case history the disease development after the common cold, flu, always evidence against mucoceles. Chronic sinusitis, bringing to perforation of bone wall and causing the development of subperiosteal process-congestive abscesses, sometimes give a slightly pronounced stretching of sinus walls.

The symptoms of the maxillary sinus malignant tumors are the following: muco-purulent discharges of dirty gray color mixed with blood, often malodorous, often nosebleeds, particularly strong during the anterior ethmoid artery arrosion; progressive unilateral nasal obstruction, the neuralgia of the trigeminal nerve first branch, anesthesia of its innervation areas. At the same time, the palpation of these areas causes severe pain, stuffy ears at the obstruction of a hearing tube mouth with a tumor. X-ray picture at malignant tumors is characterized not by stretching but by the destruction of sinus bone structures, the so-called invasive growth. Histological study will help us to perform an accurate diagnosis.

Despite, the fact that many cases of maxillary sinus mucoceles were described, however this nosology is rare. This often leads to errors in the diagnosis of this disease. We present a clinical case to confirm this.

The ENT department of the city hospital number 2 of the city of Belgorod was visited by the patient complaining of nasal breathing shortness, more on the right. He considers himself sick for a few years (about 3), when the clinic otolaryngologist recommended "to remove a polyp from the nose on the right". The onset of the disease was gradual. Thus, in 2012 he was observed by ENT department of the RCH on the issue of the nasal septum deformation. However, after the discharge the nasal breathing gradually worsened for a few years and therefore, the patient asked for help. In March of 2014, he was observed in the ENT department of the city of Belgorod hospital with the diagnosis of right maxillary sinus tumor (biopsy of the nasal cavity tumor on 03/13/14, the pieces of fibrous tissue with focal accumulation of glands, respiratory epithelium with squamous metaplasia). On 4/14/14, he was consulted in absentia at one of the central hospitals of the city of Moscow, conclusion: poor quality (?) tumor in the right i/m sinus. On May 27, 2014 he was consulted by ENT oncologist: there is no data concerning oncological process, the treatment in the general health network is advised. On 3/31/14, the patient was hospitalized in the ENT Department of the City Hospital No. 2 of the city of Belgorod. The biopsy of the right i/m sinus tumor, histological conclusion: cavernous hemangioma. The

patient was hospitalized in the ENT department of the Belgorod City Hospital No. 2 for a surgical treatment. An objective picture on admission: the shape of the external nose is not changed. Nasal breathing is difficult on both sides. Nasal mucosa is pale pink on both sides. In general nasal passage on right, subtotally obstructing a common nasal passage, a pale-pink formation is determined, resembling a polypoid tissue by consistency and type. This tumor is intimately adherent to the nasal septum, causing a sharp nasal septum shift to the left. The front ends of the lower nasal turbinates are not changed. Nasal discharges are absent. There following clinical diagnosis was set: cavernous hemangioma of the right maxillary sinus.

The patient underwent maxillary sinusotomy according to Denker method. Histological conclusion: the material is presented by fibrous tissue with chronic inflammation. One of the sides is covered by mucous membrane with an edema, covered with respiratory epithelium with the areas of hemorrhage. The following clinical diagnosis was set: mucocele of the right maxillary sinus.

SUMMARY

Despite the successfully performed biopsy and histological examination, the patient was wrongly diagnosed with cavernous hemangioma of the right maxillary sinus. As for the choice of a surgical treatment, the best option of maxillary sinus retin cyst removal is the endonasal method (the cyst is removed endoscopically through a natural fistula) or micro maxillary sinusotomy through the front wall of the maxillary sinus in the case of a cyst localization on the lateral wall.

These methods are not reasonable to apply during mucocele, since they do not allow you to remove this tumor entirely. Thus, it is advisable to perform a radical surgery according to Caldwell-Luc or Denker metod. In this case because of the process popularity, the operation was only possible with a good access to all floors of the nasal cavity. Therefore, it was decided to perform maxillary sinusotomy by Denker.

CONCLUSION

Mucoceles is a rare and tactically difficult pathology. The practitioners of different specialties should consider the likelihood of this condition development among patients be able to interpret the results of additional research methods correctly to compare them with a clinical picture for a timely and full medical assistance.

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