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Nasopatine Duct Cyst – Case Reports

Torbiel przewodu nosowo-podniebiennego – opis przypadków

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Abstract

Nasopatine duct cyst, called the incisive canal cyst, described in literature as a cystis canalis nasopalatini, cystis canalis incisivi, is the most common non-odontogenic cyst occurring in the oral cavity. It develops in the midline palate around the incisive foramen from debris of nasopatine duct’s epithelium. The etiology is unknown, although it is believed that some of the irritants may have an impact on its development. Cyst develops slowly destroying the alveolar bone of the maxilla. Typically, the process is asymptomatic and is detected accidentally on radiograph. Clinical diagnosis is made due to X-rays, but only histopathology can confirm the results. The treatment of choice is total enucleation of pathological changes. The following article presents a description of three cases of nasopatine duct cysts, which were diagnosed and treated at the Institute of Dentistry, Poznan University of Medical Sciences in the years 1996–2009. These cases are characteristic for typical exponents reported for incisive cyst, point at the need to diversify to other changes within the region and the need for proper treatment (Dent. Med. Probl. 2010, 47, 4, 508–512).

Key words: nasopatine duct cyst, non-odontogenic cyst, incisive canal cyst.

Streszczenie


Słowa kluczowe: torbiel przewodu nosowo-podniebiennego, torbiel niezębopochodna, torbiel kanału przysiecznego.

Nasopatine duct cyst is the most common non-odontogenic cyst occurring in oral cavity. It was first described by Meyer in 1914 [1, 2]. In the past, known as the fissured cyst, now according to the WHO classification is defined as a non-odontogenic, developmental, epithelial cyst of maxilla [3]. In most of cases, it develops in the midline of the palate near the incisive foramen [4].

In normal development, the nasopatine duct canal is converted into incisive canal by the disappearance of epithelium. Other cells in the form of epithelial cord can initiate the development of cysts. Mostly it is located in palatal part of canal or superficially [5]. Depending on whether the cyst was caused by palatal or nasal part of the canal, it is lined by stratified squamous or ciliated epit-
Nasopalatine Duct Cyst

Among all types of cysts diagnosed in dental surgery, a nasopalatine duct cyst is rare. Since 1960, the English-language literature has published only 468 case reports [8]. The aim of our study is to present three cases documented by the Institute of Dentistry, University of Medical Sciences in the years 1996–2009.

Case reports

Case 1

A 69-year-old man reported in 2004 because for the pain of the left maxillary central incisor. Patient's main complaint was discomfort caused by hot and cold food. Clinical examination detected a small protuberance in the median line of palate. The medical records showed that there was deep caries in this tooth one year before. Biological treatment of pulp was used as intermediate cover with calcium hydroxide: Life. This information and symptoms described in physical examination suggested that endodontic treatment should be given. Pulp vitality test was performed to confirm diagnosis. The test result was positive. The patient was referred for X-rays, which revealed a well-circumscribed radiolucency in the median line of palate (Fig. 1). Analysis of periodontal space shape aroused suspicion that the reason of this change was not odontogenic. After an examination by a dental surgeon, a presumptive diagnosis was: nasopalatine duct cyst. During the visit, anesthetic with Scandoneest of 3% (2 amp.) was made. The cyst was incised, purulent substance was evacuated and the rubber drain was placed. The doctor prescribed antibiotic Dalacin C (300 mg 3 × 1 caps) and the painkiller Ketonal Forte (100 mg 2 × 1 tabl.).

Fig. 1. Case 1. Well-circumscribed radiolucency in the median line of palate

Ryc. 1. Przypadek 1. Dobrze odgraniczone przejaśnienie w linii pośrodkowej podniebienia
On the next several visits, the change was rinsed by the solution of potassium permanganate and the drain was exchanged. When the pain disappeared and purulent substance was evacuated, the doctor performed the cyst enucleation. Infiltration anesthesia was made with Ubistesin 4%. Marginal incision was made and mucoperiosteal flap was prepared. After removal of the cyst sutures Safil 4.0 were laid. The uptaken samples were given for a histopathological examination, the result described the change as: „Fragments of fibrous wall of the cyst with markers of increased, chronic inflammation, covered with paraepidermal epithelium with the features of focal dysplasia“. Thus, it is confirmed that microscopic image corresponds to a clinical diagnosis. After removal of sutures and the four-week observation period after surgery, the treatment was considered as completed.

**Case 2**

A 44-year-old man came to the Department of Oral Surgery in year 2000 in order to extract the right third molar in mandible. His major complaint was an intense and lounged pain. Based on interview and clinical examination, the difficult eruption of wisdom tooth 48 with pericoronal inflammation (dentitio difficile dentis sapienti inferiori dextra, pericoronitis) was diagnosed. In order to illustrate the exact location and construction of the tooth roots and their relation to the lower alveolar nerve canal patient was referred to an X-ray laboratory for pantomographic radiograph. On the basis of radiograph, extraction was scheduled at the next visit as primarily an acute pericorononal inflammation should has been eliminated by rinsing solution of potassium permanganate and inserting a gauze with kamfenol and iodoform. Examinator, however concerned radiolucency on the radiograph around the roots of maxillary central incisors. To exclude a possible artifact occlusal radiograph was commissioned, which confirmed the presence of the lesion (Fig. 2). In the front part of palate, further tests were performed to rule out causes of odontogenic. Results of the pulp testing of the central incisors were consistent with vital pulp, which confirmed nonodontogenic origin of cyst. The patient was scheduled for surgery to excise the pathological lesion. Because of the hypertension, the patient was anesthetized with Scandonest 3% (2 amp.). After removal of the cyst, material has been taken for histopathological examination. The result is described as: "Fragments of fibrous connective tissue covered by (pavement) cuboidal dual-layer epithelium (cyst wall). This was consistent with a nasopalatine duct cyst diagnosis". After removal of sutures, and the further three-week period of clinical observation of treatment due to the radicalness, performed surgery was considered terminated.

**Case 3**

A 60-year-old woman was referred to Department of Oraf Surgery in 2009 because of swelling in the palate. The region of incisal papilla was tender to palpation. The mucous membrane of the normal color did not report the characteristics of inflammation. About 5 months earlier, the patient noticed a soft swelling in the palate that gradually become larger. The clinical examination estimated the size of swelling at 3 cm in diameter. On the basis of radiograph (Fig. 3) and results of the pulp testing, the palatal lesion was diagnosed as a naso-
Discussion

Diagnosing and differentiation of the nasopalatine duct cyst has to be made very carefully before making the final diagnosis. A presumptive diagnosis suggested on the base of the anamnesis and precise clinical examination has to be completed with the radiological examination in minimum two projections: periapical and occlusal. However, the only certain confirmation is a result of the histopathological examination. During the clinical examination, the differential diagnosing is very important. Mainly the nasopalatine duct cyst has to be differenced with the radicular cyst to avoid unnecessary endodontic treatment of vital and healthy teeth. For this purpose, the pulp vitality test, the percussion test and the analysis of shape and width of the periodontal space has to be performed. In case of the nasopalatine duct cyst, pulp of the neighboring teeth remains vital and the lamina dura of the periodontal fissure does not lose continuity. All the mentioned tests and analyses has to be performed when periapical granuloma of the upper incisors is suspected. It is very important accordingly to the modern endodontics, which says that most of the periapical granulomas remain 'not infected' because they are caused by the bacteria which are present only in the root canal. That fact implicates the treatment of this lesions, which is based on the antiseptic endodontic treatment without obligatory surgical removal of the periapical granulomas. During the interpretation of the X-ray, those pathological periapical lesions are most frequently suggested as the presumptive diagnosis. Situation like that is presented in described case 1.

In differential diagnosis the rare lesion – median palatal cyst, similar on the X-rays, should be also concerned. However, its etiology is connected with an inappropriate fusion of the maxillary processes and with an injection of the epithelial cells between them. As far as Francoli and Torres claim, diagnostic problems appear also during examination of smaller lesions (average size of the nasopalatine duct cyst is between 6 mm to 17 mm) because they can be similar to anatomical structures like the incisive foramen or widen to 6–8 mm incisive canal. On the other hand, the cyst can reach the size overcrossing 50 mm. The differential diagnosis should concern the supernumerary tooth appearing in this area – the mesiodens in the follicular cyst and also it should concern the primary cyst, the giant-cell granuloma, the ostitis with the palatal fistula and also naso – palatine and palatal – sinus connections.

As soon as the final diagnosis of the nasopalatine duct cyst is made, the lesion has to be surgically removed, as the literature recommends, not only because it is destroying the bone, but also a few malignant transformation are known. In English literature, there are a few cases of the squamous cell carcinoma which have developed as a result of the metaplasia of the epithelium which lines the cyst. Gardner observed characteristic symptoms of the cancer developing from the cyst. As the example, it can be a dynamic growth of the lesion, also a resorption of the roots which can be observed on the X-rays and changes in the sensitivity to touch of the upper lip. According to literature, a marsupialization is also a possible alternative treatment for some patients. It is recommended in the cases when the capsule of the cyst shows adhesions with the surrounding area which make it difficult to enucleate. Rounded incision should be made on the biggest circumference and then the cyst's lower wall with surrounding mucosa has to be removed. The procedure should be finished with inserting the sutures between the lining of the cyst and the mucosa of the oral cavity. According to some theories, if the lesion is asymptomatic and does not reach larger sizes, the surgical treatment is not necessary. But also they emphasize that the cyst has to be removed before prosthetic treatment in this area, because the chronic irritation can lead to inflammatory reaction. Considering all those facts, it seems that surgical treatment is the best way of treatment of the nasopalatine duct cyst because there are some evidenced cases of recurrence reaching from 0% up to 11%. According to Kimberly, in all collected by him 334 cases, only 7 recurrence were observed (2%). Hedin recommends regular control visits, including X-ray examination and pulp vitality tests of neighboring teeth, after the surgery during 3 years. In presented in this study cases, the four-week observation period after surgery was performed and then the treatment was considered as completed. However the total enucleation was performed in our all cases, the patients were informed that they...
were obligated to self-control and if any symptoms of recurrence would appear they had to come to clinic as soon as possible.

Another rare complication after a surgery which can be observed only in 10% of cases, is the paresthesia of the frontal part of the palate. It is caused by removing the part of the cyst’s wall which can be connected with the endings of the naso-palatine nerve [3].

Presented in this study cases confirm that the nasopalatine duct cyst can be asymptomatic (case 2) as well as can have typical symptoms described in the literature. There were only 3 patients with diagnosed nasopalatine duct cyst during 14 years, what shows how rarely this pathology appears. Although this does not let us to forget about the proper examination and also if it is necessary to use all the diagnostic sources and make a differential diagnosis to start in the right time, a good treatment to avoid dangerous complications.

References

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