SYNOVIAL CYST OF THE TEMPOROMANDIBULAR JOINT

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SUMMARY

Synovial cysts of the temporomandibular joint (TMJ) are benign, true cystic lesions. Their walls are lined by flattened or cuboidal cells of synovial origin. They contain gelatinous material – a secretion of the cells. The etiology is related to trauma and/or developmental disorder of TMJ. The differentiation includes salivary gland cysts, pharyngeal cysts of branchial origin and tumors of the preauricular area. Diagnostics consists of MR/CT imaging and histopathologic examination. Treatment focuses on complete or incomplete cyst excision. In this report, we describe a case of a 53-year-old female with a synovial cyst in the right TMJ area.

Keywords: temporomandibular joint, synovial cyst

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STRESZCZEŃIE


Słowa kluczowe: staw skroniowo-żuchowy, torbiel maziówkowa

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Introduction

Synovial cysts of the TMJ have been documented several times (Ali et al., 2006; Ansari et al., 2013; Bonacci et al., 1996; Deng et al., 2010; Farole et al., 1991; Heng-Kun et al., 2014; Leva rek et al., 2016; Mumert et al., 2012; Nahlieli et al., 2000; Spinzia et al., 2010).
They are usually present on the extensor surface of the wrist and to a lesser extent on the dorsal surface of the foot and lateral aspect of the knee (Ali et al., 2006) and intervertebral joint (Jankowski et al., 2012). They are benign cystic lesions lined by flattened or cuboidal cells of synovial origin. They contain gelatinous material. The etiology is not yet precisely known. Synovial cyst is apparently a result of trauma in the TMJ area or displacement and/or herniation of the synovial lining. Most of the cases have been observed in females (Ali et al., 2006; Levarek et al., 2016; Mumert et al., 2012; Silva et al., 2005; Spinzia et al., 2011; Steen et al., 2015; Takaku et al., 2001; Vera-Sirera et al., 2013; Wu et al., 2011; Zheng et al., 2015). The most common symptoms are swelling, pain caused by the auriculotemporal nerve compression, and tenderness of the TMJ region. (Ali et al., 2006; Ansari et al., 2013; Bonacci et al., 1996; Deng et al., 2010; Farole et al., 1991; Heng-Kun et al., 2014; Levarek et al., 2016; Mumert et al., 2012; Nahlieli et al., 2000; Partridge et al., 2016; Savolainen et al., 2013; Silva et al., 2005; Spinzia et al., 2011; Steen et al., 2015; Takaku et al., 2001; Vera-Sirera et al., 2013; Wu et al., 2011; Zheng et al., 2015).

Aim
The aim of the work is to present diagnostic and treatment methods of 53-years-old female with a synovial cyst in the right TMJ area.

Material and methods
Patients presentation
A 53-year-old woman, presented with painless, immovable prominence within the right TMJ region. The lesion appeared, a year after an injury of the right side of the face (resulting in a loss of consciousness). The patient’s past medical history included a thyroidectomy for Hashimoto’s thyroiditis. The woman was currently taking Euthyrox N 125. Physical examination showed normal mandibular range of motion, with no sound in the TMJ. There was no facial nerve paresis or paralysis.

CT examination revealed an irregular (Figures 1 and 2) hypodense lesion of size of 30 × 17 × 5 mm in the infratemporal fossa, along the bottom surface of the greater wing of the sphenoid bone, medially reaching the lateral pterygoid plate, about 6 mm from the condyloid process. There was no sign of bone loss. Lesion did not intensify after an injection of a contrast medium.

The site was approached under general anesthesia through a preauricular incision. Intraoperative examination showed fragments of a fibrous membrane containing the glandular epithelial cells with multilayer features, and a small cartilaginous lesion. The malignancy of the lesion was ruled out. The cyst was fragmentally removed and the wound healed uneventfully. The patient was discharged in good condition on the postoperative day 2. She was prescribed mechanotherapy of the TMJ which consisted in gradual opening of the jaw with the help of wooden spatula until a satisfactory mouth opening range was achieved.

Histopathologic examination showed a sclerosing fibroconnective tissue with vessels, nerves and mild chronic inflammation process. The lesion was not malignant. (Figure 3).
A follow-up MR examination one year later showed no recurrence in the TMJ region (Figures 4 and 5). However, there was a tumor derived from astrocytes found in the brain tissue, which was removed a few months later in a neurosurgery clinic.

Five years after the surgery, during a check-up, crepitation of the right TMJ and clicking in the left TMJ were noticed. There was no sound during laterotrusion, no intraoral or extraoral painful spots. The woman noticed jaw protrusion. The follow-up showed no pain when touched in the right TMJ area. No sign of damage to the facial nerve (Figures 6–8).

Discussion
In literature, synovial cysts are often identified with ganglion cysts (Ali et al., 2006; Bonacci et al., 1996; Levarek et al., 2016; Nahlieli et al., 2000; Partridge et al., 2016; Silva et al., 2005; Spinzia et al., 2011; Vera-Sirera et al., 2013; Wu et al., 2011).

A synovial cyst is a true cyst lined by synovial cells which contain gelatinous mass and might or might not communicate with the joint cavity. A ganglion cyst is lined by a fibrous connective tissue that does not communicate with the joint cavity. It is believed that synovial cysts as well as ganglion cysts occur as a result of trauma of the TMJ area. Furthermore, synovial cysts can occur as a result of an inflammatory process or displacement of the synovial lining. (Ali et al., 2006; Ansari et al., 2013; Bonacci et al., 1996; Deng et al., 2010; Farole et al., 1991; Heng-Kun et al., 2014; Levarek et al., 2016; Mumert et al., 2012; Nahlieli et al., 2000; Partridge et al., 2016; Savolainen et al., 2013; Silva et al., 2005; Spinzia et al., 2011; Steen et al., 2015; Takaku et al., 2001; Vera-Sirera et al., 2013; Wu et al., 2011; Zheng et al., 2015).

Patients usually present with swelling and tenderness of the TMJ region, especially during mouth opening (Ali et al., 2006; Ansari et al., 2013; Bonacci et al., 1996; Deng et al., 2010; Farole et al., 1991; Heng-Kun et al., 2014; Levarek et al., 2016; Mumert et al., 2012; Nahlieli et al., 2000; Partridge et al., 2016; Savolainen et al., 2013; Silva et al., 2005; Spinzia et al., 2011; Steen et al., 2015; Takaku et al., 2001; Vera-Sirera et al., 2013; Wu et al., 2011; Zheng et al., 2015).
SyNOVIAL CYST OF THE TEMPOROMANDIBULAR JOINT

Pain may be due to auriculotemporal nerve compression (Ali et al., 2006; Ansari et al., 2013; Levarek et al., 2016; Savolainen et al., 2013).

Figure 3. A fragment of articular cartilage and fibrous membrane of the cyst. H + E Stain. 100x magnification.

Figure 4. MRI – T1-Weighted Image. Frontal section. Follow-up MRI shows no presence of new lesions in the right side of TMJ area.

Figure 5. MRI – T2-Weighted Image. Frontal section. Follow-up MRI shows no presence of new lesions in the right side of TMJ area. Visible symmetry of both articular slits.

2013; Wu et al., 2011; Zheng et al., 2015).
Mumert et al., suggest symptoms of Bell’s palsy in certain cases of cysts (Mumert et al., 2012). Trismus is also likely to occur, along with the symptoms of tissue inflammation (Bonacci et al., 1996; Silva et al., 2005; Spinzia et al., 2011; Steen et al., 2015; Takaku et al., 2001; Wu et al., 2011).

In diagnostics we use CT/MR imaging. (Ali et al., 2006; Ansari et al., 2013; Bonacci et al., 1996; Deng et al., 2010; Farole et al., 1991; Heng-Kun et al., 2014; Levarek et al., 2016; Mumert et al., 2012; Nahlieli et al., 2000; Partridge et al., 2016; Savolainen et al., 2013; Silva et al., 2005; Spinzia et al., 2011; Takaku et al., 2001; Vera-Sirera et al., 2013; Wu et al., 2011; Zheng et al., 2015). We believe that MR is a better choice since it targets soft tissue. Some of the researchers have noted that lesions missed by CT scans were visible in MRI (Heng-Kun et al., 2014).

Ultrasonography is important in both: detecting the presence of lesion and distinguishing between synovial cyst (hypoechogenic lesions) and ganglion cyst (hypoechogenic lesions with hypechochogenic wall or nonechogenic) (Ali et al., 2006; Bonacci et al., 1996; Heng-Kun et al., 2014; Nahlieli et al., 2000; Savolainen et al., 2013; Spinzia et al., 2011; Steen et al., 2015; Takaku et al., 2001; Wu et al., 2011). In our opinion, this
method is not sufficient enough to give a definitive diagnosis.

TMJ arthroscopy (Bonacci et al., 1996; Farole et al., 1991; Takaku et al., 2001) is seldom performed due to invasiveness of the examination. Arthroscopic synovial biopsy with TMJ rinsed with saline and Ringer’s solution helps with defining whether cyst cavity communicates with joint cavity (Bonacci et al., 1996). This method might be helpful in taking samples for histopathologic examination.

Histopathologic examination is the most reliable tool to give a definitive diagnosis (Levarek et al., 2016). Fine-needle biopsy and (Deng et al., 2010; Savolainen et al., 2013; Silva et al., 2005; Spinzia et al., 2011; Vera-Sirera et al., 2013) intrasurgical histopathologic examination are used in this case. In synovial cysts there are synoviocytes which do not appear in pseudo-cyst’s capsule (Bonacci et al., 1996; Farole et al., 1991; Partridge et al., 2016).

Conclusions
Our treatment of choice would be a complete, surgical cyst excision. In case of difficulties due to location of the cyst, we suggest fragmental cyst excision. In literature, there were some cases of incomplete incision of lesions or injecting hydrocortisone into the cyst in order to decrease inflammation and secretion of synovial cells (Heng-Kun et al., 2014; Silva et al., 2005; Spinzia et al., 2011.) The overall prognosis is good (Spinzia et al., 2011). Each patient with swelling or pain in the TMJ area should be referred to a maxillofacial surgeon.
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