Cervical branchial cleft cysts are relatively common congenital neck anomalies. The typical clinical picture of the above-mentioned is the presence of a painless, slowly growing neck tumor located along the anterior edge of the sternocleidomastoid muscle. These tumors usually do not cause functional disorders, although very large cysts might cause episodes of apnea, breathing disorders, coughing, and dysphagia, due to the compression of the upper respiratory tract. In case of infection one may observe secondary symptoms of inflammation with the development of an abscess or fistulas leading towards diagnostic difficulties. In such cases they are often erroneously regarded as a recurrent abscess (1). In most cases fistulas are located in the skin of the lower part of the neck, running upwards along the anterior edge of the sternocleidomastoid muscle, and medially to the carotid bifurcation and posterolateral part of the throat, just below the palatine tonsils.
Cervical branchial cleft cysts should be differentiated from lipomas, hygromas, epidermoid cysts, hematomas, lymphangiomas, lymphadenitis, and metastatic papillary carcinoma of the thyroid gland (2).

The aim of the study was to present current views concerning the diagnosis and treatment of cervical branchial cleft cysts.

**MATERIAL AND METHODS**

Data and histopathological results obtained from 49 patients (18 women and 31 men) admitted to the Department of Cranio-Maxillofacial Surgery, Medical University in Łódź, due to lateral cervical cysts during the period between 2005 and 2009 were subject to retrospective analysis. Average patient age amounted to 31.2 years (ranging between 16 and 52 years). Most of the investigated patients were in their third decade of life. In case of 45 patients we additionally performed cervical ultrasound examinations, in 15- fine-needle aspiration biopsies, in 2- magnetic resonance imaging, and in 3- computed tomography. All patients were subject to surgical intervention. None of the patients underwent previous surgery. In case of 15 patients the surgical procedure was postponed, due to the presence of cystic inflammation.

**RESULTS**

One of the study group patients was diagnosed with bilateral cervical branchial cleft cyst presence. Family history of the above-mentioned was not recorded. More lesions were observed on the right side of the neck (29/49 cases). In case of all study group patients the tumors were excised by means of the approach along the anterior edge of the sternocleidomastoid muscle under general anesthesia. Bailey’s classification was used to determine the location of the cyst. Type I was diagnosed in 17 patients (superficial, along the anterior edge of the sternocleidomastoid muscle), type II in 29 patients (the cyst is located on large vessels of the neck, often adhering to the internal jugular vein), type III in two patients (lateral part of the throat and base of the skull, antero-inferiorly to the bifurcation of the carotid arteries), and type IV in one patient (the cyst is located on the lateral wall of the throat). In case of four patients a drain was maintained for a period of 48 hours after surgery. None of the histopathological examination results showed signs of malignancy. Most of the cysts were lined with stratified squamous epithelium. Average hospitalization was 5.8 days (ranging between 3 and 13 days).

Postoperative complications were observed in two patients, including postoperative wound inflammation, and partial wound healing by granulation. Neurological complications were observed in four patients: three following hypoglossal nerve damage, and in one after superior laryngeal nerve damage. Symptoms regressed during the initial three months. Previous history of infection did not affect the radicalism of surgery. Initial diagnosis on the basis of the clinical and radiological examinations, as well as biopsies was confirmed in 48/49 cases (98%).

**DISCUSSION**

The bronchogenic theory is the most commonly recognized theory, explaining the origin of the cervical lateral cysts, being associated with the incomplete atrophy of the congenital cervical sinus, and branchial clefts developing between the 4-th and 6-th week of embryonal life. According to yet another hypothesis cervical lateral cysts develop from the cystic disorders of the parotid glands or branchial clefts penetrating towards the cervical lymph nodes (2). Anomalies of the second branchial cleft are most often observed.

The above-mentioned are most frequently diagnosed between the second and fourth decades of life, when they enlarge as a result of infection. According to some authors they are more often observed in female patients. Their family history is insignificant. However, in 10% of cases their bilateral character is observed (2, 3). Frequently, the cyst is situated on the carotid vessels’ sheath, being located under the sternocleidomastoid muscle, medi ally to its anterior border. As the cyst grows its wall can reach the throat, base of the skull, and carotid vessels, being located between the hypoglossal nerve, posterior belly of the biventer muscle, as well as external and internal carotid arteries. The cyst can adhere to the
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submandibular gland. Most of the cysts may be shifted in relation to the skin and substrates (3, 4, 5).

The typical ultrasound image shows a well-demarcated cystic lesion surrounded by a capsule. The ultrasound examination presents 100% sensitivity and 96% specificity, thus, should be performed in addition to other examinations (6).

Diagnostic difficulties might arise in case of coexisting infection, or history of an inflammatory process. In such cases, patients should be subject to fine-needle aspiration biopsy (BAC) (1, 3, 7, 8). Additionally, the precise assessment of the extent of the lesion and relation to neighbouring structures will not always be possible following ultrasonography. Thus, in case of large cysts or ambiguous ultrasound and BAC results, computed tomography or magnetic resonance imaging should be recommended (3).

The method of choice considering treatment of cervical lateral cysts is their surgical excision from the epidermal access. The typical incision runs along the anterior edge of the sternocleidomastoid muscle or laterally from the point of greatest prominence to the anterior edge of the sternocleidomastoid muscle. The incision is usually at least 4cm long. One should be very careful, since the cystic wall often adheres to the carotid artery or internal jugular vein. Good illumination and magnification of the surgical field is very important. Apart from the complications presented in the study material one may also observe intraoperative complications, such as injury to the internal jugular vein, as well as postoperative complications, such as serous fluid accumulation, hematoma development, and skin fistulae (2).

The endoscopic technique creates new possibilities, where the incision and scar can be limited to 2 cm. Endoscopic surgery, as compared to classical surgery reduces pain and swelling, shortens hospitalization, positively affecting the well-being of the patient after surgery, and thus, limiting the risk of complications. In each method, it is important to completely remove the cyst, as in case of leaving internal layer cystic remnants the probability of relapse increases. Final diagnosis is based on the histopathological result, which shows the presence of stratified squamous epithelium, sometimes with ciliated cylindrical cells (9). The rate of cured patients after one cervical lateral cystic operation, according to different authors ranged between 90.3% and 99% (4, 5).

It is important to exclude the presence of squamous cancer cells in the wall of the cervical cysts. Their diagnosis should lead towards suspicion of metastasis from Waldeyer’s ring to cervical lymph nodes. In such cases, prophylactic ipsilateral tonsillectomy is recommended. When the histopathological result is negative it is recommended to implement the procedure as in case of metastasis of unknown primary lesion: lymph nodes surgery followed by radiation if necessary (10, 11).

CONCLUSIONS

Initial diagnosis of a cervical branchial cleft cyst on the basis of the clinical examination should always be confirmed by means of ultrasonography. In case of suspicion of a coexisting infection, fine-needle aspiration biopsy under ultrasound control is recommended. If there is concern that the lateral neck lesion is not a branchial cyst or its dimension is large, computed tomography of the neck or magnetic resonance should be performed. Complete excision of the tumor under general anesthesia is the treatment of choice, being associated with the low risk of local postoperative complications. Due to the low traumatic index and better esthetic effect, the endoscopic method seems beneficial.

REFERENCES


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