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Epidermoid Cysts – A Wide Spectrum of Clinical Presentation and Successful Treatment by Surgery: A Retrospective 10-Year Analysis and Literature Review

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Abstract

Epidermoid cysts are common benign lesions of hair-bearing, and less often glabrous skin. They can also occur in oral mucosa and internal organs. In case of cutaneous lesions, an epidermal punctum is a clinical diagnostic hallmark. The clinical presentation is variable leading to some differential diagnoses. Diagnosis of epidermoid cysts needs histopathological confirmation – not only of the potential of malignant transformation. The treatment of choice is surgery. We report a retrospective analysis of 2159 epidermoid cysts treated surgically. Most of the cases can be performed under local anaesthesia. The complication rate of 2.2% is low. To avoid relapses, the cyst wall has to be removed completely. Rare genetic disorders with multiple cysts are Gardner and Lowe syndrome.

Introduction

Epidermoid cysts are slow-growing benign subcutaneous lesions imposing as nodules or tumours. The lesions can either be congenital or acquired. Histologically, the cysts are lined by stratified epithelium and filled with a keratinous mass. An epidermal punctum is a hallmark of clinical diagnosis. Young males are the most affected subgroup, but any age and gender might be involved [1].

These cysts can develop in any area of the body with about 7% occurring in the head-and-neck region. Extracutaneous development has been observed in the oral cavity and intraosseous, and in various internal organs including the cerebrum [2][3][4]. Secondary infection and inflammation due to wall rupture are possible complications. The cyst wall tends to become thicker after that what implies complete surgical excision [5].

Giant epidermoid cysts > 5 cm in diameter can cause problems, especially in the head-and-neck region but also in other regions such as the sole [6-8]. Malignant transformation of an epidermoid cyst is a rare event but possible. Squamous cell carcinoma, basal cell carcinoma, and Merkel cell carcinoma have been observed [9][10][11].

Material and Methods

We analysed the files of the Department of Dermatology and Allergology, Academic Teaching Hospital of Dresden, during the years 2007-2017. We focused on those patients who were treated surgically. We analysed the anatomical distribution, the occurrence of giant epidermoid cysts defined by a diameter of more than 5 cm, complications and surgical outcome.

Results

We identified 2159 tumours in 1753 patients. The sex ratio was 2.9:1 for males to females. The mean age was 32.5 years (SD ± 18.3 years; range 16 to 83 years). The major localizations were head-and-neck region (73.4%), trunk (15.1%), extremities (9.8%), and genitals (1.7%).

Inflammation and or infection were noted in 16.8%. In these cases, antibiotic drug therapy was performed before surgery. The rupture was noted histologically in 23.7%. Giant epidermoid cysts were observed in 2.1%.

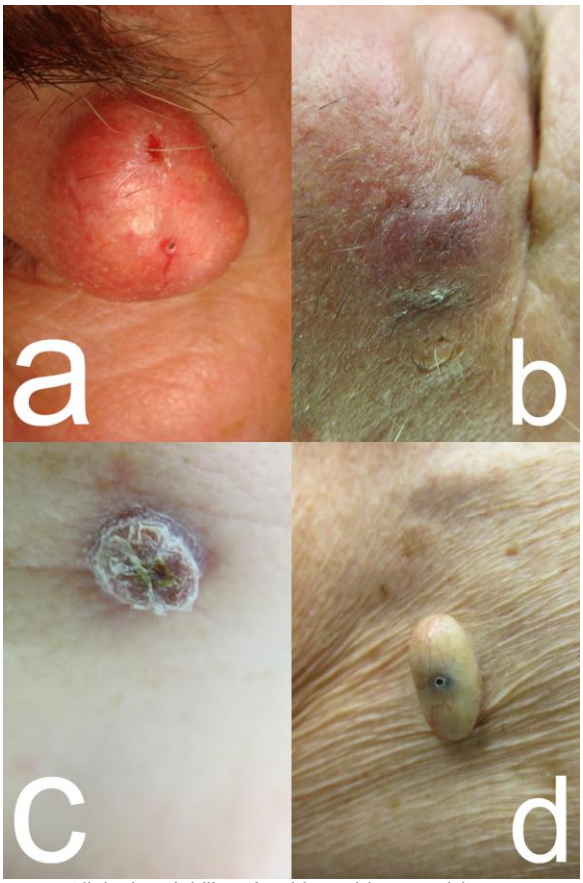

Figure 1: Clinical variability of epidermoid cysts; (a) Large cysts of the lateral brow imposing as a lipoma; (b) Retroauricular inflammatory cyst in a cancer patient – here a cutaneous metastasis was suspected; (c) Ruptured cyst of submandibular localisation; (d) Pediculated cyst on the trunk

The variability of clinical presentations is illustrated in Fig. 1. This has led to a variety of suspected diagnoses such as lipoma, hidrocystoma, dermoid cyst, trichilemmal cyst, steatocystoma, pyoderma, cutaneous metastasis and benign adnexal tumours of the skin.

Histopathology was performed for all cases removed by surgery. We did not observe a single malignant transformation among our tumours.

Surgery was realised with local anaesthesia in 98.9%; the remaining cases were treated under general anaesthesia. Postsurgical complications were noted in 2.2%, such as wound dehiscence, secondary bacterial infection, or hypertrophic scarring. Infectious complications were more frequent in diabetic patients and patients with iatrogenic immunosuppression.

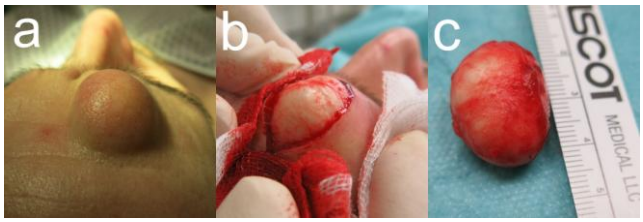

Figure 2: Surgery of a large epidermoid cyst of the glabella. (a) Clinical presentation; (b) Preparation of the cyst after mobilisation. (c) Surgical specimen

A selection of clinical presentations and surgery is added (Fig. 2 and 3). To avoid skin sagging after removal of large or giant epidermoid cysts removal of an epidermal sheet is recommended.

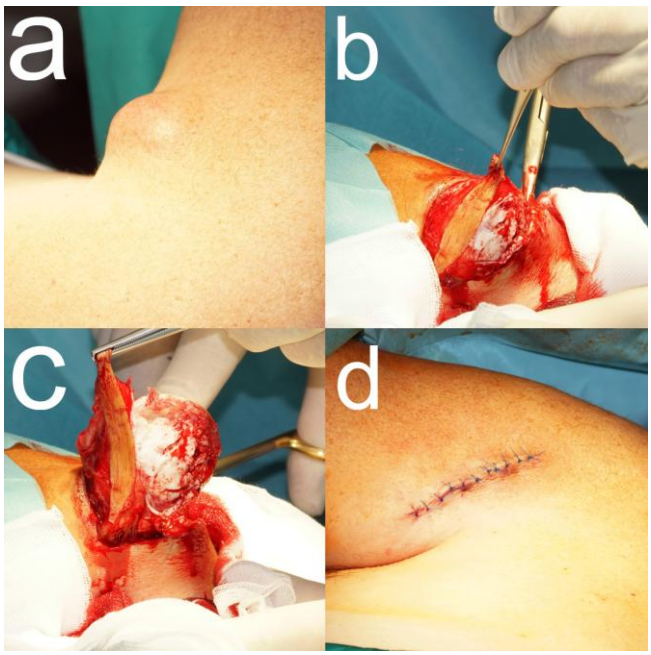

Figure 3: Surgery of a giant epidermoid cyst of the forearm. (a) Clinical presentation; (b) Preparation of the cyst leaving a small epidermal sheet for fixing with the forceps and mobilisation with a small scissor; (c) presentation of the surgical specimen; (d) Defect closure by tissue advancement and tow layered suturing

Discussion

Although the preferred localisation of epidermoid cysts is hair-bearing skin, they have also been seen on the glabrous skin and mucous membranes. Acquired cysts are thought to develop after blunt, penetrating trauma form either hair follicle infundibulum or eccrine sweat ducts [12]. The role of human papilloma virus in epidermoid cyst pathogenesis has been debated [13].

Multiple epidermoid cysts suggest a genetic background. They can occur in Gardner syndrome caused by mutations in the adenomatous polyposis coli gene [14], or in Lowe syndrome, an X-chromosomal oculo-cerebral-renal disorder caused by mutations of the OCLR1-gene [15].

We did not observe these genetic disorders among our patients. Epidermoid cysts of the subcutaneous tissue raise some possible differential diagnoses (Table 1).

Table 1: Differential diagnoses of subcutaneous epidermoid cysts

Entity	Remarks
Dermoid cysts	Ectodermal cysts may contain squamous epithelium and dermal contents
Trichilemmal cysts	Often on the scalp, family history, multiple, trichilemmal keratinisation
Pilomatricoma	Common in children, mostly head-and-neck region, hard, painless
Lipoma	Common, often soft, composed of mature adipocytes with a fibrous capsule

While small cysts may be treated by CO2- or erbium-YAG-laser [16][17][18][19], larger cysts need a surgical approach with cold steel [3][7][8]. Since skin sagging is a possible outcome after removal of larger cysts, a small sheet of the epidermis above the cyst is excised. This allows an individualised adaption of the surgical margins. To avoid relapses, complete removal of the cyst wall is mandatory. All epidermoid cysts removed surgically should be subjected to histopathological confirmation, to ensure complete excision and avoid misdiagnosis. Possible malignant transformation, although not seen in our cases, is another important argument for regular histopathologic analysis [20].

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