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The primary aim of *World Journal of Clinical Cases* (*WJCC*, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

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CASE REPORT

Gigantic occipital epidermal cyst in a 56-year-old female: A case report

Yao Wei, Peng Chen, Hao Wu

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Abstract

BACKGROUND

Gigantic epidermal cysts (GECs) are rare benign skin appendicular tumours also known as keratinocysts. GECs have a high incidence and their wall is made up of epidermis. Epidermal cysts can occur in any part of the skin; clinical manifestations include skin colour hemispherical swelling; cystic; mobile; 0.5 cm to several centimetres in diameter; and slow growth.

CASE SUMMARY

Herein, we report a case involving a 56-year-old female with a GEC in the occipitalia. On July 25, 2023, a patient with a GEC was admitted to the neurosurgery Department of the Second Affiliated Hospital of Xi'an Medical University. The phyma was shown to be a solid mass during the operation and was confirmed to be a GEC based on pathological examination.

CONCLUSION

Epidermal cysts are common cystic nodules on the surface of the body, the aetiology is unclear, the clinical manifestations can vary, and the misdiagnosis rate is high. However, giant epidermal cysts are rare. In most cases, however, the prognosis is satisfactory. This paper analyses and summarizes the population, location, clinical and pathological characteristics and pathogenesis of the disease to strengthen the understanding of this disease and improve the accuracy of clinical diagnosis.

Key Words: Epidermal cyst; Occipital; Brain; Cyst; Case report

Core Tip: The clinical manifestations of epidermal cysts are varied and the misdiagnosis rate is high. The disease occurs mostly in the head, face and upper torso of young men. Most patients usually have no symptoms, but epidermal cysts that are gigantic or located in important organs can press on the surrounding tissue structure and produce corresponding symptoms. However, gigantic epidermal cysts occurring in the occipital part of the brain in female patients are relatively rare. This report aims to strengthen the understanding of the disease and improve the accuracy of clinical diagnosis.

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INTRODUCTION

Epidermal cysts are among the most common benign skin tumours, but very few epidermal cysts can be secondary to malignant tumours, such as basal cell carcinoma and squamous cell carcinoma[1,2]. Epidermal cysts can occur in any part of the body, mainly under the skin, mostly in the head, face and upper torso of young men, and a small number of cysts can occur in the injured region or in deep tissues and organs, such as the cranium, abdominal cavity, mammary gland, *etc.* Epidermal cysts occur more than a single time; are multiple rare, usually asymptomatic, have a large volume or are located in important organs and can compress the surrounding tissue structure and produce corresponding symptoms. Most patients are treated because of secondary infection resulting in a rapid increase in volume, severe pain, and rupture.

CASE PRESENTATION

Chief complaints

Occipital phyma for 20 years.

History of present illness

The patient was found to have developed occipital phyma more than 20 years ago, without redness, swelling, or rupture, and no diagnosis or treatment was given. Recently, the patient self-reported that the scalp mass was larger than before without rupture; therefore, she came to the Department of Neurosurgery, the Second Affiliated Hospital of Xi'an Medical University for treatment.

History of past illness

The patient had a history of diabetes, heart disease, hypertension, hepatitis, tuberculosis and other infectious diseases; a history of trauma and surgery; and a history of drug allergy.

Personal and family history

There was no family history of genetic disease.

Physical examination

The vital signs were as follows: Body temperature, 36.2 °C; blood pressure, 120/82 mmHg; heart rate, 79 beats per min; and respiratory rate, 17 breaths per min.

The physical examination revealed a 77 mm × 44 mm mass on the occipitalia with a clear border, tough texture, good mobility, and tenderness. The transillumination test was negative. There was no red or swollen skin or ulceration (Figure 1A-C).

Laboratory examinations

There were no abnormalities in routine blood test results, blood biochemistry results, blood coagulation function, or routine stool or urine test results.

Imaging examinations

Craniocerebral computed tomography revealed a subcutaneous space-occupying lesion in the left occipital head, possibly a benign lesion (Figure 2A and B). Body surface colour ultrasound revealed a subcutaneous hypoechoic solid mass in the occipital region (Figure 2C-E).

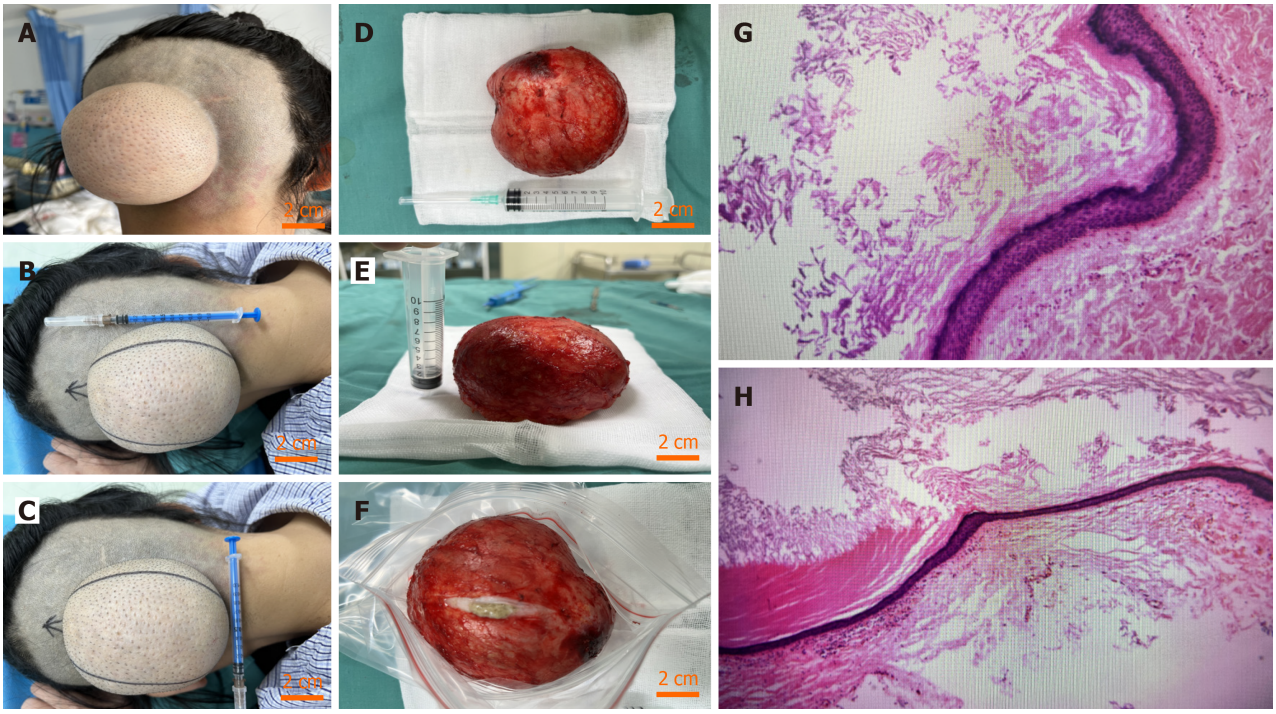

Figure 1 Preoperative manifestation, intraoperative presentation and pathology results. A: A general view of epidermal cyst; B: The long diameter of epidermal cyst; C: The wide diameter of epidermal cyst; D: Height of epidermal cyst; E and F: Image of the cyst after incision; G: Layered cutinise (the pathological results indicated epidermal cyst); H: Squamous epithelium (the pathological results indicated epidermal cyst).

FINAL DIAGNOSIS

Combined with the intraoperative findings (Figure 1D-F) and pathological examination, these findings revealed a large epidermal cyst (Figure 1G and H).

TREATMENT

Resection of the tumour was performed under local anaesthesia.

OUTCOME AND FOLLOW-UP

After 3 months of follow-up, the wound had healed well, and there was no recurrence, no rupture, or fever.

DISCUSSION

However, the pathogenesis of epidermal cysts is still unclear. It is generally believed that epidermal cysts originate from the infundibular region of the hair follicle and are caused by progressive cystic dilation and destruction of the infundibular region of the hair follicle. However, this hypothesis does not explain the rare occurrence of hairless skin, such as epidermal cysts on the palm or plantar, so other ideas have been proposed. Some scholars have found that patients with palmar and plantar epidermal cysts have a history of local trauma before disease onset, and further believe that epidermal cysts are formed by the implantation of epidermal fragments into the dermis due to penetrating injury[3]. This view is also supported by the formation of epidermal cysts in the operative area of some patients who underwent surgery for other diseases[4]. Several other studies have shown evidence of human papilloma virus (HPV) infection in epidermal cysts in the palm and plantar parts and limbs, especially in patients infected with HPV type 57, which further suggests that HPV infection may be related to the pathogenesis of epidermal cysts[5]. In addition, some scholars have found that plantar epidermal cysts are attached to or located near exocrine ducts, suggesting that epidermal cysts may originate from exocrine ducts. Studies have shown the structural relationship between plantar epidermal cysts and surrounding exocrine ducts. It has been shown that epidermal cysts are compressed by a large number of sweat glands and have structural features connected to them on the epidermal side, indicating that plantar epidermal cysts may be connected to exocrine dermal ducts, which supports the hypothesis that plantar epidermal cysts develop from epidermoid metaplasia of exocrine ducts[6]. Moreover, an HPV 60-associated epidermoid cyst with immunoreactivities for carcinoembryonic

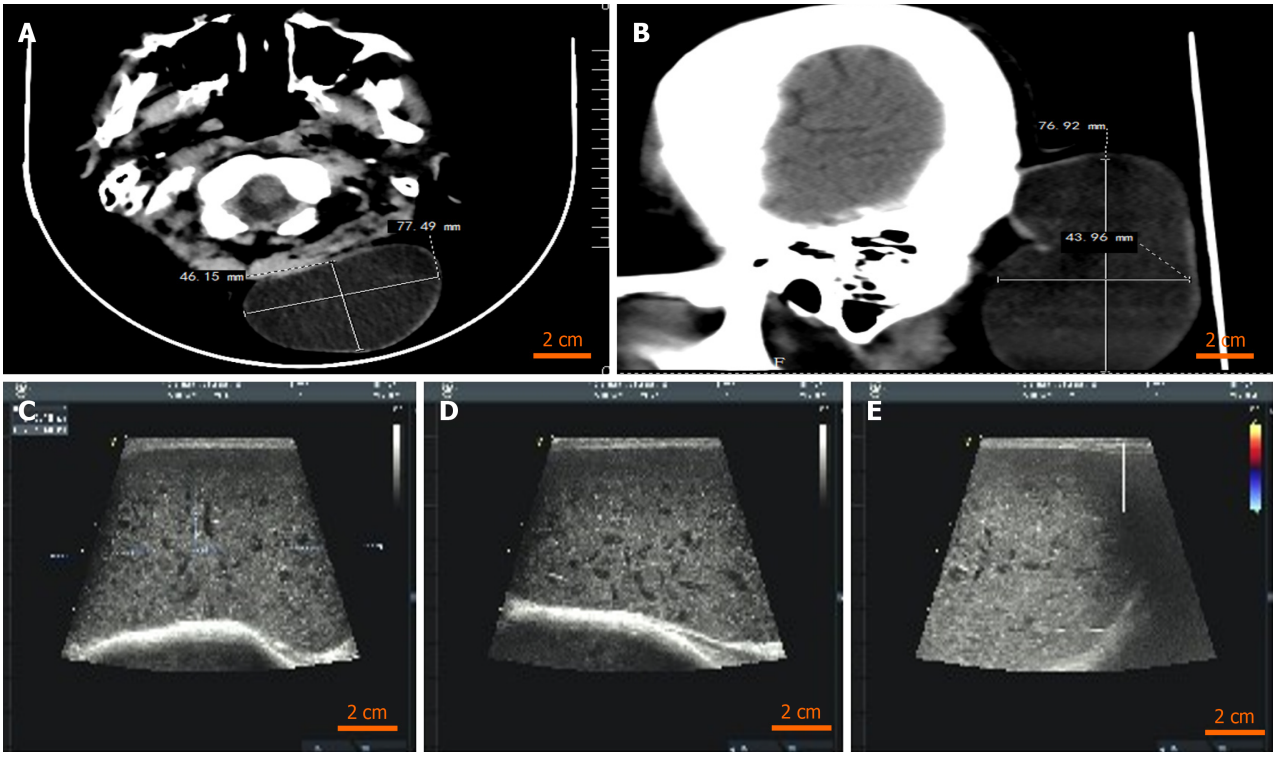

Figure 2 The computed tomography and ultrasonic image. A: The length and width of cyst of axial computed tomography (CT); B: The length and width of cyst of sagittal CT; C: A mass can be found at the subcutaneous distance of 2.3 mm from the body surface (ultrasonic image); D: The volume of the mass is 38 mm × 87 mm × 90 mm (ultrasonic image); E: The occipital mass is a solid mass with low echo, regular shape, clear boundary, complete envelope and less uniform internal echo (ultrasonic image).

antigen, involucrin and CKs identical to those of the epidermis connected with the eccrine dermal duct was found, suggesting that certain palmoplantar epidermoid cysts may develop following the epidermoid metaplasia of eccrine ducts with HPV 60 infection[7]. In conclusion, the pathogenesis of epidermal cysts is still unclear and controversial.

Currently, histopathology is still the gold standard for diagnosing epidermal cysts. Some cysts have no epithelial wall structure. Skin cysts are divided into three main types according to the conditions of the cyst wall: (1) Skin cysts with lamellar squamous epithelium mainly consist of epidermal cysts, hair sheath cysts, lipocysts, vellus hair cysts, *etc.*, which are common on the scalp, face, trunk and so on; (2) Nonlaminated squamous epithelial skin cysts, which mainly include apocrine sweat gland cysts, eccrine sweat gland cysts, branchial cleft cysts, and thyrohyoid cysts; these cysts are more common in the head and face; and (3) Skin cysts lacking epithelium mainly include mucous cysts, auricle pseudocysts, and tendon sheath cysts, which are mostly found in the oral mucosa, auricle, distal extension side of fingers, and near wrist joints. The pathological manifestations of epidermal cysts include the formation of intradermal cysts, a cyst wall composed of several layers of squamous epithelium, an upper cortex facing the cyst cavity, and keratinocytes constantly shed to form the contents of the cyst, which cause the tumour to grow continuously; additionally, the cyst is full of keratin, and rupture may occur when the size of the cyst increases to a certain extent[8,9].

Some studies have also shown that patients with unruptured epidermal cysts have larger diameters and thinner walls than those with ruptured epidermal cysts, which is consistent with most of the research findings: The larger the diameter is, the thinner the wall is, and the more likely the cyst is to rupture. Some scholars speculate that rupture may lead to an overall reduction in the size of the cyst, possibly caused by the body's foreign body reaction to the contents of the cyst and the release of various inflammatory factors, including growth factors. These factors promote the proliferation of cyst wall cells and subsequently thicken the cyst wall[10]. Several scholars have also shown that there is a positive correlation between cyst wall thickness and epidermal thickness and that cysts are thicker in patients with a history of infection than in those without a history of infection. There was no significant difference between epidermal thickness and skin lesion site [11].

CONCLUSION

Epidermal cysts are common cystic nodules on the surface of the body. The aetiology of these cysts is unclear, the clinical manifestations can vary, and the misdiagnosis rate is high. However, gigantic epidermal cysts are rare. In most cases, however, the prognosis is satisfactory. This paper analyses and summarizes the population, location, clinical and pathological characteristics and pathogenesis of the disease to strengthen the understanding of this disease and improve the accuracy of clinical diagnosis.

FOOTNOTES

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