A Case of Dermoid Cyst Causing Deep Erosion of the Skull

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Dermoid cysts develop from sequestration of epithelium along lines of embryonic fusion. The most common locations are the lateral third of the eyebrows, nose, and scalp. These cysts are located in the subcutis; they are often adherent to periosteum, and may invade or erode underlying bone.

A 34-year-old female presented with a solitary, skin colored, dome-shaped, child fist-sized, subcutaneous mass on her right occiput. At operation, keratinous material was discharged and tufts of hair projected from opening of the cyst wall. The base of the cyst was firmly adherent to periosteum and diffuse depression with focal deep erosions of the outer table of skull was found. (Ann Dermatol 12(4) 280~282, 2000).

Key Words : Dermoid cyst, Erosion, Skull

Dermoid cysts are rare congenital lesions resulting from sequestration of epithelium along lines of embryonic fusion. Histopathologically, in contrast to epidermal cyst, they are lined by an epidermis that possesses various fully matured skin appendages-namely, hair follicles, sweat glands, and sebaceous glands. Hairs are often present within and projecting into the cyst cavity[1-3]. As these cysts have a potential for intracranial extension in the head region, this is an important clinical entity[1,3-6].

We report here a case of dermoid cyst which occurred on the occipital scalp with deep erosion of the underlying skull.

CASE REPORT

A 34 year-old woman presented with a subcutaneous mass on her right occipital region. She noticed it as a nontender walnut-sized, subcutaneous nodule 6 months prior to presentation. Thereafter, the lesion had enlarged slowly with intermittent throbbing pain. Her past and family history were non-contributory. Physical examination showed a large (5.5 cm transversely × 4 cm vertically × 2.5 cm thick), round, flesh-colored cystic mass. There was no sinus opening or area of alopecia on the overlying skin. Laboratory studies including complete blood cell count, blood chemistry, urine analysis, chest X-ray and EKG were within normal limits or negative. Clinical diagnosis included lipoma, epidermal cyst, and pilar cyst. A preoperative CT scan of the head demonstrated a large subcutaneous mass with underlying bony erosion and sclerosis. The tumor appeared to have cystic structure composed of central portion of low density and peripheral wall-like structure of high density. These findings suggested the diagnosis of this lesion as a dermoid cyst (Fig. 1).

At operation, we perforated the wall of the cyst for convenience, and a large quantity of keratinous material was expressed and many tufts of hair projected from the opening of the cyst wall (Fig. 2A). The base of the cyst wall was firmly attached to the underlying periosteum of skull. The possibility of intracranial communication which was not detected in the CT scan could not be excluded com-

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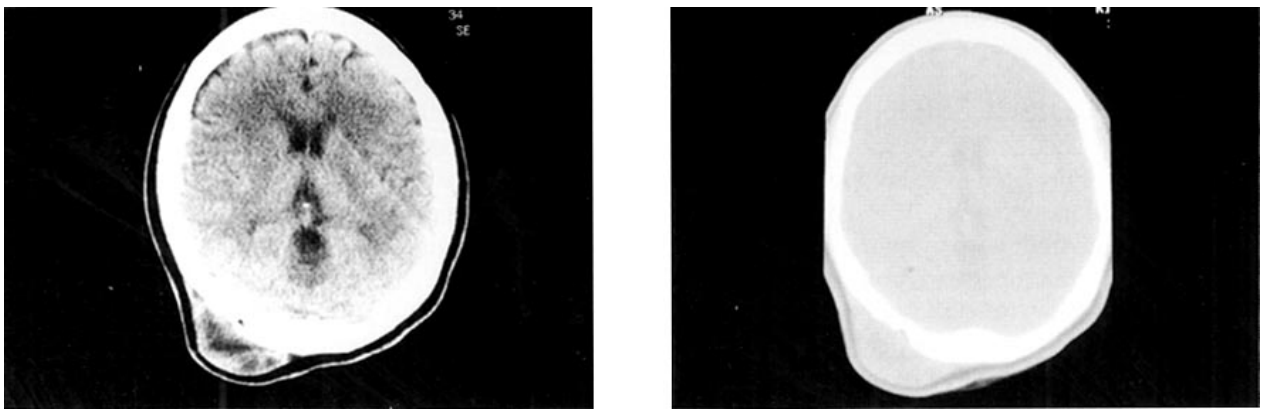

Fig. 1. CT scan of a large subcutaneous mass showing cyst-like structure (left) and partial bony defect of the outer table of skull (right) on parietoccipital area.

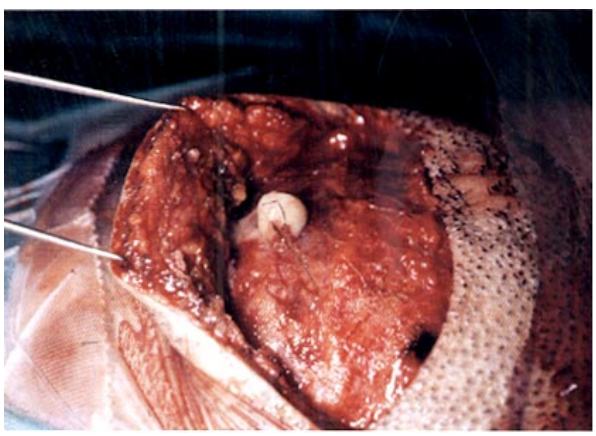

Fig. 2A. Keratinous material and tufts of terminal hair projecting from the tumor.

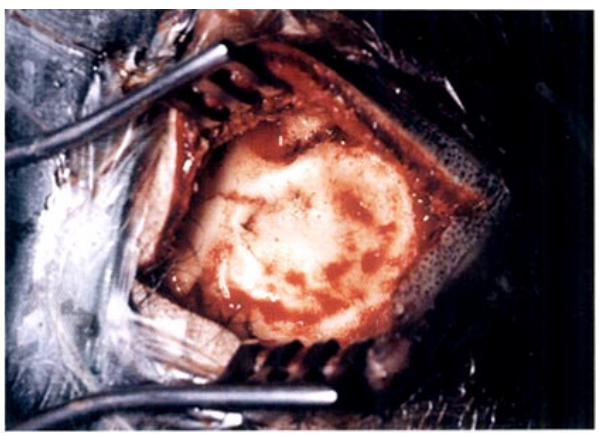

Fig. 2B. Complete removal of the cyst wall revealed diffuse erosion and focal deep depressions on the underlying skull.

pletely. Thus, a neurosurgical consultation was performed immediately. The lower portion of the cyst wall was curetted and completely removed with a neurosurgeon's help. Underlying outer table of the skull showed diffuse depression and two, deep, fingertip-sized erosions, but there was no communication with the intracranial cavity (Fig. 2B). Partial bony defect and dead space of the skull remained after complete removal of the large cyst, however, we did not fill them with bone wax or any other material because of the risk of bone infection. A penrose drain was inserted and the wound was closed primarily.

Histopathologically, the wall of the cyst was lined by stratified squamous epithelium and laminated horny materials. Mature sebaceous glands were attached to normal epidermis (Fig. 3).

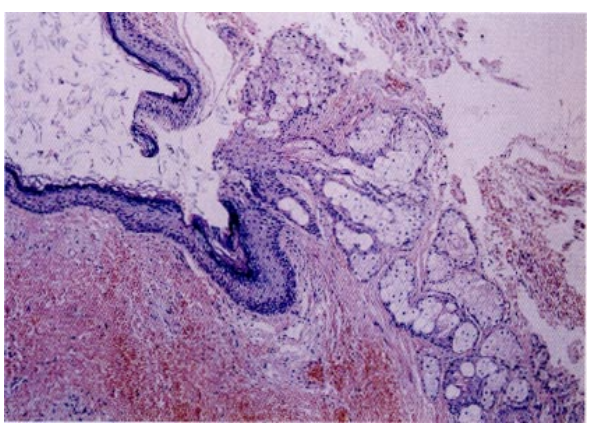

Fig. 3. The wall of the cyst is lined by stratified squamous epithelium and laminated horny materials. Mature sebaceous glands attached to normal epidermis are observed (H&E, ×100).

The patient recovered uneventfully with no complications.

DISCUSSION

About 40% of dermoid cysts are present at birth, and 70% by the age of 5 years. They typically appear as subcutaneous nodules or tumors, and in many cases, have a sinus opening, from which keratinous materials may be expressed and hairs may project[1,3,6]. The cysts are usually subcutaneous, but they may occasionally cause pressure erosion or invasion of the underlying bone or have intracranial extension through bony defect[3,5,6].

Frontotemporal or periorbital dermoid cysts usually do not extend intracranially. Although, dermoid cysts in the midline frontal (including nose), temporal-parietal, and occipital regions occur less commonly than periorbital ones, they have a higher incidence of underlying bone involvement or intracranial extension[3,4,6,7].

Saito et al.[8] reported a rare case of intracranial dermoid cyst with a small bony defect and dermal sinus, which presented only a recurrent occipital cutaneous abscess and abnormal hair growth clinically. In those cases similar to this, initial clinical diagnosis may be difficult. Therefore, prior to contemplating surgery on dermoid cysts in these regions, careful preoperative evaluation such as skull X-ray, CT scan and MRI is essential. And those associated with partial bone defects or intracranial extension should be referred to a neurosurgeon for further management[3,6,9].

In our case, the preoperative CT scan showed findings of a cystic structure and underlying bony erosion, which suggested the possibility of dermoid cyst. Keratinous materials and hairs were discharged from the cyst during excision and histopathologic examination confirmed it. Although, we made sure preoperatively that there was no intracranial communication, the base of the cyst wall was more firmly adherent to underlying skull and bony erosions were deeper at operation than we expected. Furthermore, we could not exclude completely the somewhat rare possibility that small intracranial communications might exist among the serial section planes of the CT scan. Thus, we asked the neurosurgeon for help.

Dermoid cysts are not uncommon in Korean dermatologic literature either[10]. But, to our knowledge, any report of dermoid cyst similar to our case that caused severe erosion of the underlying bony structure has not been described as yet.

Dermatologists may occasionally experience dermoid cysts in the periorbital region, nose, and scalp. We think it is essential to keep in mind the possibility of intracranial extension of these lesions and perform careful preoperative evaluation prior to excision, and, if needed, consultation with a neurosurgeon is appropriate.

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