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# A Rare Case of a Dermoid Cyst in the Right Temporal Region of the Head: A Case Report and Literature Review

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**ABSTRACT**

**Background:** Dermoid cyst is a tumour mass that is often encountered in daily clinical practice. Histological examination showed a layer of keratinized squamous epithelium. Dermoid cysts in the craniofacial region comprise about 7 percent of all dermoids. This case report will review a 21-year-old patient with a right temporal dermoid cyst.

**Case report:** A 21-year-old man came to the emergency department of Bendan Hospital, complaining of a lump on the right side of his head, the lump had been there since the patient was child, then it grew. Non-contrast CT scan of the head showing the impression of a lipoma on the scalp of the right occipital region. When the patient underwent excision of the tumour and histopathological examination of the tissue was performed, the result was a dermoid cyst.

**Discussion:** Dermoid cyst is known as a benign congenital tumour that grows early. Research prefers to use a direct approach to the patient, given that proper scar management is part of the follow-up

**Conclusion:** Dermoid cysts have until recently been considered a congenital lesion, but not all of them can be diagnosed at birth.

**KEYWORDS:** Dermoid cyst, Temporal region of the head

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## INTRODUCTION

Dermoid cyst is a tumour mass that is often encountered in clinical practice. This tumour mass represents an embryologically inherited soft tissue cyst. The prevalence rate of craniofacial dermoid cysts is about 7 percent of all dermoid tumours and 60 percent of all facial cysts.[1] Dermoid cysts usually present in infants as a painless subcutaneous mass along the line of embryonic skin fusion. The most common sites are periorbital (zygomaticofrontal suture), nose (frontonasal suture and rhinion), intraoral (floor of mouth), scalp (anterior fontanel and cranial suture), and postauricular.[2]

Histological examination usually shows a layer of keratinized squamous epithelium. Dermoid cysts are associated with mature adnexal structures, such as hair follicles and stems, sebaceous glands, and eccrine (sweat) glands. This is what distinguishes it from epidermoid cysts, where epidermoid cysts do not show adnexal features of the tissue and which will act to produce intraluminal keratin collections. In addition, the association between cranial defects may be a predisposing factor for intracranial extension.[2]

Differences in histologic examination showing the degree of ectodermal inclusion can directly affect the severity of the clinical presentation, including the potential for intracranial rupture or expansion.[3] This case report will present a 21-year-old man with a dermoid cyst on the temporal region of the scalp.

## CASE REPORT

A 21-year-old man came to the ER Bendan Hospital, Pekalongan City with a complaint of a lump on the right side of his head. The lump on the head has been there since the patient was a child. As children, the lump was only the size of a soybean and could be moved, but with age the lump grew bigger and bigger until it was as big as a ping pong ball, and could not be moved. The patient denied any history of previous head trauma. Other complaints such as sores on lumps were denied, headaches were denied, fever was denied, visual disturbances were denied, lumps elsewhere were

denied. The patient's previous hospitalization history was denied, the patient's previous surgery history was denied. The patient's brother and father had complaints of similar lumps on the neck and on the back.

From the patient's physical examination, it was found that the patient had good general condition, blood pressure 120/80 mmHg, pulse 70 x/minute with sufficient content and tension, respiratory rate 18x/minute, temperature 36.5°C, SpO2 99% room air. Physical examination of the neck, chest, heart, lungs, abdomen, and extremities were within normal limits. Examination of local status in the right temporal region showed an oval-shaped lump with a diameter of 4 cm, well-defined, flat surface, on palpation a lump with a springy consistency was found, no pain was found.

The patient underwent supporting examinations in the form of blood laboratory and non-contrast head CT-Scan. Blood laboratory investigations revealed haemoglobin 15.0 g/dL, hematocrit 46.1%, leukocytes 7.70 x 10^3/uL, platelets 261 x 10^3/uL, erythrocytes 5.08 x 10^6/uL, MCV 90.7 fl, MCH 29.5 pg, MCHC 32.5 g/dL, PT/APTT 9.5 seconds/ 23.9 seconds, then from a non-contrast head CT scan, there was an impression of a lipoma on the scalps of the right occipital region, intra-cerebral abnormalities did not appear.

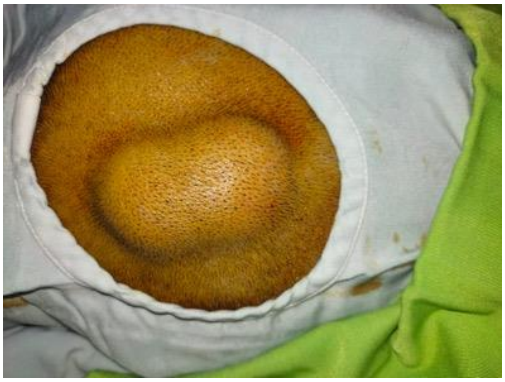

**Figure 1. Clinical appearance in the left temporal region**

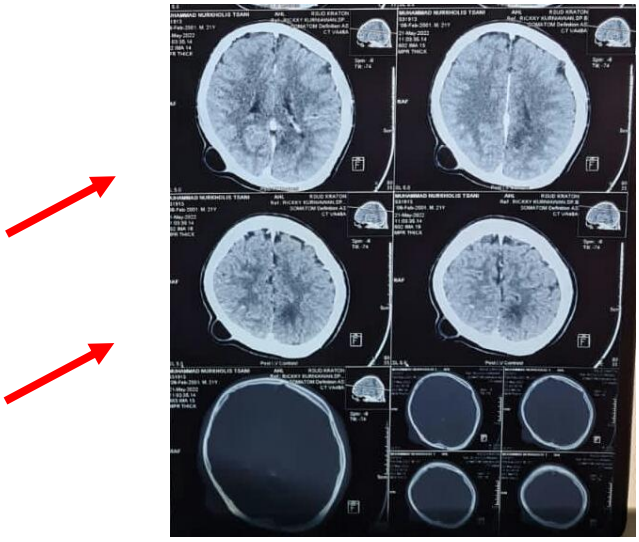

**Figure 2. Non-contrast head CT scan**

From the history and physical examination the patient was diagnosed with a suspicious benign right temporal region tumour. The patient then underwent surgical excision and histopathological examination on May 23, 2022. The patient slept on his left side under general anaesthesia. Perform asepsis and aseptic procedures, incision according to markers, deepen layer by layer, expose the tumour capsule, free the tumour capsule with the scalp, remove the tumour and tissue, then send the tissue to anatomical pathology, wash with NaCl solution and H2O2 solution, treat bleeding, stitch layers layer by layer and the operation is complete.

After the surgery, the patient was treated with asering infusion of 20 drops per minute, injection of Cefuroxim 1 gr/ 8 hours, injection of Ketorolac 30 mg/8 hours, Gabapentin 1gr/24 hours, if the patient is fully conscious of the usual diet, maintain the elastic bandage on the head. After 2 days of treatment at the hospital, the patient's general condition was good, the surgical wound was not found to have seepage, so the patient was allowed to go home and return for control in 7 days.

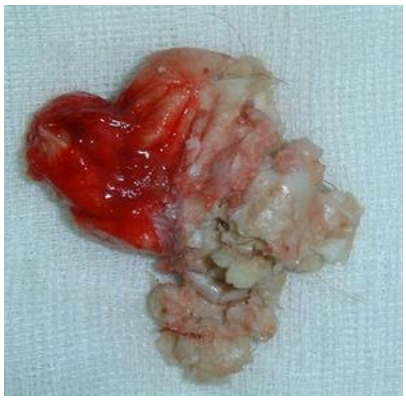

**Figure 3. Macroscopic appearance of a dermoid cyst**

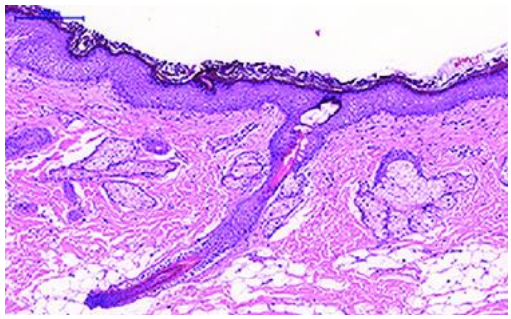

**Figure 4. Microscopic view of dermoid cyst**

Histopathological examination of the tumour tissue revealed a fibrous connective tissue stroma containing collagen bundles and cystic areas lined with stratified squamous epithelium with a lumen filled with keratin masses. No sign of malignancy. Examination gives the impression that the tumour is a benign soft tissue tumour in the form of a dermoid cyst.

## DISCUSSION

Dermoid cysts are known as benign congenital tumours that grow in early life originating from abnormally trapped ectodermal and mesodermal tissue due to the fusion of tissue with suture lines.[4] Histological examination of a dermoid cyst often presents as a squamous cell with keratinized as its wall, and contains adnexal structures such as hair follicles, sweat glands, and sebaceous glands. Dermoid cysts can expand into the intracranial space so that it can cause neurological complications when the cyst expands and ruptures, and its contents enter the subarachnoid space or cerebral ventricles, giving the impression of encephalomeningitis and seizures.[5]

Most dermoid cysts are congenital with known that about 70% of cases are found in children aged 5 years or younger. However, several studies found that only 30% of the studied patients had congenital symptoms, and dermoid cysts in children 5 years of age or younger were found to be lower (52%) than reported elsewhere. Therefore, these results suggest that dermoid cysts in adults should not be ignored, and should be considered when diagnosing the patient.[6] In the patient in this case, dermoid cysts were present since the patient was a child, but as they grew older, these cysts grew in size.

For the first time in medical history in 1937, New and Erich categorized congenital inclusion dermoid cysts in the head and neck region into four groups: periorbital area (group 1), nasal (group 2), submental area (group 3), and midventral fusion area. and mid-dorsal of the suprasternal, thyroid, and suboccipital regions (group 4).[7] However, in this case the dermoid cyst appeared in the temporal region of the right scalp.

The dermoid cysts in this new group develop slowly and rarely show extension, so the study from Pryor suggested that minimal imaging studies were sufficient to diagnose the patient. However, from the literature review, dermoid cysts that develop in the scalp or ear area are often reported to show intracranial extension, so caution is important when treating around these areas.[6] In accordance with previous studies, this study also showed that the majority of cases of dermoid cysts occurred in the periorbital area, namely 52 out of 62 patients (84%). Previous studies have shown that intracranial cases are rare, but have the possibility of rupture if operated without radiological examination.[7]

Imaging studies may be performed based on the patient's treatment plan or surgeon's preference. In previous studies, imaging was highly recommended, seeing that dermoid cysts in the medial brow sometimes showed intracranial extension, but imaging studies have not been considered mandatory because dermoid cysts developing in the lateral brow area are less common. However, previous studies suggest that imaging studies should be performed in the lateral canthal

region because intracranial extension often occurs in the medial canthal region, nasal region, scalp, and periauricular area.[8] CT scan was the most commonly used imaging modality for patients in several studies and did not show a differential diagnosis compared to other imaging studies. CT can demonstrate the location and content of the mass, as well as its relationship to surrounding structures and conditions, while also allowing the clinician to indirectly confirm intracranial extension.[9] This patient had a non-contrast CT scan of the head and a lipoma impression on the scalps of the right occipital region. Fortunately, this cyst did not expand into the intracranial direction.

Treatment of dermoid cysts can be carried out until craniotomy if the cyst has shown intracranial extension. Many studies prefer to use a direct patient approach, given that proper scar management is part of follow-up.[10] A previous study investigated the depth of the lesion, and found that 20 patients had deep lesions of the superior periosteum (41%), and two the patient had a deep lesion of the inferior periosteum (4%). Another study showed 43 patients who had a CT scan before surgery showed bone involvement, nine patients had bone erosion or bone defects.[11] In this patient, only excision of the tumour was performed so that the bleeding would be minimal and the surgical scar would be small.

The majority of studies found that many cases of dermoid cysts in adults, in the periorbital area with a higher level of deep lesions and some even involve bone. Therefore, dermoid cysts should be considered regardless of age (especially in adults) and location (especially in the periorbital region) of the mass, and the possibility of intracranial extension should be taken into account.[11]

## CONCLUSION

Until recently, dermoid cysts were considered a congenital lesion, but not all of them can be diagnosed at birth. A dermoid cyst is a benign soft tissue tumour that develops from abnormal sequestration and inclusion of surface ectoderm along the line of skin fusion during embryological development. In the literature, cysts in the midline of the scalp present a higher probability of intracranial extension because they are located in the line of embryonic fusion. Early resection can avoid more extensive surgery, and smaller skin incisions have the benefit of reducing the risk of infection in smaller wounds and providing better cosmetic results.

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