



## CASE REPORT

### GIANT EPIDERMAL CYST OF THE FOREARM

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#### ABSTRACT

An epidermoid cyst is a benign, intradermal subcutaneous soft tissue tumor. Subcutaneous epidermal cysts commonly involve the scalp, face, neck, trunk and back: fewer than 10 % occur in the extremities. We reported clinical, magnetic resonance imaging (MRI) and pathologic findings of a big epidermal cyst in the forearm.

**Keywords:** Forearm, Giant epidermal cyst, MRI

### ÖN KOLUN DEV EPİDERMAL KİSTİ

#### ÖZET

Epidermoid kist benign, intradermal subkutanöz yumuşak doku tümörüdür. Subkutanöz epidermal kistler sıklıkla kranium derisi, yüz, boyun, gövde ve sırtta yerleşir. Ekstremitelerde %10'dan azı yerleşim gösterir. Biz ön kolun büyük epidermal kistin klinik, patolojik ve manyetik rezonans görüntüleme bulgularını sunduk.

**Anahtar Kelimeler:** Ön kol, Dev epidermal kist, MRG

#### INTRODUCTION

An epidermoid cyst is a benign, intradermal subcutaneous soft tissue tumor. The tumor is considered to be a migration of an epidermal component into the dermis<sup>1</sup>. The diagnosis is clinical without imaging. Subcutaneous epidermal cysts commonly involve the scalp, face, neck, trunk and back: fewer than 10 % occur in the extremities<sup>2</sup>. We reported clinical, magnetic resonance imaging (MRI)

and pathologic findings of a big epidermal cyst in the forearm.

#### CASE REPORT

A 30-year-old man presented with a right forearm mass, which had been slowly growing for 5 years. The patient had no trauma or pain. Physical examination demonstrated a big, firm, subcutaneous mass of the right forearm (Figure 1). In

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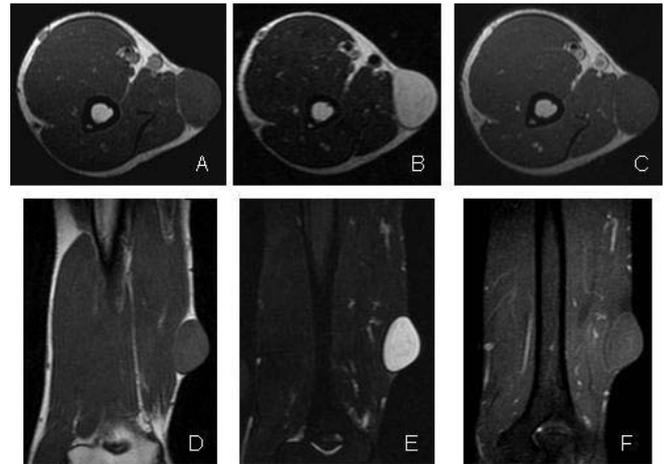
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ultrasonographic examination, the tumor had a regular contour, and was heterogenously hypoechoic. Some vascularity was noted in the color Doppler sonography, mimicking a solid mass. Then, MRI was performed (1.5 Tesla, Philips Gyroscan) for detailed investigation. The MRI showed a large, well-defined, oval, homogeneous mass measuring 3.5x3x2 cm in diameter. The lesion was hypointense on T1- weighted images and hyperintense on T2- weighted images relative to the muscle. The lesion had some low signal intensity foci and serpiginous structures in it on T2-weighted images. After intravenous injection of gadolinium, there was no enhancement of the lesion (Figure 2). The excisional biopsy of the mass was performed under local anesthesia. The gross pathological examination showed that the mass was well-defined, nodular and cystic in nature. The histopathological examination showed that the lumen of the cyst was filled with keratin materials arranged in laminated layers. The wall of the cyst was composed of stratified squamous epithelium with keratohyalin granules (Figure 3). The pathologic diagnosis was keratinous cyst (epidermoid type).



**Figure 1:** A round lobulated mass in the forearm is evident.



**Figure 2:** MR imaging. Axial T1(A), T2(B), coronal T1(D) and fat suppressed T2(E) images showed lobulated mass in the subcutaneous fat of the forearm, which had low signal intensity on T1 and high signal intensity on T2 images. Postcontrast axial T1(C) and fat suppressed T1(F) images show no enhancement of the tumor.



**Figure 3:** The histopathological examination showed that the lumen of cyst was filled with keratin materials arranged in laminated layers.



## DISCUSSION

Epidermoid cysts probably occur from inflammation of pilosebaceous structures. The second theory is that the formation of an epidermoid cyst is related to the implantation of epidermis into the dermis through trauma (example: intramuscular injection) and migration during embryogenesis. A later theory frequently valid is for intracranial lesions<sup>3</sup>. The epidermoid cyst of our case is located on the forearm but the patient had no trauma or injection history. Lee et al<sup>4</sup> showed the sonographic findings of epidermoid cysts, which can have lobulated contours and show color Doppler signals, mimicking a solid mass. Similar to his study we showed that the mass was not anechoic as a cyst, instead it was hypoechoic, heterogeneous and showed color Doppler signals as solid masses. Unfortunately, we did not record the ultrasonographic images of our patient.

Hong et al reported that MRI findings of unruptured epidermal cysts were hypointense on T1 and hyperintense on T2-weighted images relative to the muscle<sup>5</sup>. On postcontrast T1-weighted images, peripheral rim enhancement was seen. Epidermoid cysts may have hyperintense regions on T1-weighted images compared to muscle<sup>6</sup> and may be hypointense on T1 and T2-weighted images related to dense debris and calcification components<sup>7</sup>. Shibata et al reported that no enhancement was observed inside the tumors and the variety of signal intensities on T1 and T2-weighted images reflects differences in chemical components of the epidermoid cysts<sup>2</sup>.

Our case was hypointense on T1-weighted images, hyperintense on T2-weighted images compared to muscle. This case had a variable amount of serpiginous lower signal foci on T2-weighted images. We thought that heterogeneity on T2-weighted images related to the cyst lumen was filled with keratin arranged in laminated layers.

The differential diagnosis of an epidermal cyst contains a fibrous tissue tumor, such as benign fibroma, xanthoma, malignant fibrous

histiocytoma or fibrosarcoma, other subcutaneous cystic masses, vascular lesions, cystic degeneration and hemorrhage, lymphangioma with hemorrhage, cystic teratoma, large ganglion cyst and echinococcal cyst<sup>5,6</sup>. Ganglion cysts are hyperintense on T2-weighted images, and show peripheral rim enhancement on postcontrast images. The heterogeneous signals of epidermoid cysts on T2-weighted images may help differentiation of epidermal cysts from other fluid cysts (ganglion cyst, bursitis). Some solid tumors such as neurogenic tumors, nodular fasciitis, myxoid tumors may be hyperintense on T2-weighted images, so they mimic cystic masses. The enhancement pattern of these solid masses can be used to differentiate epidermal cysts<sup>5</sup>.

In conclusion, an epidermal cyst should be thought in the differential diagnosis of a cystic soft tissue masses. Useful features for the diagnosis of an epidermoid cyst of the extremity are a well-defined border, round or oval lesion, subcutaneous location, hypointense on T1-weighted images, hypointense foci in the hyperintense background on T2-weighted images, and no enhancement on postcontrast images.

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