



# Sonographic and Strain Elastographic Findings of a Clear Cell Hidradenoma that Looked Like an Epidermoid Tumor: A Case Report

표피 종양처럼 보이는 투명 세포 열선 종의 초음파 및 변형 탄성 소견: 증례 보고

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Clear cell hidradenoma (CCH) is a rare tumor of the sweat glands of eccrine or apocrine differentiation. It can occur anywhere in the body, but common sites of involvement are the head, face, trunk, and extremities. Although several reports have described sonographic findings of CCH, only one study on the axilla mentioned its strain elastographic findings. Here, we present a case of CCH in the right calf with its sonographic and strain elastographic findings in a tumor that looked like an epidermoid tumor.

**Index terms** Ultrasound; Tumor; Elastography; Subcutaneous Tissue

## INTRODUCTION

Clear cell hidradenoma (CCH) is a rare tumor of the sweat glands of either eccrine or apocrine differentiation (1, 2). Such CCH has also been called eccrine acrospiroma, solid-cystic hidradenoma, nodular hidradenoma, and clear cell acrospiroma (1, 2). CCH can occur anywhere on the body, but the common sites of involvement are the head, face, trunk, and extremities (3). Although several previous reports described the sonographic (US) findings of CCH, only one study on the axilla mentioned its strain elastographic findings (1-4). We present a case of CCH in the right calf with its US and strain elastographic findings in a lesion that looked like an epidermoid tumor.

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## CASE REPORT

A 46-year-old male presented with a solitary palpable mass on the right calf. He first noted the mass seven years ago. On physical examination, a non-tender mass was identified in the posterior aspect of the right calf. A US showed a 3.2 cm × 1.5 cm-sized, well-circumscribed, lobulated, mixed-echogenic lesion with a small cystic portion in the subcutaneous fat layer (Fig. 1A). The lesion was composed of a multifocally purely anechoic portion, and the background echogenic materials had movement like debris with posterior acoustic enhancement. It also contained a septum-like structure (arrow on Fig. 1A), and there was no definite vascularity on color Doppler examination (Fig. 1B). These US findings were similar to those of a relatively common epidermoid tumor. Strain elastography (SE) showed predominantly blue with a few small areas of green in the region of interest which implies a low elasticity (hard lesion, Fig. 1C). The patient underwent surgical excision. The gross specimen was a 3.0 cm × 2.8 cm × 2.0 cm-sized, multilocular, cystic lesion with hemorrhagic serous fluid (Fig. 1D). Hematoxylin-eosin stain revealed a nodular-appearing tumor with multifocal small cystic spaces in a large cystic component. The tumor was composed of monotonous poroid cells with round-to-oval nuclei, and showed partly squamous differentiation and prominent hyalinized stroma (Fig. 1E, F). The tumor was pathologically confirmed as CCH.

This study was approved by the Institutional Review Board of our institution and the requirement for informed consent was waived (IRB No. KBSMC 2021-02-025).

## DISCUSSION

CCH is classified an uncommon, benign, cutaneous tumor originating from sweat glands. Three different types of sweat glands exist: eccrine, apocrine, and mixed type. CCH was traditionally considered to exhibit eccrine differentiation, but it is recently regarded to exhibit both eccrine and apocrine differentiation (1, 2). Although CCH can develop at any age, CCH is most common in the fourth decade. The tumors have a female predominance, and the location is generally in the subcutaneous fat layer with or without involvement of the dermis (1, 3, 5). It usually presents as a slowly growing, solitary, mobile, well-circumscribed mass whose size ranges from 0.5 cm to 3 cm in its diameter (2, 3). The gross appearance of the tumor can vary with its rate of growth, degree of vascularity, size, proportion of mucous material, and the presence of internal hemorrhage (5). Wortsman et al. (5) reported that the CCHs in their study mainly presented on physical examination as erythematous lumps, and others appeared as hyper-pigmented or dark pseudonodular areas within the lesions on physical examination.

Because the incidence of the tumor is very low, only a few studies reported the radiological features of hidradenomas. Cho et al. (3) reported a case of CCH on the axilla, suggesting that common features of hidradenomas are well-defined cystic masses with mural nodules or well-defined solid tumors with hypo-echogenic lesion on US. They also reported that mural nodules frequently exhibit high vascularity on color Doppler US, and the echogenicity of the cystic portion might be mixed echogenic due to hemorrhage. Lee et al. (1) reported that six of seven CCH lesions had a heterogeneous echotexture of an inner echogenic portion with background anechoic portions on US. Correlating the US findings with the histologic find-

**Fig. 1.** Strain elastography and US findings of a clear cell hidradenoma, mimicking an epidermoid tumor in a 46-year-old male.

**A.** The gray scale ultrasound image shows a well-circumscribed, lobulated, mixed echogenic lesion with small cystic portions and a septum-like structure (arrow) in the subcutaneous fat layer. Some echogenic materials with movement, such as debris movement, are seen. Mild posterior enhancement is also seen.

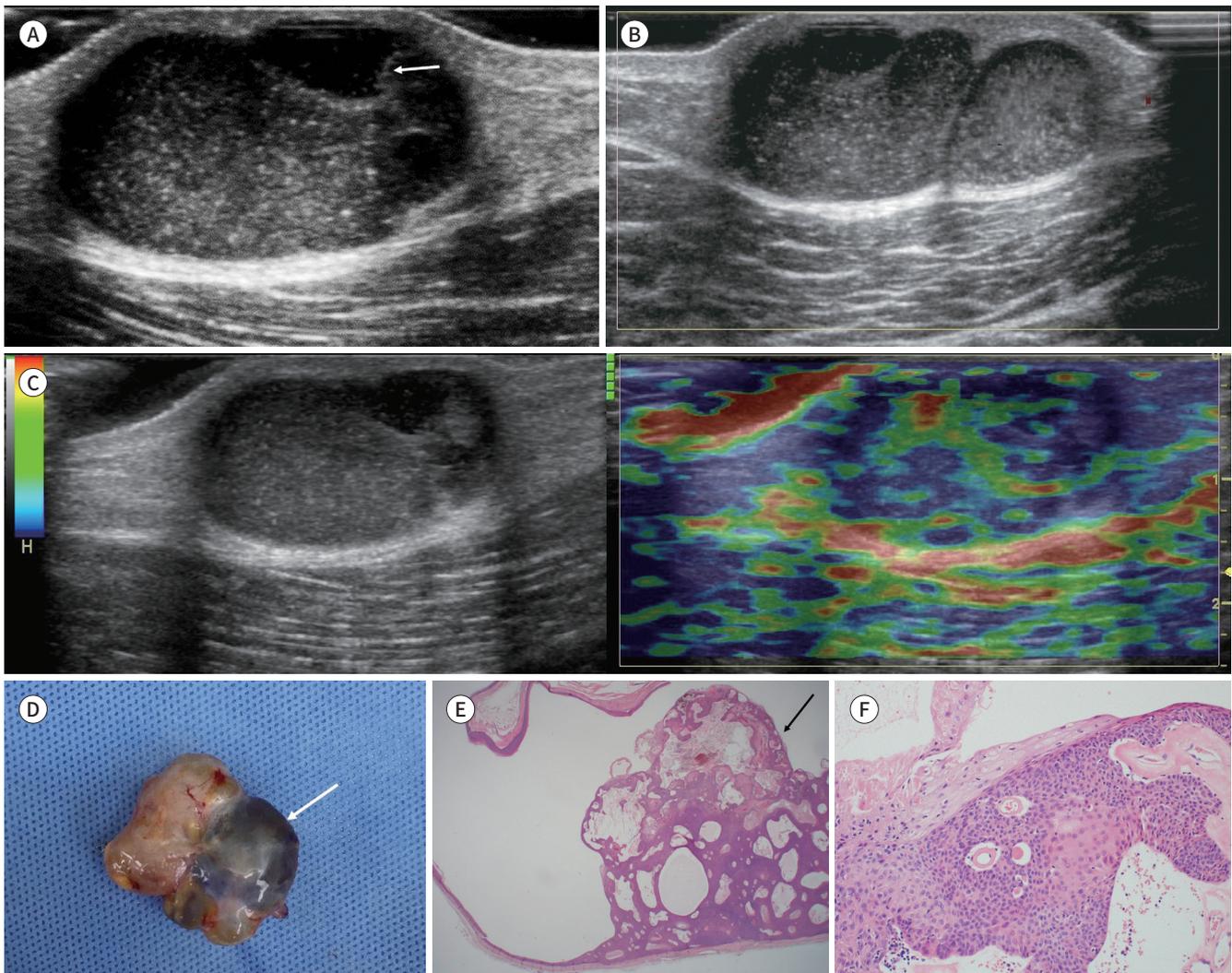
**B.** The color Doppler study shows no vascularity in the mass.

**C.** Strain elastography demonstrates predominantly blue area with a few small green areas in the region of interest, which implies low elasticity (hard lesion).

**D.** Gross appearance of the specimen shows a multilocular cystic lesion (arrow) with hemorrhagic serous fluid.

**E, F.** Histopathological features of the lesion demonstrate solid and cystic components. In a large cystic component, a nodule-like tumor (arrow) with multifocal small cystic spaces is observed (H&E stain,  $\times 12.5$ ) (**E**). The tumor is composed of monotonous poroid cells with round-to-oval nuclei and show partly squamous differentiation and prominent hyalinized stroma (H&E stain,  $\times 200$ ) (**F**).

H&E = hematoxylin and eosin



ings, they reported that the anechoic portions corresponded to the cystic component, and the inner echogenic portions corresponded to the solid component. Furthermore, the vascularity of the tumor seen on color Doppler US corresponded to the multiple vascular channels confirmed on the histologic exam. Several cases showed multiple septa in the cystic portion that were associated with the chronicity of CCH (1). In our case, nodular tumor cell which might correspond to the mural nodule in other reports were seen on microscopic image (Fig.

1E), however as the size of the nodule was small we could not see typical shape of mural nodule on gray scale US image. And these findings also mimicked epidermoid tumor. Hemorrhage and inflammation can cause heterogeneous echogenicities and thickening of the outer wall or internal septa (1). In our study, we were able to find moving material in lesions on ultrasound imaging that could be due to these hemorrhagic content. Wortsman et al. (5) called these moving echoes that resemble falling of snow as snow falling sign. In another study, some cases showed calcification of the wall and mural nodules in CCH (6).

Ryu et al. (4) reported SE results from CCH in the breast. The report was the only one that mentioned the elastographic findings associated with CCH. As described in this report, SE showed that most of the solid component was hard. In our case, SE revealed a blue-color-dominant pattern, which implies a hard lesion (Fig. 1C). Gray scale US imaging findings of CCH mimic those of epidermoid tumor, but SE findings show that CCH is harder than epidermoid tumor (7). Therefore, SE findings may be helpful for the diagnosis of CCH mimicking epidermoid tumor. However, the exact cause of these findings is unknown. Unlike epidermal tumors, most CCH lesions are composed of solid materials.

Malignant hidradenoma, hidradenocarcinoma arising de novo or secondarily from a pre-existing hidradenoma, is extremely rare. It can recur locally or metastasize distantly. Only a few cases have been reported, and the differentiation from benign hidradenoma by only imaging is difficult (2, 8, 9).

In conclusion, we presented a rare case of CCH with its US and SE findings in a lesion that looked like an epidermoid tumor.

#### Author Contributions

Conceptualization, P.H.J.; data curation, K.J.H.; investigation, P.H.J.; project administration, P.H.J.; supervision, P.H.J.; writing—original draft, K.J.H.; and writing—review & editing, K.J.N., P.H.J.

#### Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

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## REFERENCES

1. Lee JY, Kang BS, Shim HS, Song IH, Kim M, Lee SH, et al. Clear cell hidradenoma: characteristic imaging features on ultrasonography, computed tomography, and magnetic resonance imaging. *J Ultrasound Med* 2018;37:1993-2001
2. Ha J, Chung HW, Song JS. Clear cell hidradenoma and hidradenocarcinoma arising from benign hidradenoma: imaging findings of ultrasonography and CT. *J Korean Soc Radiol* 2019;80:768-772
3. Cho KE, Son EJ, Kim JA, Youk JH, Kim EK, Kwak JY, et al. Clear cell hidradenoma of the axilla: a case report with literature review. *Korean J Radiol* 2010;11:490-492
4. Ryu MJ, Kim Y, Lee S, Choi JH. Eccrine hidradenoma mimicking primary breast cancer on mammography and ultrasonography. *Iran J Radiol* 2020;17:e93054
5. Wortsman X, Reyes C, Ferreira-Wortsman C, Uribe A, Misad C, Gonzalez S. Sonographic characteristics of apocrine nodular hidradenoma of the skin. *J Ultrasound Med* 2018;37:793-801
6. Ghai S, Bukhanov K. Eccrine acrospiroma of breast: mammographic and ultrasound findings. *Clin Radiol* 2004;59:1142-1144
7. Park HJ, Lee SY, Lee SM, Kim WT, Lee S, Ahn KS. Strain elastography features of epidermoid tumours in su-

perficual soft tissue: differences from other benign soft-tissue tumours and malignant tumours. *Br J Radiol* 2015;88:20140797

8. Ham T, Cheon SJ, Roh MS, Ha DH. Ultrasonography of malignant clear cell hidradenoma: a case report. *J Korean Soc Radiol* 2020;81:448-452
9. Kane B, Adler E, Bhandari T, Rose M, DiGuglielmo N, Sun X. Malignant hidradenocarcinoma in the lower extremity: a case report of a rare tumor. *J Foot Ankle Surg* 2018;57:618-621

## 표피 종양처럼 보이는 투명 세포 열선 종의 초음파 및 변형 탄성 소견: 증례 보고

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투명 세포 열선 종(clear cell hidradenoma; 이하 CCH)은 외분비 또는 아포크린 분화 땀샘의 드문 종양이다. 신체의 어느 곳에서나 발생할 수 있지만 일반적으로 머리, 얼굴, 몸통과 사지에서 발생한다. 여러 보고에서 CCH의 초음파 소견에 대해 언급하였지만 변형 탄성 초음파(strain elastography; 이하 SE) 소견에 대한 연구는 겨드랑이의 병변에 대해 보고한 한 경우밖에 없다. 우리는 표피 종양(epidermoid tumor)처럼 보였던 종아리에서 발생한 CCH의 사례를 초음파 소견과 SE 소견을 함께 보고하는 바이다.

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