Ann Dermatol Vol. 33, No. 3, 2021
pISSN 1013-9087 · eISSN 2005-3894
https://doi.org/10.5021/ad.2021.33.3.289

CASE REPORT

Poroid Hidradenoma: A Two-Case Report and Literature Review

Joon Soo Lim, Eun Sun Kwon, Ki Bum Myung, Seung Hyun Cheong

Department of Dermatology, Konyang University College of Medicine, Daejeon, Korea

Poroid hidradenoma (PH) is a rare benign tumor that shows differentiation of the eccrine sweat gland. It occurs mainly in adults, presenting as a 0.5 to 2 cm-sized intradermal nodule, mostly on the head, extremities, trunk and neck. We report two rare cases of PH, one on the face and the other on the heel. The first patient was a 50-year-old male who had a solitary, skin-colored nodule on his right temple for 6 months. The second patient was a 67-year-old female who presented with a solitary, bean-sized, tender nodule on her left heel for 1 year. The common histological examination finding was a well-circumscribed tumor composed of solid portions and large cystic spaces in the center. The tumor cells consisted of small, monomorphic poroid cells and large cuticular cells in both cases. To our knowledge, only few cases of PH have been reported. Herein, we report two rare cases of PHs with literature review. **(Ann Dermatol 33(3) 289～292, 2021)**

-Keywords-
Cuticular, Eccrine, Hidradenoma, Poroid

INTRODUCTION

Poroid hidradenoma (PH) is a benign neoplasm with eccrine differentiation[1]. Typically, PH is a solitary tender nodule with a diameter ranging from 0.5 to 2 cm. It appears skin-colored or slightly reddish, but the presence of cystic parts may confer a blue color on the lesion. It has both solid and cystic components and is restricted within the dermis[2]. We present rare cases of PH in two patients.

CASE REPORT

Case 1

A 50-year-old male presented with a solitary skin-colored nodule on his right temple. The patient recalled first noticing the lesion 6 months before. The lesion had increased in size, but the patient did not complain of tenderness or other subjective symptoms. He had a history of nephrotic syndrome and no history of trauma in the area of the skin lesion. He had no relevant social and family histories. Physical examination revealed a bean-sized, skin-colored, indurated nodule arising from the right temple (Fig. 1A).

Case 2

The second case was a 67-year-old female who presented with a solitary tender nodule on her left heel. The lesion had appeared 1 year prior and slowly enlarged over 3 months. The patient had a history of hypertension and no history of trauma in her skin lesion. She had no relevant social and family histories. Physical examination revealed a 1.5 cm-sized, bluish indurated nodule arising from the left heel (Fig. 1B).

Histological examination of two specimens revealed well-circumscribed tumors composed of solid portions and large cystic spaces. Tumors were confined entirely to the dermis and no epidermal connection could be seen. Ductal lumens were filled with eosinophilic materials, They consisted of smaller monomorphic poroid cells with round-to-oval nuclei and larger cuticular cells with a pale cyto-

Received July 1, 2020, Revised November 2, 2020, Accepted for publication December 17, 2020

Corresponding author: Seung Hyun Cheong, Department of Dermatology, Konyang University Hospital, 158 Gwanjeodong-ro, Seo-gu, Daejeon 35365, Korea. Tel: 82-42-600-9220, Fax: 82-42-600-9090, E-mail: mabie@hanmail.net
ORCID: https://orcid.org/0000-0001-8443-724X

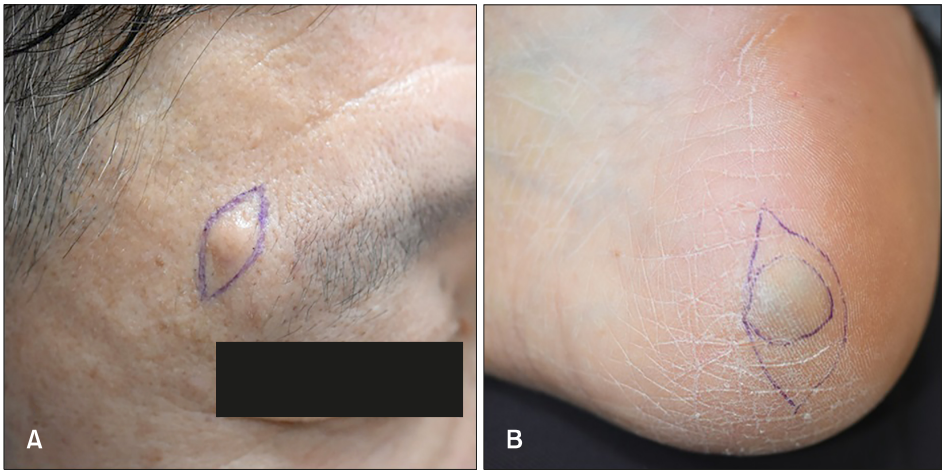

Fig. 1. (A) Case 1: A 50-year-old male with a solitary skin-colored nodule on the right temple. (B) Case 2: A 67-year-old female with a 1.5 cm-sized, bluish indurated nodule arising from her left heel.

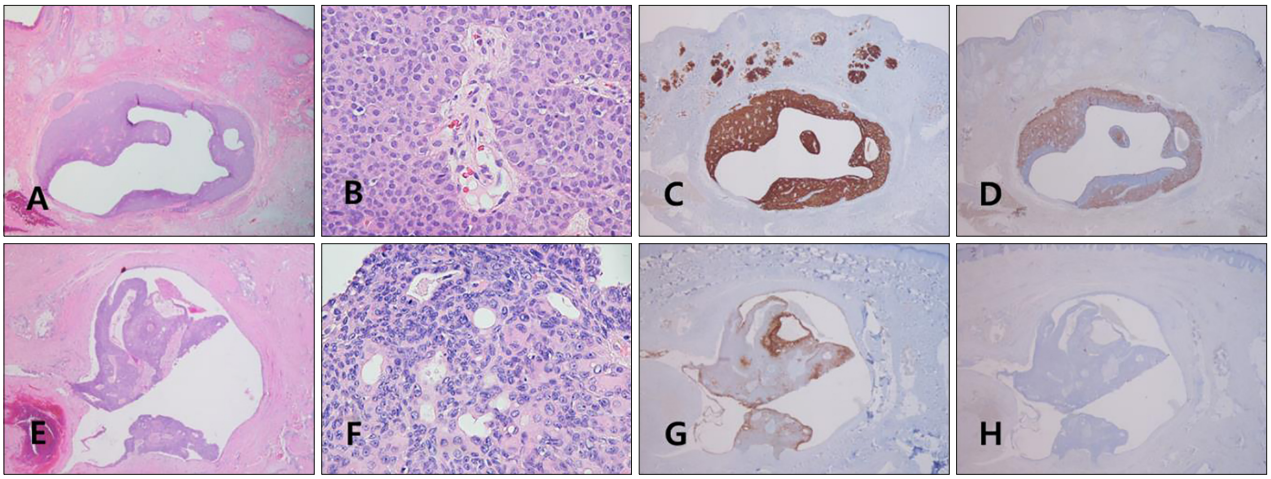

Fig. 2. (A～D) Case 1. (E～H) Case 2. (A) A well-circumscribed tumor composed of solid and cystic components in the mid-dermis and no epidermal connection could be seen (H&E, ×40). (B) Ductal structures are lined by cuticular cells and some poroid cells could be observed (H&E, ×200). (C) A tumor showed positive for epithelial membrane antigen (EMA; ×40). (D) A tumor showed positive for carcinoembryonic antigen (CEA; ×40). (E) A tumor composed of soild and cystic components with no epidermal connection (H&E, ×40). (F) Poroid cells and cuticular cells were mixed in the solid portion of tumors and ductal lumens were filled with eosinophilic materials (H&E, ×200). (G) A tumor showed positive for EMA (×40). (H) A tumor showed negative for CEA (×40).

plasm in both cases (Fig. 2). In an immunohistochemical study, carcinoembryonic antigen (CEA) and epithelial membrane antigen (EMA) were both positive in the solid portions and ductal structures in the first case. In the second case, only EMA was positive (Fig. 2). We received the patient's consent form about publishing all photographic materials.

DISCUSSION

PH is a form of hidradenoma with eccrine differentiation according to the WHO classifications of skin tumors[1]. The age of onset ranges widely, with a peak incidence in the seventh decade of life[3]. No sex or ethnic predilection was reported. The most predominant site of involvement is the head and neck region, followed by the axilla, trunk, and extremities[4]. Miller et al.[1] reported the systematic reviews of PH, which occur more commonly in male, in the head and neck region or limbs. Considering that these neoplasms

Table 1. The locations of patients with poroid hidradenoma worldwide including our cases

Site of the lesion	Number (%)
Trunk	21 (33)
Upper limb	13 (21)
Palm	0 (0)
Lower limb	11 (17)
Plantar aspect of foot (our case)	1 (1)
Head and neck (our case)	12 (19)
Another site	4 (6)

Table 2. Previous reported cases of poroid hidradenomas in Korean literature

Case no.	Age (yr)/sex	Trauma history	Duration (yr)	Clinical feature	Site	Author
1	51/Female	-	1	A solitary bluish nodule	Right thigh	Park et al. (2005)[10]
2	55/Female	-	3	A solitary bluish nodule	Left shin	Kim et al. (2007)[11]
3	79/Female	-	1	A solitary reddish to bluish nodule	Back	Kim et al. (2015)[12]
Our case 1	50/Male	-	0.5	A solitary skin-colored nodule	Right temple	
Our case 2	67/Female	-	1	A solitary bluish nodule	Left heel	

can be generally asymptomatic or accompanied by mild tenderness, the incidence of PHs might be underestimated in the literature[5].

Hidradenomas have traditionally been considered to exhibit eccrine differentiation based on histochemical and electron microscopic features[2]. However, recently, subclassification of hidradenomas into two groups, those with apocrine differentiation (known as clear cell hidradenoma) and those exhibiting eccrine differentiation (known as PH), was suggetsted[6]. The former accounts for 95% of all hidradenomas and is composed of clear, polygonal, and mucinous cells with apocrine differentiation. The latter neoplasm, which constitutes 5% of hidradenomas, is characterized by a single or multilobulated dermal nodule with no connection to the epidermis and consists of two cell types, poroid and cuticular cells with eccrine differentiation.

Histopathological examination revealed that PH presents solid and cystic components, and tumor cells restricted to the dermis[7]. The tumor is composed of two types of cells, poroid and cuticular cells. Poroid cells are uniform, small cuboidal cells with an oval-to-round nuclei. Cuticular cells have an abundant eosinophilic cytoplasm with a larger nucleus that shows occasional multinucleation. The cystic spaces are considered as eccrine dilated ducts containing eccrine secretory fluid.

In immunohistochemical studies, epithelial markers such as EMA and cytokeratin are considered related to the cells of the dermal sweat ducts[5]. EMA demonstrates eccrine differentiation[7]. CEA, a sensitive marker of cutaneous adnexal tumors, can also be positive.

The distribution of the lesions varied between the tumor groups. In our literature review, PHs are mostly predominant in the trunk and are not found on the plantar aspect of the foot (Table 1)[2]. A second patient with PH in the plantar area of the foot will be the rare case worldwide.

PHs are mostly covered with intact skin; however, approximately 15% of these neoplasms demonstrate ulceration at presentation due to direct trauma or abrasion to the mass[2]. PHs can have a bluish aspect, probably due to the Tyndall effect of the cystic components within the tumors[5]. This confounds the clinician in distinguishing between PH, angioma, melanoma and nevus.

The differential diagnosis of PH includes other poromas (hidroacanthoma simplex, dermal duct tumor, eccrine poroma) and apocrine hidradenomas[8]. Hidroacanthoma simplex is characterized by nests of round cells within normal epidermal cells. Dermal duct tumor is same histopathologic features, but located in the dermis. Eccrine poroma is clear margin between normal epidermal keratinocytes and cuboidal cells with dark nuclei protrudes into the underlying dermis. Apocrine hidradenomas are characterized by mucinous, polygonal and clear cells, and decapitation secretion into the ducts with apocrine differentiation[8]. In addition, some benign subcutaneous neoplasms such as fibroma, fibrolipoma, dermatofibroma, hemangioma, pyogenic granuloma, epidermal cyst, and basal cell epithelioma might be confused with this neoplasm[8]. Therefore, histological examination with a skin biopsy is crucial for the diagnosis of PH.

PH is treated with total excision of the lesion, which is usually curative. These neoplasms are considered benign, because the risk of malignant transformation is less than 1%[9]. Furthermore, the prognosis of PH is relatively good, and recurrence has rarely been reported[2]. Our patients had no complications or recurrence 3 months after the excision.

Until now, only few cases of PHs have been reported. Since 1990, rare cases of PHs have been reported in the literature and only 3 case reports have been published in Korea (Table 2)[10-12]. In these reports, the clinical features of patients were similar with those of our patients, except the anatomical sites (thigh, shin, back). Herein, we report two rare cases of PHs.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

FUNDING SOURCE

None.

DATA SHARING STATEMENT

Research data are not shared.

ORCID

Joon Soo Lim, https://orcid.org/0000-0002-5934-8170
Eun Sun Kwon, https://orcid.org/0000-0003-0183-8924
Ki Bum Myung, https://orcid.org/0000-0002-5464-6929
Seung Hyun Cheong, https://orcid.org/0000-0001-8443-724X

REFERENCES

1. Miller R, Ieremia E, Birch J, Chan J. Poroid hidradenoma in the hand: a case report and systematic review. J Cutan Pathol 2018;45:696-700.
2. Whitmore RM, Anderson CJ, Piper T. Poroid hidradenoma. A case presentation. J Am Podiatr Med Assoc 1998;88:510-513.
3. Delfino S, Toto V, Brunetti B, Di Marino MP, Baldi A, Persichetti P. Poroid hidradenoma: a case report. In Vivo 2007;21:905-907.
4. Ueno T, Mitsuishi T, Kawana S. Poroid hidradenoma: a case report with review of Japanese published work. J Dermatol 2007;34:495-497.
5. Liu HN, Chang YT, Chen CC, Huang CH. Histopathological and immunohistochemical studies of poroid hidradenoma. Arch Dermatol Res 2006;297:319-323.
6. Nandeesh BN, Rajalakshmi T. A study of histopathologic spectrum of nodular hidradenoma. Am J Dermatopathol 2012;34:461-470.
7. Requena L, Sánchez M. Poroid hidradenoma: a light microscopic and immunohistochemical study. Cutis 1992;50:43-46.
8. Battistella M, Langbein L, Peltre B, Cribier B. From hidroacanthoma simplex to poroid hidradenoma: clinicopathologic and immunohistochemic study of poroid neoplasms and reappraisal of their histogenesis. Am J Dermatopathol 2010;32:459-468.
9. Chiu HH, Lan CC, Wu CS, Chen GS, Tsai KB, Chen PH. A single lesion showing features of pigmented eccrine poroma and poroid hidradenoma. J Cutan Pathol 2008;35:861-865.
10. Park KT, Ahn YS, Kim JS, Yu HJ, Park YW. A case of poroid hidradenoma. Korean J Dermatol 2005;43:1142-1144.
11. Kim DH, Song JY, Choi KC, Chung BS. A case of poroid hidradenoma. Korean J Dermatol 2007;45:1109-1111.
12. Kim DJ, Baek JH, Lee DY, Lee SK, Kim MS, Lee UH, et al. A case of poroid hidradenoma. Korean J Dermatol 2015;53:230-234.