

CASE REPORT

Apocrine hidrocystoma of the foreskin. A case report and review of the literature

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Apocrine hidrocystoma (AH) is an uncommon benign cystic tumor that is rarely located in the genitalia. We present the case of a 52-year-old uncircumcised man who presented an AH on his foreskin. The lesion was non-proliferative. Including the present report, only 10 cases of penile AH have been published to date. Most patients are adult (mean age 39.2 years, range 25–56 years) and only one case in one child and another case in one adolescent have been reported. The lesion involves more commonly the foreskin followed by the shaft. The average maximum diameter was 1.6 cm (range 0.3–3 cm). The majority (70%) of tumors are unilocular. The main differential diagnosis of AH includes eccrine hidrocystoma, epidermal inclusion cyst and male median raphe cyst. Complete excision of the lesion is curative.

Keywords: apocrine hidrocystoma, foreskin, immunohistochemistry, penis.

Introduction

Apocrine hidrocystoma (AH) is an uncommon benign cystic tumor that arises from the apocrine secretory coil, most often found on the face or scalp, especially at the periorbital region [1]. The tumor occurs in any age group and is prevalent in adults between 30 and 70 years of age [1, 2]. This lesion is usually solitary and equally prevalent among males and females [1].

The tumor rarely occurs on the genitalia [1]. As far as we are aware, only nine cases of this neoplasm have been reported on the penis [3–10].

We herein report a new case of AH located on the foreskin and a review of the literature.

Case presentation

A 52-year-old uncircumcised man was referred for evaluation of an asymptomatic dome-shaped lesion over his foreskin. It had been present for the last three years, and had increased in size over the last months. His past medical history was irrelevant. Physical examination revealed a skin-colored, painless, well-delimited nodule that measured 2×1.5 cm.

The section of the circumcision specimen showed dermal cystic spaces (Figure 1A) lined by one or several layers of high-columnar or cuboidal cells with eosinophilic granular cytoplasm and basally situated nuclei (Figure 1B). There were some papillary projections and folding into the cystic cavities. These projections consisted of a stalk of vascular connective tissue covered by the columnar epithelium (Figure 2A). Decapitation secretion was observed in the columnar cells (Figure 2B). Myoepithelial cells could be observed beneath the epithelial layer and on a basement membrane. Nuclear atypia and mitosis were not detected. Some cystic spaces were filled with proteinaceous material.

Immunohistochemical study revealed intense, diffuse positivity of the secretory epithelial cells for cytokeratin (CK) 7 (Figure 3A), CK 8/18, androgen receptor (Figure 3B) and GATA3 (Figure 3C) and focal positivity for gross cystic disease fluid protein 15 (GCDFP15) and S100 protein. The myoepithelial cells showed intense, diffuse reactivity for CK 5/6, and p63 (Figure 3D), and negativity for S100 protein, calponin, and alpha-smooth muscle actin (α -SMA). Ki-67 labeling of the lesion was very scant.

Antibodies used in the immunohistochemical study are detailed in Table 1.

Table 1 – Antibodies used in this study

Antibody	Source	Clone	Dilution	Retrieval solution pH (Dako)
CK 7	Dako	OV-TL12/30	FLEX RTU	High
CK 8/18	Dako	EP17/EP30	FLEX RTU	High
CK 5/6	Dako	D5/16B4	FLEX RTU	High
Androgen receptor (AR)	Dako	AR441	1:50	High
GATA3	Biocare Medical	L50-823	1:250	Low
GCDFP15	Dako	23-A3	FLEX RTU	High
S100 protein	Dako	Polyclonal	FLEX RTU	High
P63	Dako	DAK-p63	FLEX RTU	High
Calponin	Dako	CALP	1:200	High
α -SMA	Dako	1A4	FLEX RTU	High
Ki-67	Dako	MIB1	FLEX RTU	Low

Biocare Medical, Pacheco, CA, USA; Dako, Glostrup, Denmark; CK: Cytokeratin; GCDFP15: Gross cystic disease fluid protein 15; RTU: Ready to use.

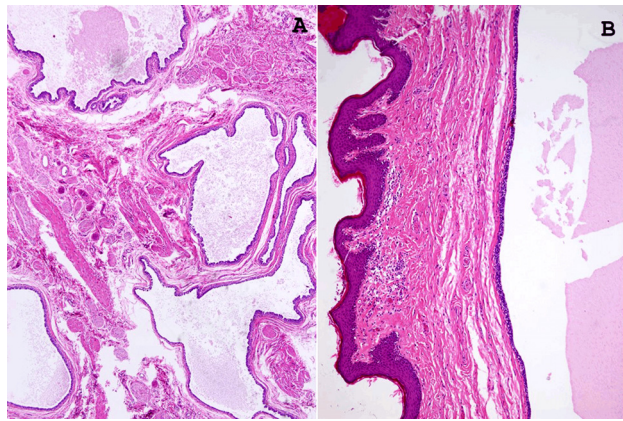


Figure 1 – Histopathological features of the apocrine hidrocystoma of the foreskin: (A) Scanning power showing a multicystic lesion; (B) The lesion is located in the dermis and shows a pseudostratified columnar epithelium. Hematoxylin–Eosin (HE) staining: ×40 (A); ×100 (B).

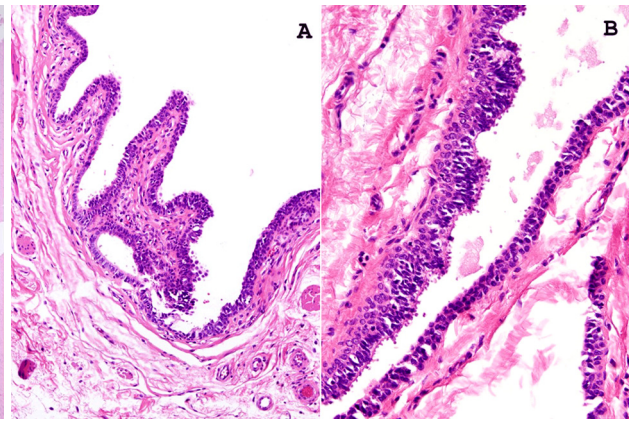


Figure 2 – Organization and cytological aspect of the lesion: (A) Papillary projections into the cyst cavity. The core of each projection is formed by vascular connective tissue; (B) Stratified columnar epithelium with decapitation secretion. HE staining: ×200 (A); ×400 (B).

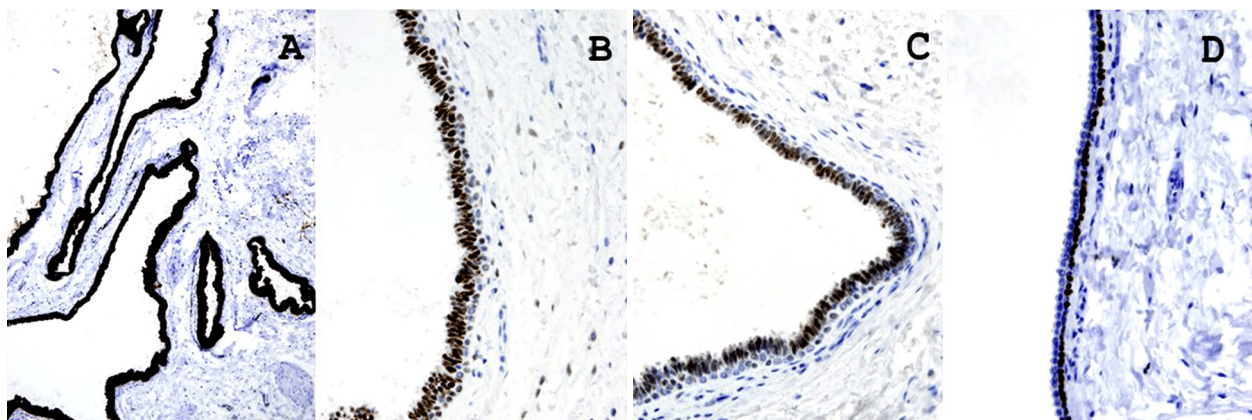


Figure 3 – Immunohistochemistry of the apocrine hidrocystoma: (A) Intense positivity of the secretory cells for CK 7 (×100), (B) Androgen receptor (×400) and (C) GATA3 (×400); (D) Myoepithelial cells are reactive for p63 (×400).

Discussion

AH was first described by Mehregan, as a benign nevoid tumor, which represents an adenomatous cystic proliferation of apocrine glands. Thus, the lesion was called apocrine cystadenoma [11]. AH and apocrine cystadenoma have been used interchangeably in the literature. However, Sugiyama *et al.* presented the basis for separation the AH from the apocrine cystadenoma. They reported that the lesions with true papillary projections should be referred to apocrine cystadenoma rather than AH. Thus, they divided the cystic apocrine lesions in two groups: proliferative and non-proliferative. In the proliferative group (apocrine cystadenoma) there are true complex papillae with a fibrous core, and this change is usually associated with atypia, mitotic activity and increased Ki-67 staining. In the non-proliferative group (AH), there may be some structures that resemble papillary projections but lack a fibrous core [12].

AH is rarely located on the genitalia [1]. Including the present report, only 10 cases have been published to date [3–10] (Table 2).

Most patients are adult (mean age 39.2 years, range 25–56 years) and only one case in one child [7] and another case in one adolescent [10] have been reported. No case was associated with ectodermal dysplasia syndromes such as Schöpf–Schulz–Passarge syndrome (SSPS) or

other significant processes. The lesion involves more commonly the foreskin followed by the shaft. The average maximum diameter was 1.6 cm (range 0.3–3 cm). The majority (70%) of tumors are unilocular. Their color may vary from skin colored to blue, or even brown or pigmented.

Table 2 – Cases of apocrine hidrocystoma reported on the penis

Case No. / [Reference]	Age [years]	Location on penis	Size [cm]	Locules	Myoepithelial cells
1 / [3]	29	Prepuce	1	Unilocular	Absence
2 / [3]	56	Prepuce	–	Unilocular	Absence
3 / [4]	49	Prepuce	3	Unilocular	Presence
4 / [5]	28	Shaft	1.3	Unilocular	Presence
5 / [6]	35	Shaft	1.5	Multilocular	Not reported
6 / [7]	6	Urethral meatus	0.3	Multilocular	Presence
7 / [8]	25	Glans	1.2	Unilocular	Presence
8 / [9]	40	Shaft	3	Unilocular	Not reported
9 / [10]	16	Urethral meatus	0.8	Unilocular	Presence
10 / Our report	52	Prepuce	2	Multilocular	Presence

The present case showed intraluminal papillary infoldings, but these were different from the branched, complex papillae illustrated by Sugiyama *et al.* [12]. In addition, the percentage of Ki-67 positive cells was

extremely low. Therefore, our case belongs to the non-proliferative group; *i.e.*, we classify it as an AH. Immunohistochemical study confirmed the apocrine nature of the secretory cells. CK 7, CK 8/18, AR, GATA3 [13], and GCDFP15 are sensitive and relatively specific markers for these cells. On the other hand, S100 can be positive in the secretory cells of both eccrine and apocrine hidrocystoma [14].

Two cases showed absence of myoepithelial cells (Table 2); however, these cases were reported prior to the use of immunohistochemical stainings. Immunohistochemical staining for myoepithelial cells in cutaneous benign cystic apocrine lesions is variable. Recently, p63 has been recommended as a reliable marker [15].

Excision of AH is generally curative. Recurrence is possible in theory, but it has never been reported.

AH should be considered in the differential diagnosis of penile tumors. To this purpose, it should be noted that AH can show a complete oncocytic change [16]. The main differential diagnosis of AH includes eccrine hidrocystoma, epidermal inclusion cyst and male median raphe cyst. Eccrine hidrocystomas result from dilation of eccrine glands due to retention of sweat and blockage of the sweat duct. They appear as unilocular structures lined by one or two layers of cuboidal cells. There are no secretory cells showing decapitation [17]. Epidermal inclusion cysts are the most common genital cystic lesions [18]. These cysts are lined by a keratinizing squamous epithelium showing a granular layer. The lumen is filled with keratin [18]. The cysts may appear as a late complication of penile surgery such as hypospadias repair or circumcision [18, 19]. Median raphe cysts are predominantly found on the paramental site and penile shaft and have a clear mucinous content. The lining of the cyst can be variably composed of urothelium-like epithelium without umbrella cells (urethral type), pure squamous epithelium without keratin, well-formed intraepithelial mucinous glandular structures, squamous metaplasia with mucinous cells, and focal ciliated cell metaplasia. The urethral type of epithelium is the most common type [20].

✉ Conclusions

AH of the foreskin is rare and may present as an asymptomatic swelling. The condition needs to be differentiated from other congenital or acquired cystic lesions of the penis. Although the lesion may have a proliferative character, recurrence or malignant transformation has not been described. Treatment should include complete excision.

Conflict of interests

The authors declare that they have no conflict of interests.

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Consent

Written informed consent was obtained from the patient for publication of this case report and all accompanying images.

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