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**Photo Vignette**

**Changing pigmentation in a solitary scalp lesion**

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**Abstract**

A healthy 66 year-old man presented with a complaint of changes within a nodule on the scalp, which had first appeared over 10 years prior. He had no previous history of skin cancer. On physical examination a solitary, asymmetric, purple-black nodule with irregular borders was identified on the right vertex of his scalp. The remainder of his examination did not reveal any additional lesions.

**Keywords: Pigmented lesions, hidrocystoma**

**Case synopsis**

A healthy 66 year-old man presented complaining of changes within a lesion on the scalp, which had first appeared over 10 years prior. The patient felt it could be related to a head injury he experienced around that time. Recently, his sons noted a change in its coloration. Otherwise, the scalp nodule remained the same size without bleeding or pain from the affected area. He had no personal or family history of skin cancer.

On physical examination, a 1.8 x 1.5 cm solitary, asymmetric, purple-black nodule with irregular borders was identified on the right vertex of his scalp (Figure 1). The remainder of his skin examination did not reveal any other similar lesions. An excisional biopsy was performed for histopathological examination.

Histopathologic examination demonstrated a large dilated cyst extending from the dermis into the subcutaneous fat (Figure 2). The cystic space was lined by bland appearing cuboidal to flat cells, many of which contained a small amount of brown pigment. Some areas showed decapitation secretion (Figure 3). No evidence of old or recent hemorrhage in or around the cyst was identified. A Prussian Blue stain was negative for iron deposition in or around the cyst. Focal positive staining of cytoplasmic granules with Fontana and periodic acid-Schiff (PAS) was observed. Melanocytic immunohistochemical markers (MART-1 and MITF) did not reveal an atypical melanocytic lesion.



Figure 1. Purple-black nodule on the scalp

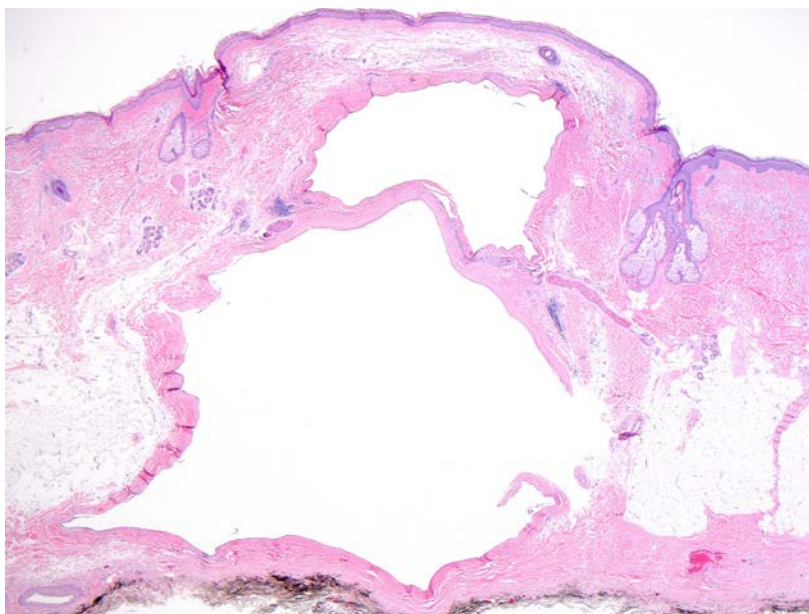


Figure 2. Dilated cyst lined by cuboidal to flat cells

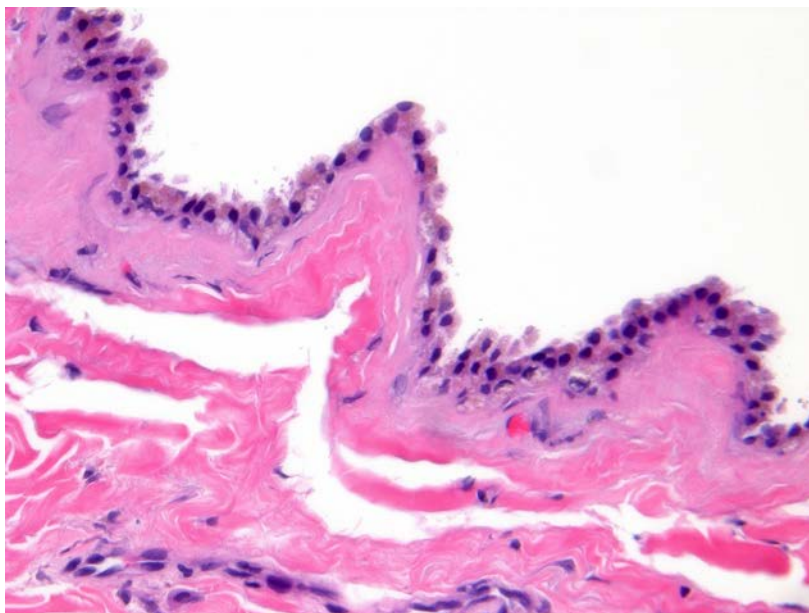


Figure 3. Decapitation secretion

## Discussion

Hidrocystomas are benign cysts arising on the face, trunk, axilla, or popliteal fossa with their most common location in the periorbital region [1]. They have a slight predilection for females and can either occur as multiple (Robinson type) or solitary (Smith and Chernosky) lesions [2]. Classically, their appearance is associated with warm humid environments because they are believed to be retention cysts of the intradermal sweat ducts.

Clinically, hidrocystomas appear as firm, translucent, dome-shaped papules. Their coloration can vary from skin color to blue, brown, or black with 8-50% of them containing pigmentation [3, 4]. As a result, these lesions can mimic both non-melanocytic and melanocytic lesions. Therefore, the clinical differential diagnosis of such lesions should include other benign follicular cysts (epidermal inclusion cyst and pilar cyst), dysplastic nevi, melanoma, basal cell carcinoma, hemangioma, and nodular Kaposi sarcoma [2]. Our case was clinically suspected to be either a melanoma or a vascular tumor.

The cause of this pigmentation in hidrocystomas remains unclear. The scattering of shorter wavelengths of light by the cyst contents, known as the Tyndall phenomenon, is favored [2, 3]. The brown cytoplasmic pigment likely also contributes to the atypical pigmentation. This brown pigment within pigmented hidrocystomas is thought to be lipofuscin, a brown-yellow cytoplasmic deposit that results from the oxidation of cellular contents [5]. It begins to accumulate in the skin during childhood and increases with age. Positivity with PAS and lack of reactivity with Prussian blue and MART-1 help to distinguish it from iron deposition or melanocytic pigmentation respectively [5].

Upon histologic examination, apocrine and eccrine hidrocystomas are unilocular cysts, usually in close proximity to apocrine or eccrine glands [2]. The walls of the cysts are lined by two layers of cuboidal cells with eosinophilic cytoplasm and bland nuclei [1]. The presence of papillary projections, decapitation secretion, or PAS-positive diastase-resistant cytoplasmic granules helps to differentiate apocrine cysts from those of eccrine origin [1-3]. However, secretions within the lumen may result in flattening of the cuboidal wall, making delineation between the two difficult. Finally, close inspection of the epidermis, dermis, and cyst wall for atypical melanocytes should be performed because central involution of a melanocytic lesion from necrosis must be excluded [5].

No medical intervention is required for hidrocystomas, but possible treatment options include surgical excision, carbon dioxide laser vaporization, atropine, and topical scopolamine [2]. Clinical observation of these lesions may be warranted; a very rare case of squamous cell carcinoma has been found arising from squamous metaplasia within a cyst [6].

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