International Journal of Medical and Pharmaceutical Research

Online ISSN-2958-3683 | Print ISSN-2958-3675
Frequency: Bi-Monthly
Website: https://ijmpr.in/

Case Report

Cylindroma of the Scalp: A Diagnostic Challenge on Cytology with Histopathological Correlation

Dr Maheshbhai V. Mori[1], Dr Dineshkumar P. Vyas[2], Dr Rakesh L. Suthar[3]

[1]Resident Doctor, Department of Pathology, General hospital, Mehsana, Gujarat 384001
[2]Professor and Head, Department of Pathology, General hospital, Mehsana, Gujarat 384001
[3]Resident Doctor, Department of Pathology, GMERS Medical College, Gotri, Vadodara, Gujarat 390021

Corresponding Author:

Dr Maheshbhai Vallabhbhai Mori
Resident Doctor, Department of Pathology, General hospital, Mehsana, Gujarat 384001
(maheshmori1995@gmail.com)

Received: 17-03-2026
Accepted: 06-04-2026
Published: 23-04-2026

ABSTRACT

Cylindroma is a rare benign adnexal tumour with eccrine or apocrine differentiation, commonly involving the scalp and head region. Recurrent cylindroma is uncommon and poses diagnostic challenges, particularly in cytology, where it may mimic basal cell carcinoma or adenoid cystic carcinoma. We report a rare case of recurrent cylindroma of the scalp in an elderly woman, highlighting the cytological and histopathological features essential for accurate diagnosis and appropriate management.

Keywords*: Cylindroma, Fine-needle aspiration cytology, Scalp, Adnexal tumour.*

INTRODUCTION

Cylindroma is a benign adnexal tumour showing ductal differentiation of eccrine or apocrine origin. It most commonly occurs on the scalp and forehead [1, 2]. With progressive growth and coalescence of multiple nodules, a characteristic "turban tumour" appearance may develop [3]. Cylindromas may be sporadic or inherited in an autosomal dominant manner. Recent advances in molecular pathology have identified mutations in the CYLD tumor suppressor gene as a key factor in the NF-kB signaling pathway [7, 8]. Recurrent cylindroma is rare and warrants careful evaluation to exclude malignant transformation and histologic mimics. On fine needle aspiration cytology (FNAC), cylindroma may closely resemble basal cell carcinoma or adenoid cystic carcinoma, leading to potential misdiagnosis [1, 2]. Histopathological examination remains the gold standard for definitive diagnosis.

CASE REPORT:

A 65-year-old female presented to the outpatient department with a slowly growing, skin-coloured nodule over the parietal region of the head. The lesion was asymptomatic, with no history of pain, discharge, bleeding, ulceration, or crusting. There was a past history of breast carcinoma. Routine laboratory investigations, including complete blood count, liver and renal function tests were within normal limits.

The patient had a history of a similar lesion at the same site approximately 10 years ago, for which surgical excision was performed at an outside facility. However, histopathological slides and margin status from the previous surgery were not available for review. Based on the clinical history and same anatomical location, a provisional diagnosis of recurrent lesion was considered, although the possibility of residual disease can not be completely excluded.

On local examination, a well-defined, firm, non-tender, skin coloured nodular swelling measuring approximately 2 cm in diameter was noted (Figure 1).

Figure 1. Firm, nodular swelling over the parietal region of the scalp

There was no regional lymphadenopathy. The patient was moderately built and nourished and was well oriented to time, place, and person. Radiological investigation was not performed.

Cytological Findings

Fine-needle aspiration cytology (FNAC) was performed using a 22-gauge needle. Smears were fixed in 95% ethyl alcohol and stained with haematoxylin and eosin. Hematoxylin and eosin staining was preferred in this case as it provides superior visualization of eosinophilic basement membrane-like hyaline material, which is a key diagnostic feature of cylindroma, compared to Giemsa stain. The Smears were moderately cellular, showing tight nests and cluster of basaloid cells with mild nuclear atypia and occasional nuclear overlapping. Peripheral palisading was noted in some clusters (Figure 2).

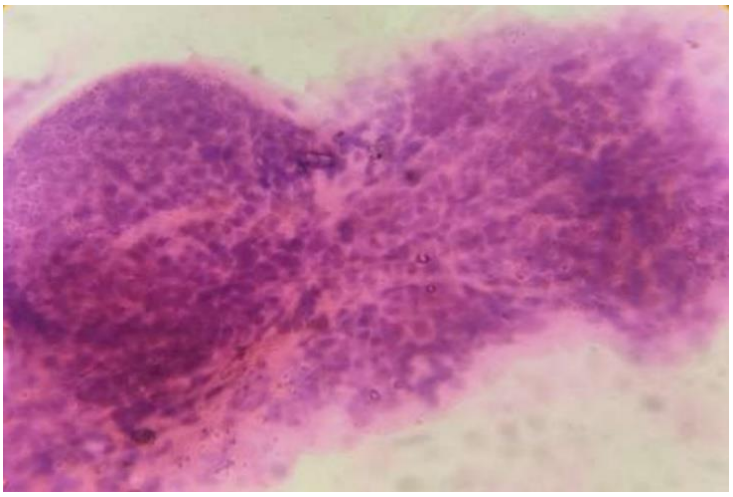

Figure 2. Cytological examination showing basaloid cells with peripheral palisading (H & E stain, 40x objective magnification)

No necrosis or mitotic activity were identified. Cytomorphologically, a differential diagnosis of basal cell carcinoma versus adnexal neoplasm with basaloid morphology was considered.

Histopathological Findings

The lesion was surgically excised and submitted for histopathological examination. Grossly, two nodular masses measuring 1.2 x 1.0 x 0.8 cm and 1.3 x 1.0 x 0.5 cm were received, both having smooth external surfaces. Cut sections were solid and grey-white. Microscopic examination revealed well-circumscribed lobules of basaloid cells arranged in a characteristic jigsaw-puzzle pattern, surrounded by thick hyalinized basement membrane material (Figure 3).

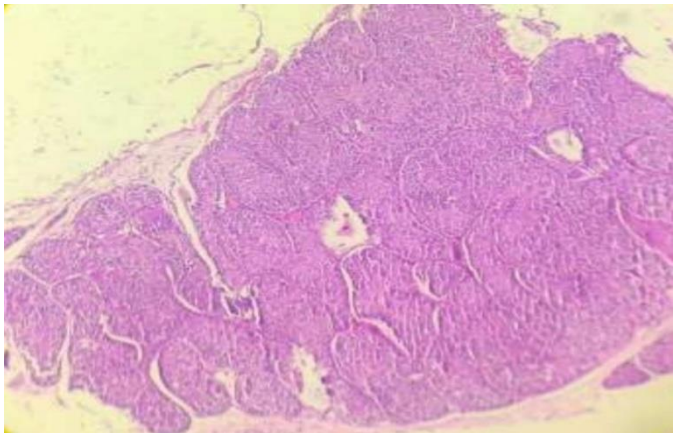

Figure 3. Histological examination showing jigsaw puzzle pattern of basaloid lobules (H & E stain, 10x objective magnification)

Peripheral palisading of tumour cells was observed, with centrally located duct-like structures composed of cells with small, dark nuclei (Figure 4).

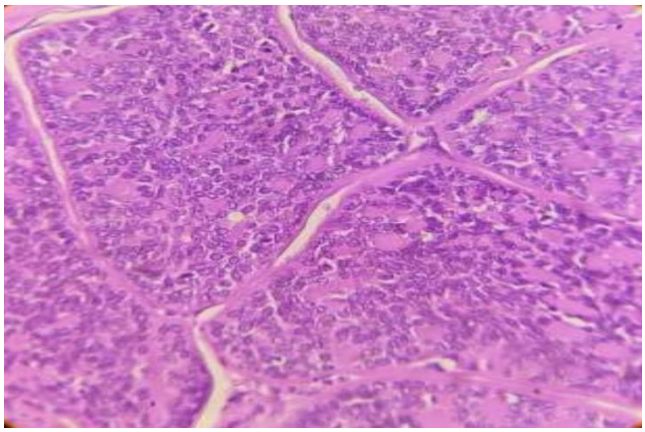

Figure 4. Histological examination showing peripheral palisading and hyalinized stroma (H & E stain, 40x objective magnification)

No significant cytological atypia, necrosis, or mitotic activity was identified. Based on these features, a diagnosis of cylindroma was confirmed.

Immunohistochemistry was not performed as the diagnosis was evident on classical histomorphological features. Additionally, there was no evidence of significant atypia, necrosis, or infiltrative growth to suggest metastatic carcinoma, particularly in the context of the patient's past history of breast carcinoma.

DISCUSSION:

Cylindroma must be differentiated from other adnexal tumours such as eccrine spiradenoma and trichoepithelioma, as well as malignant entities including basal cell carcinoma and primary cutaneous adenoid cystic carcinoma [2, 6]. FNAC of cylindroma can be particularly challenging duo to overlapping cytological features, especially the presence of basaloid cells and hyaline globules, which may closely simulate adenoid cystic carcinoma [1, 6].

Cylindroma is a benign adnexal neoplasm commonly arising from eccrine or apocrine glands and is frequently associated with mutations in the CYLD tumor suppressor gene. This gene plays a crucial role in regulating the nuclear factor kappa-B (NF-kB) signaling pathway, and its inactivation leads to uncontrolled cellular proliferation [7, 8]. These mutations are observed in both sporadic cases and inherited conditions such as Brook-Spiegler syndrome.

Cytological diagnosis of cylindroma can be challenging due to significant overlap with other basaloid neoplasms. FNAC typically reveals tight clusters of basaloid cells, peripheral palisading, and hyaline globules. However, these features may mimic basal cell carcinoma and adenoid cystic carcinoma, leading to potential diagnostic pitfalls. The absence of significant cytological atypia, necrosis, and mitotic activity favors a benign lesion such as cylindroma [1, 9].

Histopathological examination remains the gold standard for definitive diagnosis. The characteristic "jigsaw puzzle" pattern, composed of well-circumscribed nests of basaloid cells surrounded by thick eosinophilic hyaline basement membrane material, is highly diagnostic [9, 10]. Peripheral palisading and the presence of centrally located duct-like structures further support the diagnosis. In contrast, adenoid cystic carcinoma typically demonstrates infiltrative growth,

cribriform architecture, and perineural invasion, which aids in differentiation [6].

Recent advances in dermatopathology and WHO classification have further refined the understanding and classification of adnexal tumours, emphasizing the importance of integrating histopathology with molecular findings [8, 10, 11].

In patients with a prior history of malignancy, particularly breast carcinoma, the possibility of cutaneous metastasis must always be considered. However, metastatic lesions usually exhibit marked cytological atypia, infiltrative growth patterns, and lack the classical architecture seen in cylindroma [9]. In the present case, the absence of these malignant features, along with classical histomorphology, supported a benign diagnosis; hence, immunohistochemistry was not deemed necessary.

In cases of suspected recurrence, distinguishing between true recurrence and residual disease may be challenging in the absence of prior histopathological records and margin status. This limitation should be acknowledged, and careful clinicopathological correlation is essential for accurate diagnosis [4].

CONCLUSION:

This case highlights the diagnostic challenge of cylindroma on cytology due to its overlap with other basaloid neoplasms. Careful histopathological evaluation remains essential for accurate diagnosis. Clinical correlation is important, especially in suspected recurrent lesions where prior records may be limited.

Acknowledgements: None
Founding: None
Competing Interests: None

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