Original Research Paper

Volume - 15 | Issue - 03 | March - 2025 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Pathology

OCULAR SEBACEOUS CARCINOMA OF EYELID- A RARE CASE REPORT

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ABSTRACT Sebaceous carcinoma, a rare & aggressive malignancy originating from sebaceous glands, is commonly observed in the Asian population & associated with syndromes like Muir-Torre syndrome & prior radiation therapy. Clinically, it often mimics benign conditions such as chalazion or blepharitis, delaying diagnosis. This case report discusses an 80-year-old female presenting with progressively enlarging masses on the upper & lower left eyelids. MRI suggested neoplastic etiology, & surgical excision confirmed sebaceous carcinoma through histopathology & immunohistochemistry, with strong positivity for CK7 & EMA. Histological examination revealed malignant epithelial cells arranged in islands & ribbons, with basaloid cells, squamous epithelial pearl formation, & comedo necrosis. These findings highlighted the tumour's aggressive nature & the need for comprehensive management. Postoperative recovery was uneventful, but follow-up was emphasized due to high recurrence risk. Sebaceous carcinoma constitutes 1% of eyelid malignancies, often affecting the upper eyelid. It is characterized by varied growth patterns & cell types. Immunohistochemical markers, including p53 mutations, Ki-67 proliferation index, & CK7, play a pivotal role in diagnosis & prognosis. This case underscores the importance of early diagnosis, histopathological assessment, & vigilant monitoring to mitigate recurrence & metastasis risks.

KEYWORDS : Sebaceous carcinoma, Eyelid malignancies, Muir-Torre syndrome, DNA mismatch repair genes, Periocular tumours

INTRODUCTION

Sebaceous carcinoma originates from cutaneous sebaceous glands, including the gl& of Zeis or the Meibomian glands.[1] This malignancy is more commonly observed in the Asian population & is associated with syndromes such as Muir-Torre syndrome, a clinical variant of hereditary nonpolyposis colorectal cancer syndrome.[2,3] It may also develop as a secondary malignancy following radiation therapy for retinoblastoma.[4]

Clinically, sebaceous carcinoma often mimics benign conditions, such as blepharitis, chalazion, or even basal cell carcinoma & squamous cell carcinoma, which can complicate the diagnostic process.[5]

Sebaceous gland carcinoma (SGC) is a rare but aggressive form of skin cancer, with approximately 40% of cases occurring in the periocular region, constituting around 5% of all eyelid malignancies.[6] This malignancy is known for its high risk of recurrence & metastasis, highlighting the need for prompt & effective management.[7]

Sebaceous carcinoma may also be linked to the autosomal dominantly inherited Muir-Torre syndrome, a rare condition associated with Lynch syndrome & often accompanied by intestinal tract malignancies.[8] Germline pathogenic variants in DNA mismatch repair genes such as MLH1, MSH2, PMS1, PMS2, MSH3, & MSH6 are frequently implicated in this syndrome.[9]

Case Report:

Patient Presentation

An 80-year-old female presented with a progressively enlarging mass in the left upper & lower eyelids over 6 months. The masses were painless but caused significant cosmetic concern due to their visible growth. On clinical examination, the masses were firm & localized, with no evidence of ulceration or discharge. MRI findings suggested a neoplastic etiology, likely basal cell carcinoma or squamous cell carcinoma, necessitating surgical intervention for definitive diagnosis & treatment.

Surgical Intervention

The patient underwent surgical excision of the masses, both for diagnostic purposes & to alleviate the risk of further progression. The excised specimens were examined grossly, revealing grey-brown lesions covered by skin. The mass from the lower eyelid measured 1.0 × 0.5 × 0.5 cm, while the upper eyelid mass measured 1.0 × 0.5 × 0.3 cm. Surgical margins were carefully assessed to ensure complete removal of the tumor.

Figure 1: Gross Appearance Of Ocular Sebaceous Carcinoma Of Eyelid

Histopathological Findings

Microscopic examination revealed malignant epithelial cells arranged in numerous islands & broad ribbons, surrounded by basaloid immature cells. Squamous epithelial pearl formation with keratinization was observed in some areas. The presence of comedo necrosis, a hallmark feature of sebaceous carcinoma, was prominent in multiple sections. Additionally, hyperplastic & dysplastic changes were noted in the epidermis, with rete ridges extending into bulbous

down growths. Based on these findings, the tumor exhibited growth patterns classified as trabecular, lobular, papillary, & basal cell carcinoma-like, with cell types including basaloid, basosquamous, & epidermoid.

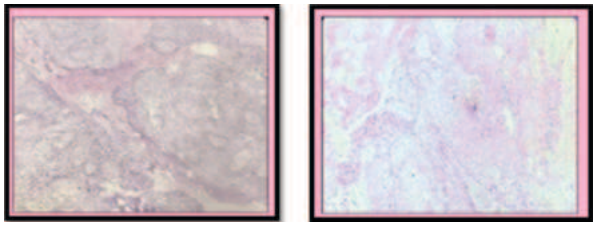

Figure 2 A& B: Tumor Cells in 40x

Immunohistochemistry (IHC)

Immunohistochemical analysis confirmed the diagnosis. The tumor cells showed strong positivity for cytokeratin 7 (CK7) & epithelial membrane antigen (EMA). These markers are specific for sebaceous carcinoma & were critical in distinguishing the lesion from other neoplastic conditions such as basal cell carcinoma or squamous cell carcinoma.

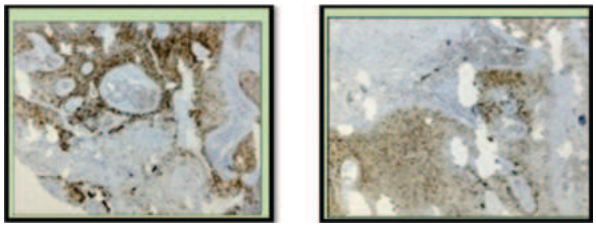

Figure 3 A & B: CK7 & EMA Presentation

Postoperative Course

The patient recovered well postoperatively, with no immediate complications. Follow-up care emphasized the importance of regular monitoring due to the aggressive nature of sebaceous carcinoma & its potential for recurrence. Surgical excision with clear margins was the primary treatment, but adjuvant therapies such as radiotherapy & chemotherapy were considered based on the patient's overall health & tumor characteristics. The patient was educated about the need for long-term follow-up to monitor for any signs of local recurrence or distant metastasis.

DISCUSSION

Eyelid malignancies, although rare, include a variety of tumor types, among which basal cell carcinoma (BCC) is the most common, accounting for 85–90% of cases globally.[10] Squamous cell carcinoma (SCC) follows with a prevalence of 10–12%, & sebaceous gland & carcinoma (SGC) accounts for approximately 1% of cases.[11,12] These findings align with our histopathological observations, which also indicated basal & squamous cell carcinomas as the predominant tumor types. BCC is particularly prevalent due to its association with areas of high sun exposure.

Diagnostic Approach & Imaging

Given the aggressive nature & potential for delayed diagnosis in eyelid malignancies, imaging modalities play a crucial role in early & accurate diagnosis. As highlighted in our case, MRI was instrumental in identifying the neoplastic etiology, suggesting the possibility of BCC or SCC. While there are no standardized guidelines for systemic evaluation, patients with large tumours or delayed diagnoses should undergo advanced imaging, such as CT or MRI, to assess distant extension. Furthermore, in conditions such as Muir-Torre syndrome, a PET scan may aid in the early detection of visceral malignancies.[13]

Sebaceous Gland Carcinoma (SGC) Characteristics

Sebaceous carcinoma of the eyelid frequently mimics benign conditions, a phenomenon known as masquerade syndrome. This often leads to delayed diagnoses.[14] The clinical manifestations of SGC can vary:

- Common Presentation: A firm, sessile to round, painless, subcutaneous nodule, often yellow due to lipid content.[15]
- Pseudo-inflammatory Presentation: Diffuse unilateral thickening of the eyelid, often extending to the cornea & conjunctiva without a discernible nodule, mimicking an inflammatory condition.[16] In some cases, SGC may ulcerate or resemble BCC, presenting challenges in clinical differentiation.

Histopathological Analysis In Our Study Revealed:

- Malignant epithelial cells arranged in numerous islands & broad ribbons.
- Peripheral basaloid immature cells surrounding the islands.
- Squamous epithelial pearl formation with keratinization.
- Comedonecrosis observed in certain regions.

Epidemiology & Localization

SGC is the 3rd most common malignancy among eyelid tumors, exhibiting a female predominance & affecting the upper eyelid more frequently due to the abundance of Meibomian glands.[6,17] These findings correlate with our case involving an 80-year-old female presenting with masses on both the upper & lower eyelids. The laterality findings, where the left eye was affected more frequently, are consistent with the study by Burns SJ, which reported a 56% prevalence in the left eye.[18]

Histopathological Variants & Growth Patterns

Sebaceous carcinomas are histologically classified based on:

- **Growth Patterns:** Trabecular, lobular, papillary, & BCC-like.
- **Cell Types:** Basaloid, basosquamous, & epidermoid.
- **Cytoarchitecture:** Nodular or infiltrative lesions.

Our case demonstrated basaloid & squamous features with hyperplastic & dysplastic epidermis & bulbous down-growth of rete ridges.

Genetic & Immunohistochemical Markers

Recent studies have highlighted the role of genetic markers in SGC diagnosis & prognosis:

a) p53 Mutations: Found in 67% of SGC cases, with immunoreactivity reported in 50–100% of tumors. P53 overexpression helps differentiate SGC from benign sebaceous proliferations (11%), BCC (20%), & SCC (50–60%).[19,20]

b) Ki-67 Proliferation Index: Elevated levels (38–72%) correlate with poor clinical outcomes, including tumor recurrence & lymph node metastasis.[21,22]

c) Other Markers: Elevated Bcl-2-associated athanogene 3 (BAG3) & ZEB2/SIP1, which are associated with epithelial-to-mesenchymal transition, have been observed in SGC cases.[23,24]

In our case, immunohistochemical analysis revealed CK7-positive & EMA-positive, confirming the diagnosis of ocular sebaceous carcinoma.

CONCLUSION

Ocular sebaceous carcinoma being aggressive tumour presenting at 55 to 70 years needs aggressive treatment. To reduce tumour recurrence, thorough, surgical excision is suggested with chemotherapy & radiotherapy. Histopathology has capital importance for final diagnosis.

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