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Case Report

Role of Fine Needle Aspiration Cytology in Diagnosis of Sebaceous Cell Carcinoma of Eyelid

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Abstract: Sebaceous carcinoma of the eyelid is a malignant tumor originating from meibomian glands, ciliary glands of Zeis, sebaceous glands of caruncle. Without early management, it follows an aggressive course leading to widespread metastasis in regional lymph nodes and distant organs. Sebaceous carcinoma can resemble other benign tumours leading to its incorrect interpretation. FNAC plays a significant role in the diagnosis of this malignant tumor. In our hospital, we diagnosed a case of sebaceous carcinoma of the lower eyelid based on cytology that was clinically diagnosed as lacrimal gland carcinoma.

Keywords: Sebaceous Cell Carcinoma, Eyelid, Fine Needle Aspiration Cytology.

INTRODUCTION

Sebaceous carcinoma of the eyelid commonly originates from the glands of Zeis, meibomian glands of the tarsus, and sebaceous glands of eyebrows and caruncle [1]. Based on literature, the incidence of this rare tumour is less than 1% of all eyelid tumors and accounts for 5% of all malignant eyelid tumors [1]. Sebaceous carcinoma, originating from ocular adnexa, is an extremely rare malignant neoplasm that follows an aggressive course [2]. Hence, early diagnosis and management plays a crucial role in saving lives. Fine-needle aspiration cytology (FNAC) is a cost effective, easy and rapid tool to diagnose such lesions at an early stage. We present a case of lower eyelid tumor diagnosed as sebaceous cell carcinoma on FNAC in an elderly female.

CASE REPORT

An elderly female, 79 years old presented with a painful swelling in the right lower eyelid since 2 months. She complained of reduced vision accompanied by whitish discharge from the same eye. The swelling was 2*1 cm, extended from inner to outer canthus, fixed to the underlying soft tissue, hard in consistency, tender and associated with purulent discharge. Overlying skin was pinkish in colour. The left eye was unremarkable.

FNAC was performed using a 22 gauge needle following necessary aseptic and antiseptic precautions. The aspirate was blood mixed. The smears were subsequently stained with PAP and May Grunwald Giemsa stains. Microscopic examination of the stained smears revealed high cellularity with interconnecting trabeculaeand the cells are arrangedin overlapping clusters, in isolation and acinar structures. Individual cells are round to oval, medium cell size showing moderate pleomorphism, moderate bluish cytoplasm with prominent cytoplasmic microvacuolations, moderate nucleocytoplasmic ratio, pleomorphic hyperchromatic nuclei and inconspicuous nucleoli. Mitosis was inconspicuous. Background was clear. No cytoplasmic keratinization, intranuclear inclusion, spindle cells, palisading pattern or mesenchymal fragments found. Subsequently, the patient underwent wide local excision of the lower eyelid and right orbital exenteration. On grossing the size of the specimen of skin covered lower eyelid was 4.5*3*2.5cm. Slicing revealed a yellowish tumor of size 3*2*2cm. The tumor was reported as sebaceous carcinoma; Grade 3.

Lymphovascular invasion was present. Immunohistochemistry was done. The tumor was positive for p63, CK, EMA and negative for p53, S100. The FNAC findings were correlated with histopathological and immunohistochemistry report which confirmed the diagnosis of sebaceous cell carcinoma.

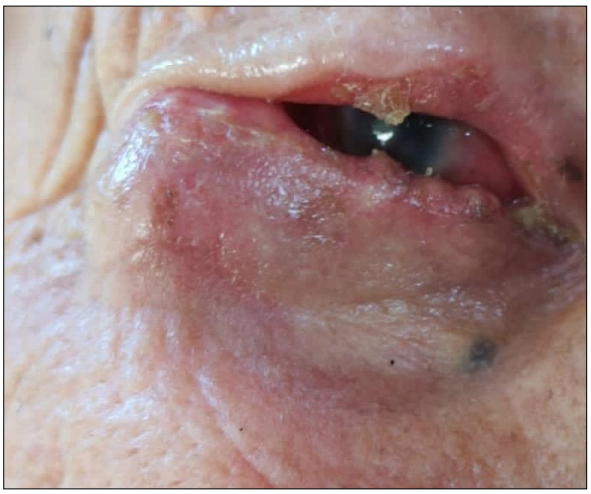

Figure 1: Swelling in the right lower eyelid

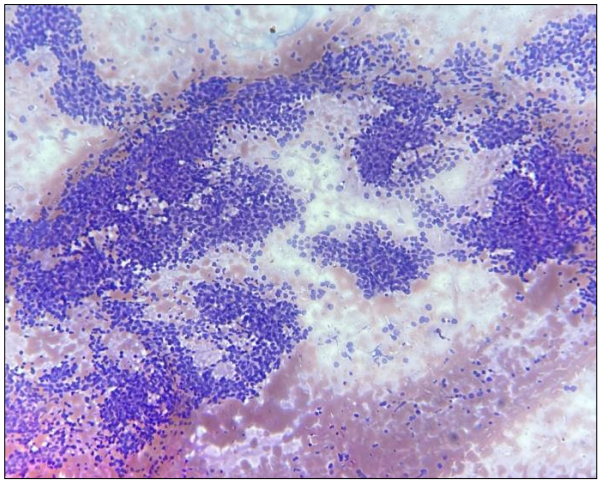

Figure 2: Highly cellular smears with interconnecting trabeculae (PAP, 10X)

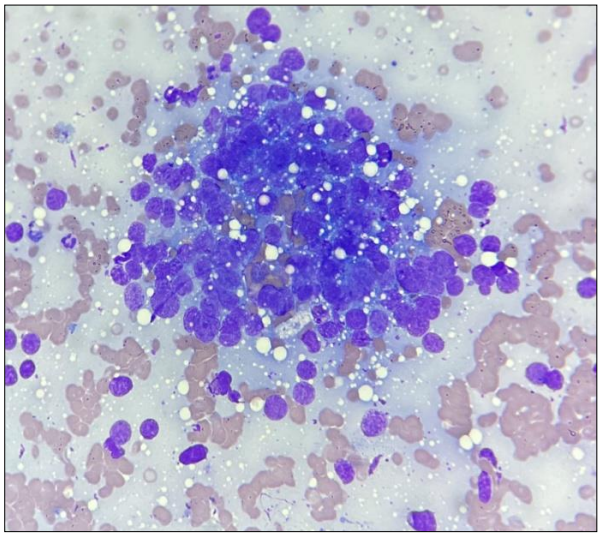

Figure 3: Malignant cells with cytoplasmic microvacuolations (MGG, 40X)

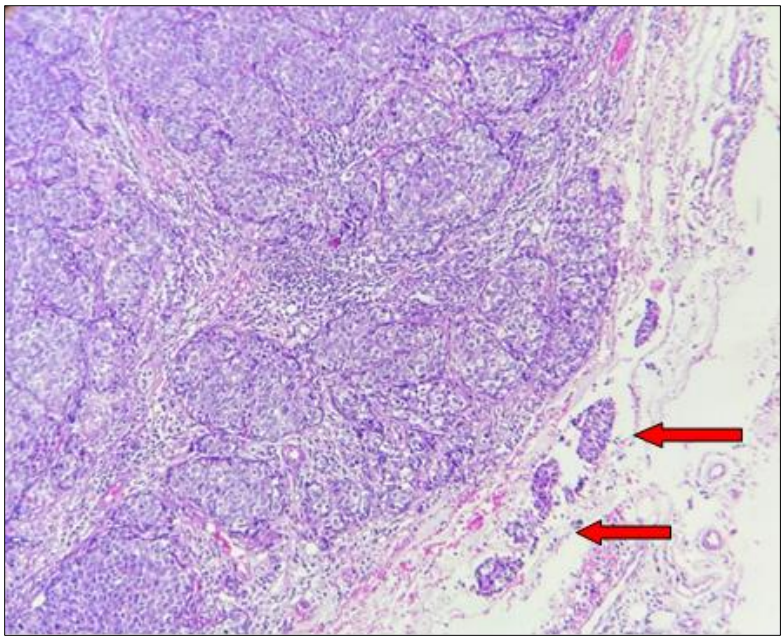

Figure 4: Sections showing malignant sebaceous cells arranged in lobules with lymphovascular invasion marked with red arrows (H&E, 10X)

DISCUSSION

Sebaceous cell carcinoma can morphologically resemble tumours such as chalazion, keratoacanthoma, chronic blepharitis, basal cell carcinoma, melanoma etc**.** Such resemblance often leads to wrong interpretation which causes delay in management.

Maheshwari, *et al*., reported three cases of sebaceous carcinoma diagnosed on FNAC where in the first case, they found moderate cellularity with clear background. Cells were arranged in loose cohesive clusters, with few cells present in isolation. Nuclei were oval to round, large, hyperchromatic with prominent nucleoli and the cytoplasm was clear and scanty. Their second case showed loose cohesive cells with few cells present in isolation with scant cytoplasm and altered nuclear-cytoplasmic ratio. Nuclear features were similar to the first case. Their third case showed malignant cells in the smear [3].

Our findings differ from that of Maheshwari, *et al*., in the presence high cellularity with overlapping cell clusters, acinar structures with interconnecting trabeculae, moderate cytoplasm with prominent intracytoplasmic microvacuolations and inconspicuous nucleoli.

A study conducted by Gao L, *et al*., revealed highly cellular smears having two types of tumor cells: one showed tumor cells resembling sebaceous gland morphology, with large cells containing vacuolated cytoplasm, the other showed poorly-differentiated cell containing dark, irregular nuclei. Variably sized cytoplasmic vacuoles were found in all four cases, and the Sudan III stain revealed positivity for lipid in the vacuoles [4]. Some cells had squamoid, fusiform and basaloid morphology [4]. Our study showed only a single type of cells that differentiated towards sebaceous cell morphology.

A study done by Gill, *et al*., found the aspirated smears to be cellular with cells arranged in loose groups, clusters as well as dispersed singly in a background of red blood cells [5]. The cells were pleomorphic with moderate to scanty amount of vacuolated cytoplasm having round to oval, large, hyperchromatic nuclei and conspicuous nucleoli [5]. Mitotic figures were also noted. In our study, mitotic figures and nucleoli were inconspicuous.

According to study by Gupta, *et al*., the cytological features of the eyelid tumor showed cellular smears consisting of sheets as well as singly dispersed population of pleomorphic cells with hyperchromatic round-to-irregular nuclei with prominent nucleoli, mitosis and moderate amount of cytoplasm [6]. Cells showed abundant foamy cytoplasm mixed with naked nuclei and foreign body giant cells in a background of fat and necrosis [6]. In our study, cells were predominantly arranged in overlapping clusters, acinar structures with interconnecting trabeculae, round to oval cells, inconspicuous nucleoli. Background was clear in our study and mitotic figures, multinucleated foreign body giant cells, stripped nuclei were not seen.

Table 1: Table showing the different cytomorphological features of the malignant neoplasms

Features	Basal cell carcinoma	Sebaceous cell carcinoma	Squamous cell carcinoma	Malignant melanoma	Clear cell renal cell carcinoma
Cellularity	Moderate	Hypercellular	Moderate	Moderate	Moderate
Monolayered sheets	Present	Absent	Absent	Absent	Absent
Overlapping clusters	+/-	+	++	-	+
Isolated cells	+	+++	++	+++	++
Cell size	Small	Medium	Large	Medium	Large
Cytoplasm	Pale	Bluish	Keratinization	Pale/Clear/melanin	Clear
Cytoplasmic vacuolation	-	+++	-	-	-
Nuclear pleomorphism and hyperchromasia	Mild	Moderate	Marked	Moderate	Moderate
Prominent nucleoli	-	+/-	-	+++	+++
Background	Clear	Clear	Necroinflammatory	Melanin	Clear

Basal cell carcinoma, squamous cell carcinoma, malignant melanoma and clear renal cell carcinoma have moderately cellular smears whereas sebaceous cell carcinoma has hypercellular smears. Basal cell carcinoma usually presents with monolayered sheets of cells. In contrast, sebaceous cell carcinoma, squamous cell carcinoma, malignant melanoma and clear renal cell carcinoma do not usually reveal monolayered sheets. However, sebaceous cell carcinoma, squamous cell carcinoma and clear renal cell carcinoma can show overlapping cell clusters. Isolated cells are most commonly seen in sebaceous cell carcinoma and malignant melanoma. Smears from clear renal cell carcinoma and squamous cell carcinoma show large cells. Clear renal cell carcinoma has cells with clear cytoplasm, moderate nuclear pleomorphism and hyperchromasia. Squamous cell carcinoma has cells showing marked nuclear pleomorphism and hyperchromasia However, prominent nucleoli is the hallmark in clear renal cell carcinoma and malignant melanoma. In contrast, sebaceous carcinomaand malignant melanoma present with medium cells. Hallmark of sebaceous carcinoma is the presence of cytoplasmic microvacuolations which are absent in the other malignancies. Background is composed of inflammatory cells and necrosis in squamous cell carcinoma, melanin pigment in melanoma. Basal cell carcinoma, sebaceous cell carcinoma and clear renal cell carcinoma have clear background.

CONCLUSION

Fine needle aspiration cytology plays a crucial role in the early diagnosis and management of sebaceous cell carcinoma. It is an easy, costeffective and rapid tool to diagnose this rare neoplasm at an early stage before it metastasizes to distant sites which can lead to poor prognosis.

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Conflict of Interest: None declared.

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