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Original Research Article

Fine needle cytology-diagnostic tool for palpable orbital and eyelid lesions

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ABSTRACT

Background: Fine needle aspiration cytology in orbital lesions gained importance in the last 3 decades. FNAC can be used for aiding the clinician to plan treatment of orbital and eyelid tumors study was undertaken to evaluate the role of FNAC as a diagnostic tool for diagnosis and management of various orbital and eyelid lesions, as it is of great value in the diagnosis of new primary, recurrent and metastatic orbital tumors.
Methods: Patients of different age groups presenting with orbital and eyelid lesions were studied over a period of 4 years from March 2013 to Feb 2017. The 75 patients selected for this study were clinically evaluated and then investigated with computed tomograpghy (CT) scanning. Each patient was subjected to FNAC under direct vision/ultrasongraphy guidance with sterile 22 guage needle without anaesthesia. Biopsy was done to confirm the cytological diagnosis.
Results: The age of patients varied from 3 years to 70 years. On cytology 61 cases were benign and 14 malignant. Histopathological examination of 53 cases was done which confirmed the cytological diagnosis.
Conclusions: FNAC is a useful, rapid, safe and cost effective method for diagnosing orbital and eyelid pathology.

Keywords: Eyelid, FNAC, Orbital, Tumors

INTRODUCTION

The diversity and rarity of the orbital lesions compounded by the difficulty in obtaining direct surgical biopsies make FNAC an important preliminary tool in diagnosis of eyelid and palpable orbital tumors, with the aid of sonography, CT scan for deeply seated orbital tumors.[1-5]The concept of FNAC was proposed by Martin and Ellis at Memorial Hospital, USA, in 1927.[6] It began to flourish in Scandinavia during 1950's and 1960's. Schyberg first used fine needle aspiration cytology for diagnosis of orbital tumors in 1975.[7]

In Asian population, incidence rates of orbital tumors are 0.3 per 1,000 in males and 0.2 per 1,000 in females with worldwide incidence of 0.8 per 1,000 population per year.[8.] Any pathologic condition affecting the eyelid, whether a benign, vascular, inflammatory or malignant lesion, may appear as a nodule.[9,10] FNAC helps in determining the nature of the lesion in cases where it is clinically difficult to decide whether it is a true neoplasm or an inflammatory lesion.

METHODS

75 cases of palpable orbital and eyelid tumors were analysed by FNAC during a 4-year period from March 2013 to Feb 2017. The patients were in age group 3-70 years. The male to Female ratio was 2:1. The cases were those referred by Ophthalmology and Surgery departments. FNAC was done using 22 Guage needle without anaesthesia and smears stained with MGG. In

cases where required needle biopsy using 16 G biopsy gun or wedge biopsy was done. Immunohistochemistry was done for confirmation of round cell tumors. No complications related to procedure was noted.

RESULTS

Among the 75 cases of palpable orbital and eyelid tumors analyzed by FNAC over a period of 4 years, 14 cases were malignant and 61 cases were benign. The patients belonged to the age group 3 years to 70 years with majority in age group of 20-40 years. Among these patients 50 (66.6%) were males and 25 (33.3%) females. Male: Female ratio was 2:1. The nature of these tumors is shown in Table 1 (Orbital tumors) and Table 2 (Eyelid tumors).

Table 1: Orbital tumors (March 2013 to February 2017).

Diagnosis	No. of cases
Lymphoma	01
Rhabdomyosarcoma	02
Retinoblastoma	01
Neuroblastoma	01
Peripheral neuroectodermal tumor	02
Squamous cell carcinoma	01
Basal cell carcinoma	01
Adenocarcinoma	01
Metastases	01
Total	11

Table 2: Eyelid tumors (March 2013 to February 2017).

Diagnosis	No. of cases
Epidermal cyst	30
Dermoid cyst	06
Benign cyst	06
Chalazion	01
Inflammatory	04
Basal cell adenoma	01
Squamous cell papilloma	02
Basal cell carcinoma	01
Squamous cell carcinoma	01
Metastases	01
Others	11
Total	64

In Non-Hodgkin's Lymphoma, cytology smears showed a monotonous population of lymphocytes with round nuclei. Having coarse granular chromatin. Biopsy confirmed the diagnosis. Cytology smears of Rhabdomyosarcoma showed round cells with open chromatin, few rhabdomyoblasts were seen which were PAS positive. Biopsy and Immunohistochemistry markers were positive for Myogenin and Desmin. Cytology smear of poorly differentiated neuroblastoma in 6 years female showed pleomorphic round cells with open chromatin. Core needle biopsy and IHC were done for confirmation, CD56, Synaptophysin and CD 99 were positive (Figure 1).

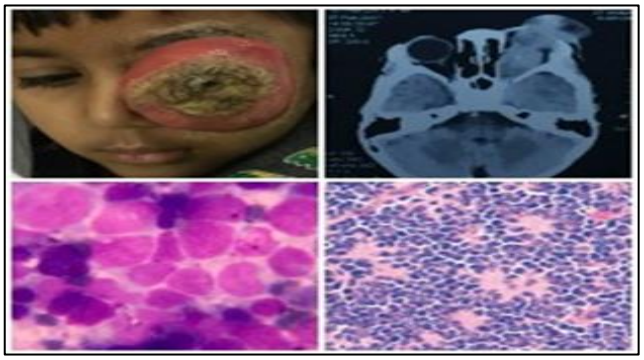

Figure 1: Neuroblastoma, F/6 years cytosmear MGG stain, 40 X histopathology, H and E stain,40 X.

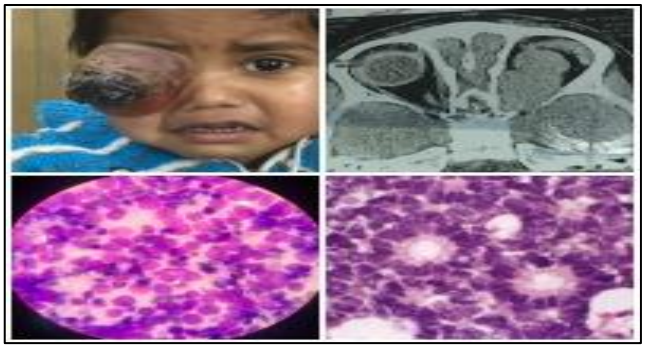

Figure 2. Retinoblastoma, M/3 years Cytosmear, MGG stain, 40 X Histopathology, H and E stain, 40 X.

Cytology smears of Retinoblastoma in 3-year-old male showed small round cells, with high N:C ratio, true rosette formation (Figure 2). The smears of squamous cell carcinoma in 50-year-old male showed well differentiated keratinized malignant squamous cells. Core needle biopsy confirmed the diagnosis (Figure 3).

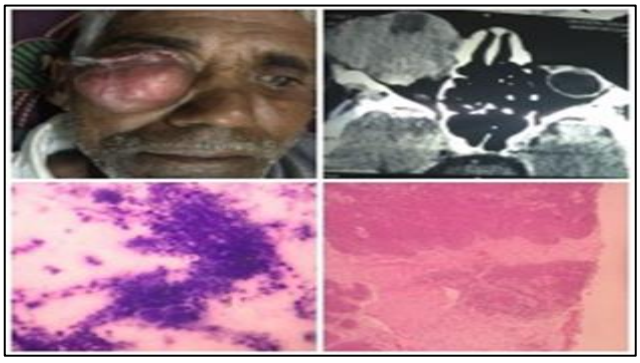

Figure 3. Squamous cell carcinoma, M/50 year, cytosmear, MGG stain, 40 X, histopathology, H and E stain,40X.

30 cases of eyelid tumors were epithelial cysts, with thick foul smelling material, showing anucleate squames on smears. Smears from benign cyst showed few macrophages in thin eosinophilic background. Smears from chalazion showed epitheliod cells (Figure 4). Smears from Adenocarcinoma showed scattered pleomorphic cells with prominent nucleoli and high N:C ratio (Figure 5).

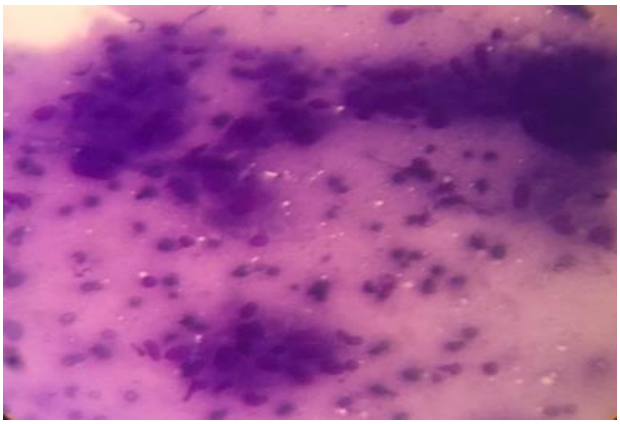

Figure 4. Chalazion, epitheloid granuloma, MGG Stain, 40X

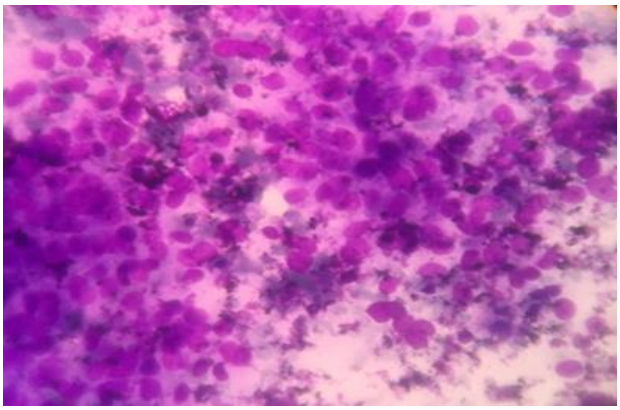

Figure 5: Adenocarcinoma eyelid, cytosmear MGG stain, 40 X.

DISCUSSION

Since the first application by Schyberg of FNAC to the diagnosis of orbital tumors in 1975, several authors have reported the accuracy of this simple procedure.[1-3,7,11,12] Currently, FNAC is also performed in intraocular tumors with the aid of Ultrasonography computerized axial tomography guidance, thus allowing the diagnosis of small and deep lesions.[13-16]

As per the present study, FNAC is an accurate diagnostic technique in the evaluation of orbital masses without complications. It should be emphasized that case selection is very important in regard to FNAC. It is not a procedure of choice for lesions under five mm in size, especially if they have a fibrous nature.[17] The positive identification rate was almost 100% on FNAC. The diagnostic accuracy of the technique vaies from 80% to 100% in the literature. The accuracy depends on the combination of expertise of physician and competent cytopathologist. Characterizing histopathologically, small round cell malignant tumors is sometimes difficult, hence IHC was performed for confirmation of cytodiagnosis.

So FNAC is a cost effective, reliable and accurate method of diagnosing orbital masses in children and adults. It is needed to distinguish between inflammatory and neoplastic lesions, between benign and malignant lesions, and epithelial and mesenchymal lesions. It is also useful in diagnosing an unresectable malignant neoplasm, thus eliminating the need for further surgical interventions.

CONCLUSION

FNAC of orbital and eyelid tumors is a suitable accurate diagnostic technique with close co-operation between the ophthalmologist and experienced pathologist, in combination with history, clinical diagnosis, smear examination and observation by the gross appearance of the lesion. No radical procedure should be planned on the basis of FNAC, but it allows the diagnosis of a new primary lesion or the recurrence or metastases of a tumor and can be done to identify lesions that require either specific medical therapy, as in non resectable, inflammatory, and lymphoid tumors, or limited surgery for benign resectable neoplasms.[3]

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