STUDY OF ROLE OF FINE NEEDLE ASPIRATION CYTOLOGY (FNAC) IN EYELID AND ORBITAL LESIONS

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ABSTRACT

AIM

To study the role of FNAC in eyelid and orbital lesions. To evaluate the safety profile of FNAC and its primary role in secondary orbital tumours.

MATERIALS AND METHOD

In this retrospective study, 30 cases were studied for a period of 1 year from March 2011 to March 2012, which includes 20 eyelid lesions and 10 anterior orbital lesions that presented to our Outpatient Department of Orbit and Oculoplasty.

RESULTS

Among the 20 eyelid lesions, aspirates of 19 were found adequate for the FNAC diagnosis that is sample adequacy of 95%. Only 1 aspirate (10%) was found inadequate. Similarly, among the 10 orbital cases, sample adequacy of 90% (9 cases) were noted and 1 aspirate (10%) was found inadequate. Of the 19 adequate eyelid lesion aspirates, 73.68% (14 aspirates) were found positive for malignancy, while the remaining 26.31% (5 aspirates) were reported as benign. Similarly, out of 9 adequate orbital aspirates, 77.77% (7 cases) showed positivity for malignancy, remaining 22.22% (2 cases) showed benign nature. Out of the 19 adequate eyelid lesion aspirates, 89.47% (17 aspirates) showed an exact correlation with the HPE results. Remaining 10.52% (2 aspirates) showed indefinite diagnosis, which had shown the lesion to be a benign spindle tumour, HPE confirmed these aspirates as Neurofibroma. Out of the 9 adequate orbital lesion aspirates, exact correlation was found in 88.88% (8 aspirates) and Indefinite diagnosis was seen in 11.11% (1 aspirate) which had shown the lesion as benign spindle lesion. HPE confirmed this as neurofibroma. All the cytology reports of 30 cases were received within 6 hours of sending the aspirate.

CONCLUSION

Fine Needle Aspiration Cytology of the eyelids and orbit lesions is a safe procedure. It can be done without anaesthesia in outpatient department and can be done in patients who are not fit for anaesthesia. It delivers results within 5–6 hours. It differentiates lesions as benign or malignant very easily. It can be considered as a first diagnostic investigation of choice in tumours such as lymphoma, metastatic tumours and infections that do not require surgical intervention for treatment. It gives rapid results and correlates highly with biopsy proven HPE. FNAC can be considered as a primary investigation in the diagnosis of eyelid and orbital lesions and it can be done safely as an outpatient procedure.

KEYWORDS

FNAC, Eyelid Lesions, Orbital Lesions.

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INTRODUCTION: Fine needle aspiration cytology has an important application in clinical practice. It was defined by Bamforth (1996) as one of the most useful component of non-exfoliative or clinical tissue cytology.(1)

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It has been used in the diagnosis of neoplasm of various organs such as thyroid, pancreas, lungs, abdomen or breast.(2)

In 1972, ocular lesion cytology was described safely by Naib.(3) Schyberg was the first who described its use in orbital tumours.(4) FNAC for intraocular tumour was proposed in 1979 by Jackobie et al(5) FNAC is a safe, reliable, relatively non-invasive method that can be used in place of open biopsy, to establish the diagnosis of orbital and eyelid lesions. It also helps to eliminate or plan the need for surgical intervention.

In this study, the role of FNAC in the diagnosis of orbital and eyelid lesions is evaluated.

MATERIALS AND METHOD: The study was done in Orbit and Oculoplasty Department, Regional Institute of Ophthalmology and Government Ophthalmic Hospital, Chennai. This retrospective study period was 1 year from March 2011 to March 2012. 30 patients including 20 eyelid lesions and 10 anterior orbital lesions were studied, which presented to our outpatient department.

Inclusion Criteria: It includes solid lesions more than 5 mm in eyelid and anterior orbital regions.

Exclusion Criteria: Lacrimal gland lesions were excluded for the fear of breach of capsule and tumour seedling along the needle track. Deep seated lesions were excluded for the fear of absence of visualisation and risk of haemorrhage.

A detailed history regarding the presenting symptoms such as onset of lesions, its duration and progression were asked for. History of any loss of weight were recorded. History regarding any previous surgery and treatment of eye in the past were noted. Systemic factors like diabetes, hypertension, ischaemic heart disease and renal disease were also evaluated. Patients were also subjected to detailed ocular and systemic evaluation. In ocular examination, eyelid position, fullness and contour were noted. The size, colour, tenderness and the consistency of the lesions were noted. In orbital lesions, the site, size, tenderness, consistency and pulsation of the lesions were noted. Any variation with Valsalva manoeuvre, any displacement of the globe were also noted. Visual acuity was recorded by Snellen's chart. Anterior segment examination was done by slit lamp. Fundus examination was done by 90D and indirect ophthalmoscope. Intraocular pressure (IOP) was recorded by applanation tonometry. Colour vision and field examination were done. Other investigations like RBS, complete haemogram, bleeding time, clotting time were also done.

All the patients after obtaining the consent were subjected to FNAC in the outpatient department.

FNAC in all the patients were performed without local anaesthesia by using a fine 23 G needle of 3 cm long, attached to a 10 mL disposable syringe. This thin hollow needle was inserted into the lesion (Fig. 1) for sampling of cells (This is known as sampling technique where the sample should be a representation of general population). The lesions were palpated and the needle was introduced (Fig. 2). Once the needle was in the lesion, maximum retraction of the plunger was maintained and after a gentle to & fro movement in various directions, the plunger was released and aspirated. After the aspiration, 2 slides were prepared for each lesion (Fig. 3) and were immediately fixed with isopropyl alcohol and sent for examination (Fig. 4).

Fig. 1, 2: Clinical Photograph showing Eyelid Lesion and its Aspiration

Fig. 3, 4: Clinical Photograph showing Preparation of Slide and Coupling Jar

RESULTS: Among the 30 cases, 20 were eyelid lesions and remaining 10 cases were orbital lesions. Of the 20 eyelid lesions, the maximum number of cases that is 35% (7 cases) were seen in the age group between 51 – 60 years. In orbital lesions out of 10 cases, 40% (4 cases) belonged to the age group of 61–70 years. Of the 20 eyelid lesions, 60% (12 patients) were males, remaining 40% (8 patients) were females. Out of 10 orbital lesions, 60% (6 patients) were males, while the remaining 40% (4 patients) were females (Chart 1).

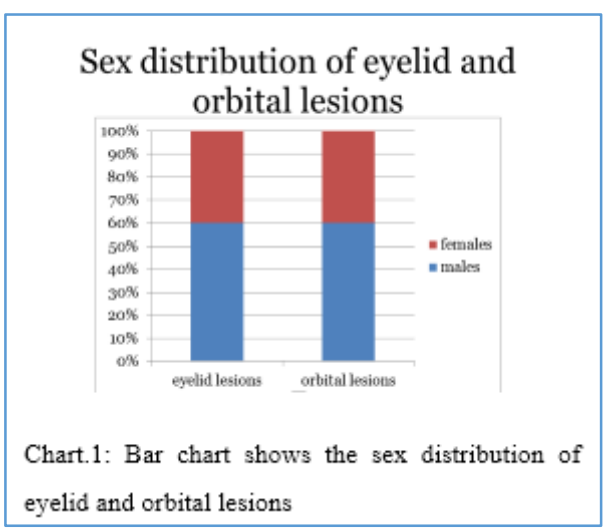

Chart.1: Bar chart shows the sex distribution of eyelid and orbital lesions

Out of 20 patients of eyelid lesions studied, 65% (13 patients) had lesion in the right eye, remaining 35% (7 patients) had lesion in the left eye. In orbital lesions out of the 10 cases, 40% (4 patients) had right side lesion, 60% (6

patients) had lesions in the left eye. 80% (16 patients) of the eyelid lesions were found to be in the upper eyelid and the remaining 20% (4 patients) were found to be in the lower eyelid (Chart 2).

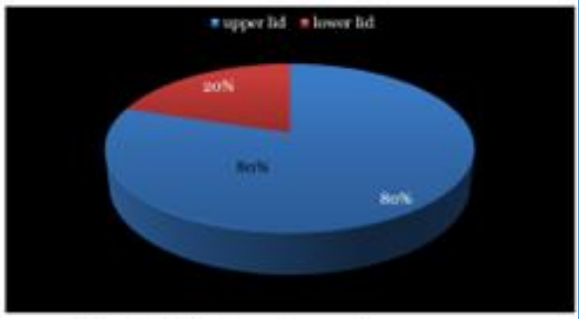

Chart.2: Pie chart shows the percentage distribution of eyelid lesions

Among the 20 eyelid lesions, 19 of aspirates were found adequate for the FNAC diagnosis. That is sample adequacy of 95%. Only 1 aspirate (5%) showed inadequacy. Similarly, out of the 10 orbital cases, sample adequacy of 90% (9 cases) were noted and the remaining 1 aspirate (10%) was found inadequate (Chart 3).

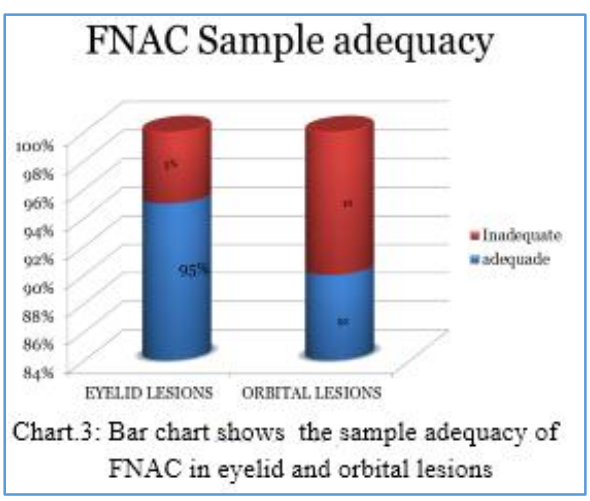

Chart.3: Bar chart shows the sample adequacy of FNAC in eyelid and orbital lesions

Among the 19 adequate eyelid lesion aspirates, 73.68% (14 aspirates) were found positive for malignancy, while the remaining 26.31% (5 aspirates) were reported as benign. Similarly, out of 9 adequate orbital aspirates, 77.77% (7 cases) showed positivity for malignancy, remaining 22.22% (2 cases) were benign in nature (Fig. 8). (In FNAC, positivity for malignancy was shown by cellular atypia, nuclear pleomorphism, irregular nuclear membrane or prominent nucleoli.)

After obtaining the FNAC reports, the biopsies of respective lesions were carried out as an elective procedure under anaesthesia and the results were collected. The FNAC results correlated with the same.

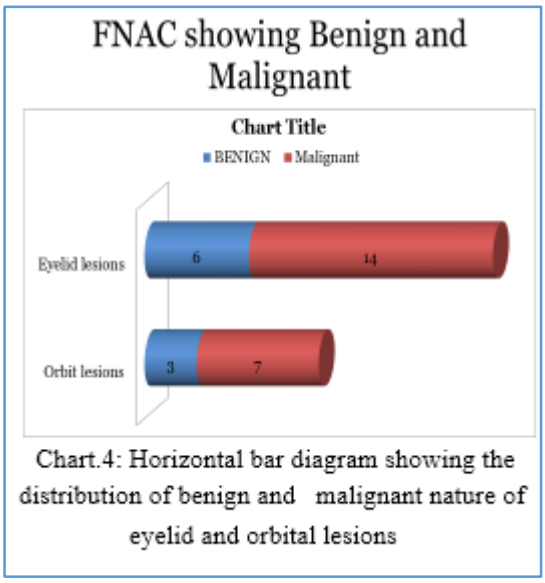

Chart.4: Horizontal bar diagram showing the distribution of benign and malignant nature of eyelid and orbital lesions

Out of 19 adequate eyelid lesion aspirates, 89.47% (17 aspirates) exactly correlated with HPE results, while the remaining 10.52% (2 aspirates) showed indefinite diagnosis which had shown the lesion to be a benign spindle tumour. HPE confirmed these 2 aspirates as neurofibroma. Out of 9 adequate orbital lesion aspirates, 88.88% (8 aspirates) showed an exact correlation, indefinite diagnosis was seen in 11.11% (1 aspirate) which had shown the lesion as benign spindle lesion (Chart 5). HPE confirmed this as neurofibroma (Fig. 5).

Chart 5: Bar diagram shows the correlation of FNAC reports

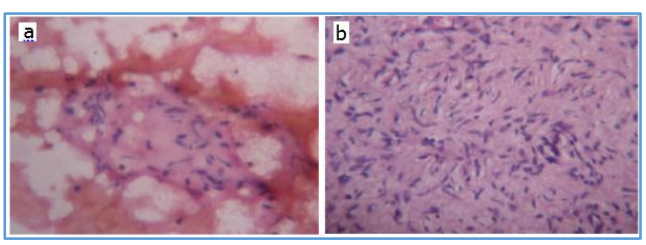

Fig. 5a, b: FNAC sample shows the benign nature of lesion with spindle shaped cells and sheets of spindle shaped cells respectively.

All the cytology reports of the 30 cases were received within 6 hours of sending the aspirate. All the HPE reports (30 cases) were received on the 5th day of sending biopsy samples.

DISCUSSION: In our study, we observed a wide variation in the age incidence of eyelid and orbital lesions based on the aetiology, but a majority of the eyelid cases[6] were seen in the age group of 51–60 years and the orbital lesions were in the age group of 61–70 years. Eyelid and the orbital lesions[7] were found to be more common in males. We found the eyelid lesions were more common in the right eye while the orbital lesions were common in the left eye. Upper eyelid involvement was found to be more common.

In our study, FNAC samples were found adequate for commenting on the cytological characteristic of the lesions. We found that FNAC was able to detect malignancy in 100% of the cases. Therefore, FNAC with adequate sample is an excellent tool to find out the nature of the lesion in both eyelid and the anterior orbital lesions.[8] Among the 19 adequate eyelid aspirates, 89.47% (17 aspirates) showed an exact correlation with the HPE diagnosis. Out of 9 adequate orbital aspirates, FNAC 88.88% (8 aspirates) correlated exactly with the HPE diagnosis.

CONCLUSION: Advantages of FNAC in eyelid and orbital lesions are that it can be quickly performed and easily repeatable. It can be done as an outpatient department procedure with quick reporting of results without need for anaesthetia or orbitotomies and the results are obtained within few hours. It causes only minimal trauma at the site of interest. It gives speedy result and is cheap and it is relatively a painless procedure. It is also suited in debilitated patients, is readily repeatable and can be used for multiple lesions. It can also be used in patients who are severly ill with risk factors for anaesthetia and surgery. When the suspected tumour doesn't require surgical intervention as in lymphoma, metastatic tumours, rhabdomyosarcoma and sarcoidosis, FNAC can be performed. It is most cost effective as it avoids unnecessary admissions, saves time, and makes use of minimal instrumentation. FNAC in orbital and eyelid lesions can be used to differentiate between malignant and benign lesions with ease and increase the cost effectiveness in the diagnosis of orbital and periorbital lesions.

Limitations of FNAC in eyelid and orbital lesions are that deep seated orbital lesions are to be avoided due to the risk of retrobulbar haemorrhage[9]. The risk can be avoided by using USG guided FNAC for deep seated lesions. Lacrimal gland tumours are to be avoided for the risk of breaching the capsule and local metastasis along the needle biopsy track[5]. Fibrous nature of tumours lead to difficulty in diagnosis. Sample adequacy is important as an accurate diagnosis cannot be made if haemorrhagic aspirate or insufficient material is aspirated. Rare potential complications are penetration of the sclera, diplopia and ptosis.

FNAC gives rapid results and correlates highly with tissue biopsy proven HPE. FNAC can be considered as a primary investigation in the eyelid and the anterior orbital lesions. It can be done safely as an outpatient procedure.[10]

FNAC is a simple, safe and rapid diagnostic technique and the accuracy can be emphasised with clinical, histological and followup data. FNAC can be used as a good screening method in orbital and periorbital mass lesions.

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