Original Article

Spectrum of Scalp lesions: A cytological experience

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Abstract

Background: Many benign and few malignant lesions occur in the scalp area and are easily accessible for aspiration, fine-needle aspiration cytology (FNAC) ,which is safe noninvasive, rapid diagnostic modality , minimizing the need of biopsy. Benign entities in this region may mimic malignancy clinically and radiologically. FNAC helps to plan surgery, ruling out malignancy in the benign cases, and offering typing of the malignant ones. **Materials and Methods:** The study was conducted at VMMC and Safarjung Hospital over a period of one year. A total 185 palpable scalp swellings were included in the study. FNAC was performed using a 23 gauge needle. Air dried smears were Giemsa stained and 95% ethanol fixed were used for Pap staining. Zeil Nelson staining and relevant immunocytochemistry was performed on case to case basis. The lesions were broadly grouped on cytology into benign and malignant conditions. The malignant lesions were further classified as primary and metastatic and where ever possible the primary site was suggested in metastatic cases. **Results:** Of the 185 cases, 178 were benign and 7 were malignant lesions. The benign lesions included 89 cases of epidermal inclusion cyst/ keratinous cysts/dermoid cyst, 32 lipoma, 9 non specific cystic lesion, 7 benign adnexal lesions, 5 fibrohistiocytic, 8 mesenchymal tumors and 6 hematoma. There were 11 cases of reactive lymphadenitis, 10 of non specific inflammation and 1 of tuberculosis .The primary malignancies included 2 cases of squamous cell carcinoma. Metastatic lesions included 2 cases of melanoma and three cases of follicular carcinoma thyroid. **Conclusion:** FNAC is a rapid noninvasive reliable diagnostic modality for scalp lesions and minimizes the need of biopsy and to a great extent helps in planning surgery if indicated.

Key words: Fine needle aspiration cytology, scalp lesions.

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INTRODUCTION

Introduction

Scalp lesions are easily accessible for fine-needle aspiration cytology (FNAC), which is vital in preoperative diagnostic and therapeutic decision making, avoiding the hazards of open biopsy at this site. Many benign entities at this site may mimic malignancy clinically, by virtue of large size, bony erosion and fixity. FNAC offers a rapid diagnosis in benign lesions of the scalp, ruling out malignancy. In the case of malignant lesions FNAC helps to diagnose and type the lesion, enabling the surgeon to plan the extent of surgery. The present study was carried out to evaluate the utility of cytomorphology in diagnosis of lesions occurring at this site, differentiating benign lesions from malignant ones and typing of malignancies.

MATERIALS AND METHODS

The study was conducted in the department of pathology, VMMC and Safarjung Hospital over a period of one year. A total 185 palpable scalp swellings were included in the study. The patients were evaluated clinically and

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computed tomography (CT) scan or ultrasonography (USG) was carried out to access the skull involvement when indicated .23 gauge needle was used for FNA . Air dried smears were Giemsa stained and 95% ethanol fixed were used for Pap staining. Zeil Nelson staining and relevant immunocytochemistry was performed on case to case basis.

The lesions were broadly grouped on cytology into benign and malignant conditions. The malignant lesions were further classified as primary and metastatic and where ever possible the primary site was suggested in metastatic cases.

Ethics

Theprocedures were part of the routine diagnostic carried out in the cytology section and were in accordance with hospital ethical standards.

RESULTS

The study group comprised of patients ranging from a first to the eighth decade of life. There was a slight male predominance with male female ratio of 1.5 :1 Of the 185 cases, 178 were benign and 7 were malignant lesions. The Primary malignancy included 2 cases of squamous cell carcinoma. Metastatic lesions included 2 cases of melanoma and three cases of follicular carcinoma thyroid. The spectrum of benign lesions included inflammatory, cystic as well as neoplastic lesions (Table 1), The commonest lesions were keratin cysts (89 cases), which included epidermal inclusion cysts/ trichilemmal cysts/dermoid cysts, followed in frequency by lipoma (32 cases), non specific cystic lesion(9 cases), benign adnexal lesions(7 cases) , fibrohistiocytic lesions(5 cases), mesenchymal tumors(8 cases) and hematomas(6 cases). There were 11 cases of reactive lymphadenitis , 10 of non specific inflammation and 1of tuberculosis. The keratinous cysts, epidermal, dermoid and trichilemmal cyst, were classified together because of many overlapping features although in some cases morphologically differentiation was possible like presence of sebaceous glands in dermoid and calcification in trichilemmal cyst. We did not give much importance to calcification as long standing epidermal inclusion cyst can also show calcification. There was one case of tubercular abscess in which acidfast bacilli were demonstrated by Ziehl–Nielson stain.The patient was immunocompromised. Radiology showed absence of skull involvement. Of the benign soft tissue lesions, lipomaswere the most common followed by mesenchymal tumors and benign fibrohistiocytic lesions. A diagnosis of hematoma was given in 6 cases. The mesenchymal lesions showed spindle to oval cells and stromal fragments. The fibrohistiocytic lesions showed presence of histiocytes and fibroblasts andoccasional giant cells were also seen. Lipomas showed the characteristic fibrofatty fragments and fat cells in lipidecaous background. The adnexal tumors showed moderately cellular smears, with single and clusters of small eccrine cells and basement membrane material. There were 7 malignant lesionsof which 2 were primary lesions arising from scalp and underlying bone was not involved and6 secondary malignancies all cases were confirmed histologically. (Table 2) The squamous cell carcinoma(SCC) was the primary malignancy in our study .Both the cases were moderately differentiated. The metastatic lesions were follicular carcinoma of thyroid and melanoma. Smears from follicular carcinoma thyroid showed sheets and clusters of follicular cells with mild pleomorphism and nuclear enlargement. A few microfollicles were also observed. Smears from metastatic melanomas showed clusters of pleomorphic cells with prominent nucleoli and presence of melanin pigment in the cytoplasm.

Table 1: Cytological diagnosis of benign lesions(n= 178)

Cystic lesions	No (%)	Inflammatory lesions	No (%)	Non-neoplastic	No (%)
Epidermal inclusion cyst/dermoid cyst/trichilemmal cyst	89 (50%)	Reactive	11(6.17%)	Lipoma	32(17.97%)
Non specific cystic lesion	9(5.05%)	Non specific inflammation	10(5.61%)	Benign mesenchymal	8 (4.49%)
		Tubercular	1(0.56%)	Benign fibrohistiocytic	5(2.8%)
				Adnexal lesions	7 (3.93%)
				Hematoma	6(3.37%)

Table 2: Cytological diagnosis of malignant lesions (n=7)

Primary	No (%)	Clinical and radiological finding	Cytomorphology
Squamous cell carcinoma	2(28.57%)	**Case 1** 54 years male 1X1cm parietal growth ,no bony erosion **Case 2** 62 year male with1X1.5 cm occipital growth ,no bony erosion	The smears showed scattered malignant squamous cells with moderate anaplasia, hyperchromatic pyknotic nuclei and lavender blue cytoplasm in dirty background.
Metastatic Follicular carcinoma,thyroid	3 (42.85%)	**Case 1** 52 years female 0.8 X0.5 nodule in the fronto parietal region of scalp.No bony erosion **Case 2 65years female** 1X1 cm nodule, parietal region scalp .No bony erosion. **Case 3** 50 years female fronto 0.8X0.8 cm parietal nodule. No bony involvement	Clusters and sheets of follicular cells showing microfollicular pattern , mild nuclear enlargement and overlapping Cells were positive for TTF1
Melanoma	2 (28.57%)	**Case 1** 58 years female 1x1cmparietal growth .No bony involvement **Case 3** 45 years male1x1.8 cm frontoparietal growth. No bony involvement	Highly pleomorphic cells lying singly and in cluster with prominent nucleoli , abnormal mitosis and necrosis.Melanin pigment seen Cells were positive for HMB-45

DISCUSSION

Scalp lesions could be fairly accurately and rapidly diagnosed by FNA due to easy accessibility and to could be very helpful in management and determining the further action plan of treatment. The usefulness of FNA in scalp swellings has been established by various studies. The benign lesions were predominant in our study which was in concordance to finding of S.R. Hingway.[1] Keratinous cysts, epidermal and dermoid cysts, were the commonest lesions diagnosed, which is similar to the findings of Garcia-Rojo et al.,[2] who found 16 trichilemmal cysts and eight lipomas in 62 scalp aspirates. We had 32 cases of lipoma. Tuberculous lesion in the scalp has been reported secondary to calvarial involvement[3-5]. In cases where caseation is not too prominent, or absent, then sarcoidosis of the scalp should be considered in the differential as a very rare manifestation of cutaneous sarcoid.[1,6]. In our study tuberculosis presented as abscess and AFB was demonstrated on Zeil Nelson stain. Adenxal lesions are also reported in literature in the scalp lesion and are in concordance to our findings[1] Some adnexal tumors have been reported at this site in association with nevus sebaceous of the scalp (trichoblastomas and a syrigocystadenoma papilliferum).[1,8] Benign adnexal tumors should be kept in mind in the differential diagnosis of scalp masses, to avoid over diagnosis of malignancy[1].

FNAC is a useful and convenient method for diagnosis of malignant scalp lesions, with or without involvement of bone. This area is very vascular, and malignant tumors in this region quickly invade underlying bones and in advanced cases infiltrate brain parenchyma and its coverings. SCCof scalp can arise due to predisposing factors like secondary to pre-existing medical conditions such as chronic inflammation of skin, long-standing sores, actinic keratosisburns, scars, or exposure certain chemicals or X ray, radiotherapy or chronic immunosuppressive states .It can also arise as a complication of long-standing cutaneous lupus erythematosus.[7] In our case, however, it arose in a previously normal skin.[1] As such cutaneous metastases of visceral malignancies are rare, and of these the scalp is a common site, probably due to its rich vascularity[1]. Follicular carcinoma of the thyroid accounted for 16.7% of metastatic deposits in the scalp in Saikia's[8] study. In our study 3 out 7 cases were of metatststic follicular carcinoma which is significantly high . This is probably because of the small sample size of malignant lesions. To conclude FNAC of scalp lesions is aneasy reliable and useful, technique as many benign scalp tumors grossly look because of huge size, and bone erosion Many a times they are even fixed to deeper structures,.Thus FNAC

avoids a biopsy which is an unnecessary hazard . FNAC if combined with the clinical and radiological finding can help the clinician to manage the patient successfully and avoiding unnecessary surgery.

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