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Case Report

A Case of Intracranial-Extracranial Meningioma: Diagnosis on Fine Needle Aspiration Cytology

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ABSTRACT

Meningiomas are common intracranial and intraspinal tumors. They may rarely present extracranially where they are accessible to fine needle aspiration cytology and may pose a diagnostic challenge to the pathologist. We report a case of a 60 year old female who presented with scalp swelling. FNAC of the lesion showed typical cytomorphological features of a meningioma. Diagnosis of an extracranial meningioma was rendered on FNAC and radiological correlation was advised. CT scan head also supported the diagnosis which was confirmed on subsequent histopathological examination.

Key words: meningioma, extracranial, fine needle aspiration.

INTRODUCTION

Meningiomas are tumors derived from arachnoid cells. They account for approximately 18% of primary intracranial tumors and 25% of primary intraspinal tumors. [1] Most meningiomas occur in middle to adult life and show a moderate female to male ratio 3:2. [2] Meningiomas may present extracranially. Extracranial meningiomas whether primary or secondary are rare with an incidence of 1-2%. [3]

CASE REPORT

Sixty year old female patient came to the hospital for FNAC of scalp swelling. She had a history of swelling frontal region of scalp since eight months associated with pain for one month. She had no other complaints. She gave history of excision of the swelling six months back for which no records were available but the swelling recurred only one month after its excision. On local examination the swelling was present on the frontal region of scalp measuring 4X4 cm. It was firm, non tender and immobile fixed to the underlying structures. Overlying skin looked normal. There was no lymphadenopathy. General physical examination and systemic examination were normal.

Fine needle aspiration cytology of the scalp swelling was done using 24-guage needle and 20 ml syringe. Smears were stained by MGG and PAP stain. On

microscopic examination, the smears were highly cellular comprising of oval to spindle cells arranged as diffuse sheets, loose clusters and cell balls or entangled in fibrillary material. Many clusters were showing whorl formations (Figure 1). Individual cells had pale cytoplasm, indistinct cell borders, ovoid to elongated nuclei, finely granular chromatin. Some of the nuclei were showing the presence of pseudoinclusions (Figure 2). No necrosis, mitosis or cellular atypia was seen. On fine needle aspiration, suggestion of extracranial meningioma was given. Patient was advised radiological correlation. CT head showed contrast enhancing hyperdense extra-axial mass lesion measuring 43X40X36 mm in midline frontal region, causing destruction of overlying bone with extension into scalp with an impression of Meningioma with extracranial extension (Figure 3). Patient underwent frontal craniotomy and total excision of the tumor along with excision of the involved bone. Subsequent histopathological examination of the tumor confirmed the diagnosis of meningioma (Figure 4).

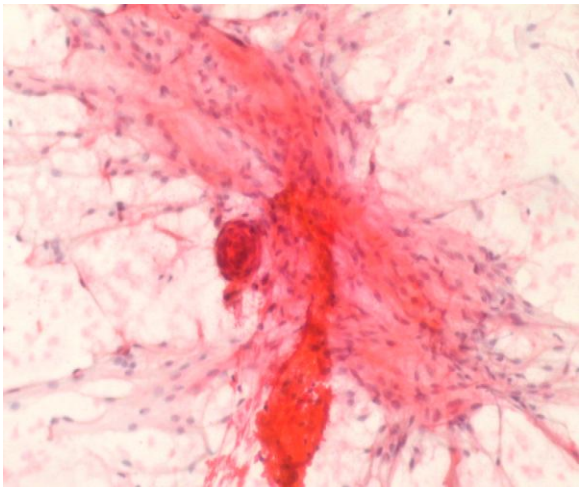

Figure 1: Smear showing oval to spindle cells entangled in a fibrillary material along with one whorled structure. (PAP stain, X400).

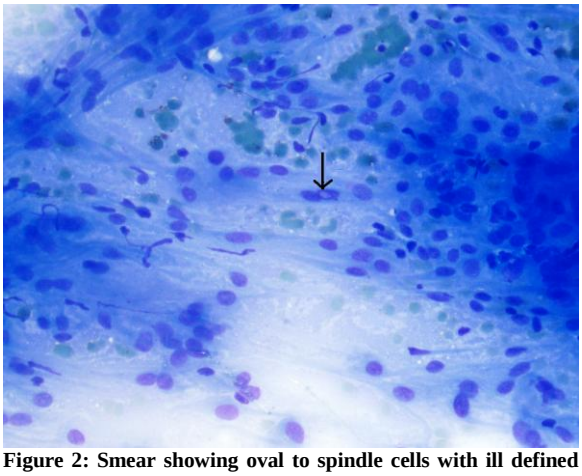

Figure 2: Smear showing oval to spindle cells with ill defined cell borders arranged as syncitial fragments. Arrow showing intranuclear inclusion. (May Grunwald Giemsa stain, X 400).

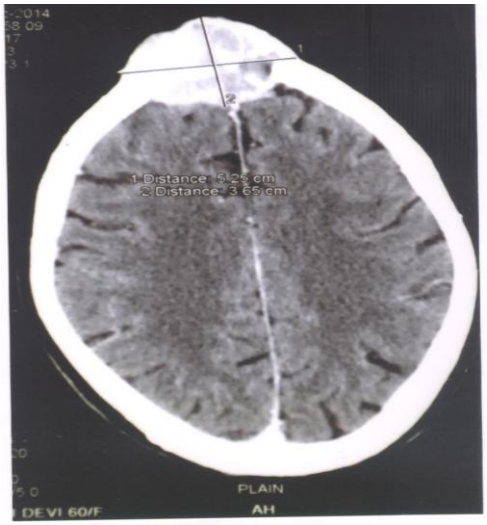

Figure 3: CT head showing hyperdense extra-axial mass lesion in midline frontal region, causing destruction of overlying bone with extension into scalp.

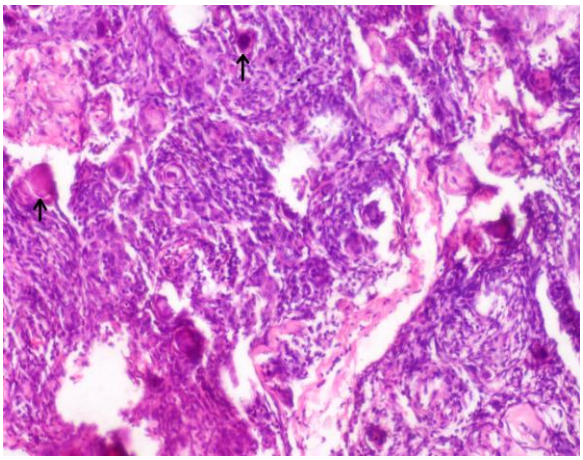

Figure 4: Tissue section showing meningioma with a whorled pattern of cell growth and psammoma bodies (shown by arrows) (Hematoxylin and eosin stain, X400)

DISCUSSION

Extracranial and extraspinal meningiomas are rare. They can arise in a variety of ways.

- They may be present intracranially and present extracranially after erosion of skull bone [4] or extension through a natural (skull foramina, suture lines, supraorbital fissure etc), traumatic or iatrogenic skull defects. [5-7] The reported incidence of intracranial meningiomas with extracranial extension is up to 20% of cases. [8,9]
- They may arise from arachnoid cells and rests of cranial nerve sheaths most commonly in orbit and sheath of optic nerve. [10]
- They may have no connection with CNS and cranial nerves and arise from embryonic arachnoid cells or multipotent mesenchymal cells anywhere in the body. [11,12]
- They may represent metastasis from a primary intracranial or intraspinal meningioma. [11]

Cutaneous meningiomas most commonly occur in the scalp and may be primary or secondary. [13] Possibility of meningioma should be included in differential diagnosis while evaluating FNA material from tumors especially in head and neck region.

In FNA specimens the cytomorphological features typically characteristic of meningioma are tightly cohesive clusters of spindle cells, occasional whorls, lobular and syncytial cellular fragments, intranuclear inclusions, nuclear grooves and psammomatous calcification. [4,5,14] Palisaded appearance of cells and fibrillary substance may be seen. [15] High grade features and nuclear atypia may be seen in metastatic cases. [11] Unusual cytomorphological features have included presence of epithelioid cells, inflammatory cells, small cell change, papillary structures, whorls resembling zellballan and pseudoacinar growth. [11,16]

The differential diagnosis of meniongiomas on FNA material is broad. The finding of whorled spindle cells may be seen with granulomas, keratin pearls from well differentiated squamous cell carcinoma, reactive soft tissue lesions (e.g fibromatosis, fasciitis) and neoplastic mesenchymal tumors (e.g. neural tumors, myoepithelioma, follicular dendritic tumor). Malignant solitary fibrous tumor or meningeal hemangiopericytoma is included in the differential diagnosis of an intracranial anaplastic meningioma presenting with metastasis. [11] The presence of intranuclear inclusions, nuclear grooves and psammoma bodies in a tumor raises the possibility of papillary thyroid carcinoma especially in a neck FNA. Presence of pseudoacini may evoke a diagnosis of adenocarcima and zellballan like structures may suggest paraganglioma. [6] In the present case typical features of meningiomas like whorl formations by oval to spindle cells entangled in fibrillated material and presence of pseudoinclusions at places were seen where as features like keratin pearls, granulomas, or pseudoacini formation were conspicuously absent.

CONCLUSION

In summary extracranial meningiomas are rare and have morphological similarities with many other lesions, so may pose a diagnostic challenge to the pathologist. But it should always be included in the differential diagnosis when typical cytomorphological features of meningiomas are seen especially in the lesions of head and neck. FNAC is a simple and effective procedure and can be highly suggestive of the diagnosis and supported by radioimaging can be very helpful in preoperative diagnosis of such patients.

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