



Case Report

Cytodiagnosis of an Extradural Meningioma Presenting As a Scalp Mass

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ABSTRACT

Meningiomas are usually dura based intracalvarial lesions. However, they may occur at other locations and are variably known as ectopic, extracalvarial, extraneuraxial or epidural. As a result, they may be accessible to aspiration. Some of these have been found to be associated with head injury occurring at the same site. They may present in a variety of sites, scalp, orbit, floor of the mouth, middle ear, etc. In these situations they may mimic a number of entities clinically and radiologically. Fine needle aspiration cytology (FNAC) is extremely useful in their diagnosis as they have characteristic cytological features. Syncytial oval to plump spindly cell clusters, with bland vesicular nuclei, occasional intranuclear inclusions and grooves and psammoma bodies are helpful features in cytodiagnosis. We describe a case of intradiploic meningioma presenting as a scalp swelling, associated with a history of head injury. Ectopic meningiomas should be kept in mind as a possible differential diagnosis at unusual sites.

Key words: Scalp swelling, ectopic meningioma, cytodiagnosis.

INTRODUCTION

Meningiomas arise from meningotheial tissues and usually present as dura-based intracalvarial masses. However meningiomas can occur, though rarely, at other locations. These are termed as ectopic, extracalvarial, extraneuraxial or epidural. [1-4] Approximately 1% of meningiomas arise at extra- dural sites with 68% of the primary extradural meningiomas involving the calvaria. [1] Head trauma has long been suspected as a risk factor with convincing documentation of meningiomas occurring in the immediate vicinity of a prior skull fracture. [5,6] Fine needle aspiration cytology (FNAC) is extremely

useful in diagnosis of meningiomas. We present a case of extracalvarial meningioma, occurring after a head injury. The cytomorphological features helpful in diagnosis are described, with special emphasis on differential diagnosis.

CASE REPORT

A 47-year old female patient presented with a left parietal scalp swelling. She had noticed it about a year back, and it had been gradually increasing since then. The only other significant relevant history was of head injury at the same site due to a road- traffic accident about a year prior to the appearance of the swelling. On

examination, the swelling was approximately 4x4x2 cm on the left parietal region and was firm and immobile. The overlying skin was normal. A general examination was also within normal limits. An X-ray skull revealed an expansile lytic lesion of the left parietal bone that eroded the outer table and had a considerable soft tissue component. (Figure 1). A probable radiologic diagnosis of a primary bone tumor or secondaries in the bone had been offered. FNA was done and smears prepared. Wet- fixed smears were stained with Haematoxylin& Eosin (H&E) and Papanicolaou (Pap) stains while the dried smears were stained with May- Grunwald Giemsa (MGG).



Figure 1. X-ray skull. Expansile lytic lesion of left parietal bone eroding the outer table.

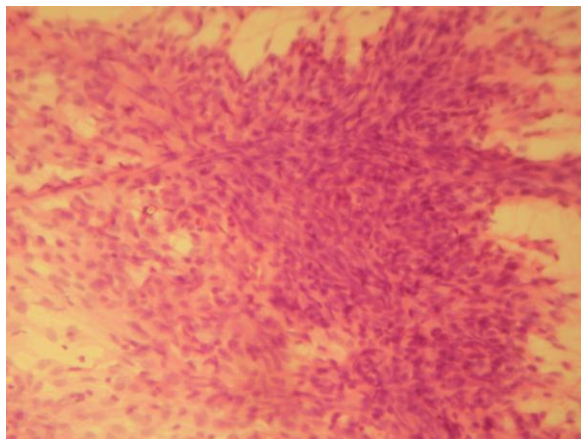


Figure 2. FNAC scalp lesion. Spindly, slender to plump cells in cohesive sheets and fascicular arrangement.

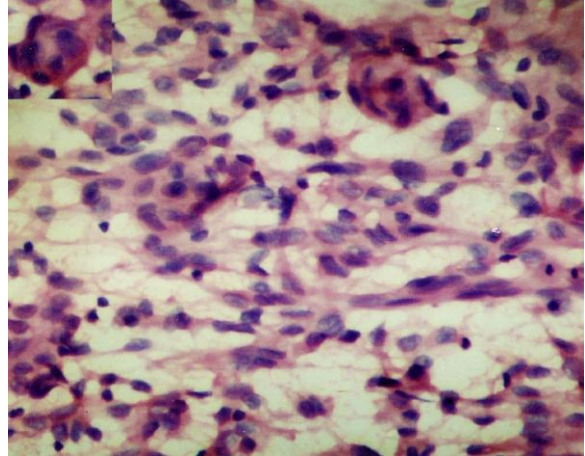


Figure 3. Small cells in syncytial clusters and tight whorls. Pale cytoplasm and bland oval to elongated nuclei with finely granular chromatin. Some nuclei show grooves.

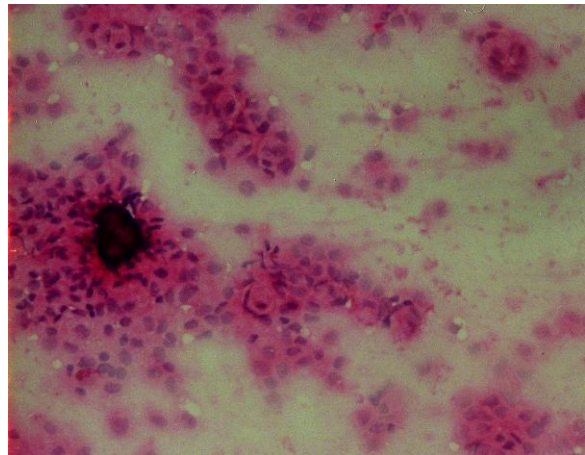


Figure 4. psammomatous calcification.

Cytology smears revealed abundant cellularity comprising of sheets and loose syncytial clusters of spindly cells (Figure 2). Occasional small tight whorls of cells were also seen (Figure 3). The cells were spindly, slender to plump, with pale cytoplasm. The nuclei were bland, oval to elongated with finely granular chromatin. Few nuclei showed the presence of grooves and intranuclear pseudoinclusions that were sharply outlined. Focal psammomatous calcification was also seen (Figure 4). Considering these features a diagnosis of meningioma was offered.

The mass was excised under general anesthesia. During surgery, the outer table of

the skull was found to be eroded by an encapsulated firm mass 5x4x3 cm. The inner table was intact. The cut surface was gray white, whorled. It was diagnosed, on histopathology, as Fibroblastic Meningioma.

DISCUSSION

Meningiomas originate from meningotheial cells and usually present as dura-based intracalvarial lesions. However meningiomas arising at other locations, termed as ectopic, extracalvarial, extraneuraxial or epidural, though rare, are also well- documented.^[1-4] Approximately 1% of meningiomas arise at extra- dural sites with 68% of the primary extradural meningiomas involving the calvaria.^[1] Extracranial meningiomas can be divided into four subtypes according to their development:^[7]

1. Extracranial extension of an intracranial meningioma (Secondary).
2. Extracranial metastasis of an intracranial meningioma (Secondary).
3. Extracranial extension of a meningioma arising in a neural foramen. (Primary)
4. Ectopic without any connection with any neural foramen, cranial nerve or intracranial structure (Primary).

Lang et al^[8] has proposed a single term, “primary extradural meningiomas” for such lesions. He classifies these into purely extracalvarial (type I), purely calvarial (type II), or calvarial with extracalvarial extension. Type II and III are further subdivided into convexity (C) or skull base (B). In their study, benign Type IIB or Type IIIB lesions were found to have greater likelihood of recurrence than patients with benign Type IIC or Type IIIC tumors.

Head trauma has long been suspected as a risk factor with convincing documentation of meningiomas occurring in the immediate vicinity of a prior skull fracture.^[5,6] Though still unclear, the

pathogenesis postulated is that frequent mitotic activity as a part of reparative process in the meningeal tissue captured in extradural tissue following trauma leads to changes promoting oncogenesis.^[1,4,5] Though hyperostosis is the most common radiologic finding (59%), osteolysis is seen in 35%.

Based on the osteolytic shadow on X-ray, a primary bone tumor or metastasis were the two clinical differentials offered. However, a diagnosis of primary bone tumor (such as fibrous dysplasia, giant cell tumor, eosinophilic granuloma and aneurysmal bone cyst)^[1] could be excluded based on their specific cytodiagnostic criteria. On cytology, syncytial cell clusters, whorling and intranuclear pseudoinclusions and grooves, as well as psammomatous calcification have been emphasized as useful diagnostic features. Unusual cytomorphological features identified in only a few cases included epithelioid cell predominance, abundant inflammatory cells, small-cell change, papillary structures and pseudoacinar growth.^[9]

However, a differential diagnosis of metastasis of squamous cell carcinoma was considered. But though the whorling vaguely mimicked squamous pearls, absence of cellular atypia and presence of the other cytologic criteria helped rule out metastasis of squamous cell carcinoma. Metastasis of papillary carcinoma thyroid may be considered when intranuclear pseudoinclusions and psammoma bodies are numerous. But cell morphology and syncytial pattern rather than papillary structures help in its exclusion.

Usually morphology on cytology and histopathology are diagnostic. However, in doubtful cases, immunohistochemistry can be of help in arriving at a definitive diagnosis. The cells are intensely vimentin, pancytokeratin and epithelial membrane antigen (EMA) positive. They are negative

for glial fibrillary acid protein, myelin basic protein or neurofilament protein. ^[10]

CONCLUSION

This case of intradiploic meningioma presenting as a scalp swelling is being presented due to its unusual nature, association with history of trauma and typical cytodagnostic features which helped in its diagnosis. Cytology is an extremely useful tool in the preoperative diagnosis of scalp swellings in general and ectopic meningioma, in particular. Ectopic meningiomas should be kept in mind as an unusual differential diagnosis in scalp swellings.

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