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CASE REPORT

CYTOLOGICAL DIAGNOSIS OF GRANULAR CELL TUMOR AT A RARE SITE

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ABSTRACT

Granular cell tumor (GCT) is a rare benign tumor of neural origin and the involvement of lower extremity is even rarer. The commonly involved sites are head and neck region, breast and upper extremities. In literature, very few cases have been reported on fine needle aspiration cytology (FNAC). Here we report a case of 54 year old female who presented with calf swelling diagnosed as GCT on cytology and confirmed on histopathology.

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INTRODUCTION

Granular cell tumor (GCT) is usually benign tumor characterized by large granular-appearing eosinophilic cells. It was first described by Abrikossoffin 1926, as a tumor of myogenic origin (Abrikossoff, 1926). The older terms for this tumor are granular cell myoblastoma, granular cell neuroma, granular cell neurofibroma, and granular cell schwannoma, GCTs are rare and account for approximately 0.5% of all soft tissue tumors (Andalib and Heidary, 2014). Based on histochemical, immunohistochemical and ultrastructural findings, they are now considered to have a neural origin (Loncar *et al.,* 2010). They can occur in almost any anatomic location, including the dermis, subcutis, submucosal, and even internal organs, including the larynx, bronchus, stomach, and bile duct (Smith, 2010). The involvement of deep subcutis of lower extremity is rare. Here we report a case which was diagnosed on FNAC. To best of our knowledge the reports of cytological diagnosis at this site are sparse in literature. The aim of presenting this case is to emphasize the importance of cytology in identifying this rare neoplasm at an uncommon cutaneous area of leg.

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CASE HISTORY

A 54 year old female presented in the cytology department with a swelling at right calf region of 2 years duration. The swelling was insidious in onset and slowly progressive in size. There was no history of pain and any other significant complains were absent. On local examination a firm, non-tender nodular swelling measuring 1.5x 1 cm was palpable deep in the right calf region. FNAC was performed using a 24G needle fitted to 10 cc syringe. A blood tinged material was aspirated. The smears were air dried and stained with May Grunwald Giemsa (MGG) stain. The smears were richly cellular and revealed presence of tumor cells having eccentric small round to ovoid nuclei with bland chromatin and abundant amount of cytoplasm with fine granulation. The cells were present in cluster and scattered singly. Occasional cells with mildanisokaryosis and prominent nucleoli were also identified. The cells were fragile, with stripped nuclei against a background comprising of finely granular material and RBCs [Figure 1a and Figure 1b]. There was no evidence of mitotic activity and necrosis. A cytological diagnosis of benign GCT was made on these findings and excision biopsy was advised. Histopathological examination of excised tissue revealed presence of large polygonal tumor cells in sheets having small round to oval hyperchromatic nuclei and uniform eosinophilic granules filling the cytoplasm. Mitotic activity and necrosis were absent [Figure 2a and Figure 2b]. On immunohistochemistry, the cells showed positivity for S-100 protein and were negative for HMB-45 and NSE. A diagnosis of benign GCT was confirmed.

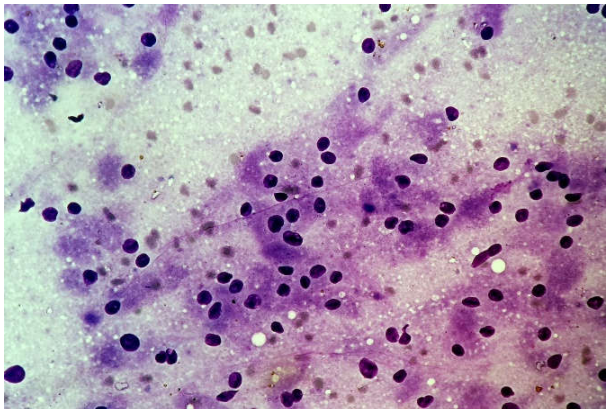

Figure 1a. FNA smear showing tumor cells having small round to ovoid nuclei with bland chromatin and abundant amount of fragile cytoplasm with fine granulations against a background comprising of fine granular material and RBCs (MGG, x100)

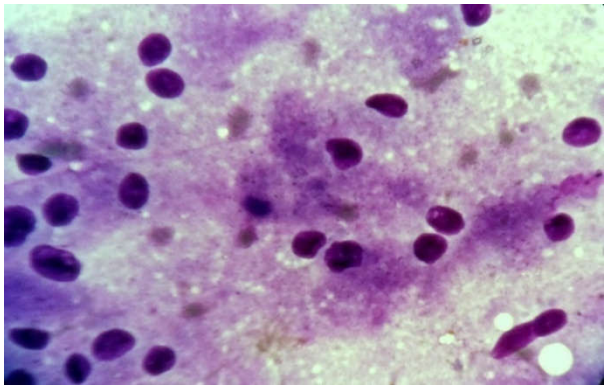

Figure 1b. FNA smear showing tumor cells showing mild anisokaryosis and prominent nucleoli in few (MGG, x400)

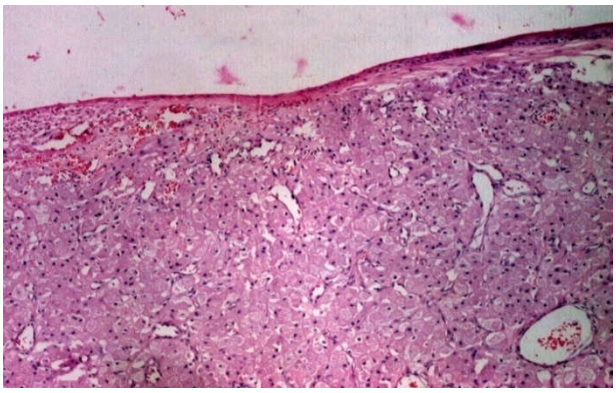

Figure 2a. Section showing large polygonal cells present in sheets (H and E,x40)

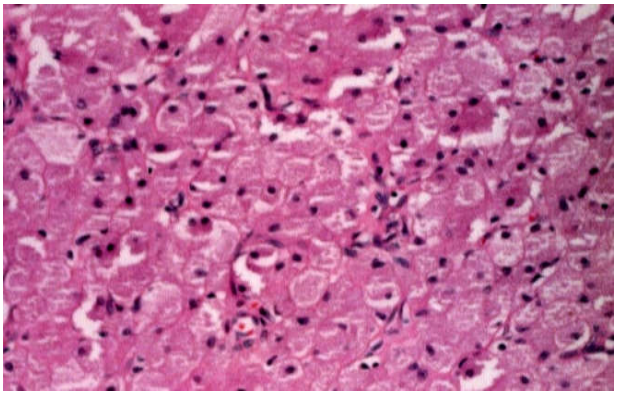

Figure 2b. Section showing tumor cells having small round to oval hyperchromatic nuclei and eosinophilic granules filling the cytoplasm (H and E, x100)

DISCUSSION

Granular cell tumors are slowly growing neoplasms derived from Schwann cells. They are benign tumors, with rare exception (Qian, 2009). These usually occur in adults, with slight female preponderance. The patient presents with a painless submucosal, dermal or subcutaneous mass. The most common site involved is tongue (LeGallo and Wick, 2010). Microscopic features of benign GCT are remarkably uniform regardless of the site. Benign GCT has distinctive cytomorphologic appearance that permits its diagnosis on FNAC. The benign GCT morphologically resembles the inflammatory lesions with numerous histiocytes, fibrous histiocytoma, oncocytic neoplasms, neuroendocrine tumors, granular renal cell carcinoma, leiomyosarcoma, melanoma and ameloblastoma (Osipov and Shidham). Malignant GCTs are rare and large. The features of malignancy include necrosis, cellular pleomorphism, spindling of tumor cells, cellular pleomorphism, prominent nucleoli and mitosis. Wide en bloc excision is recommended for malignant lesions (Loncar *et al.,* 2010). Granular cells are not unique to GCTs. Cytoplasmic granularity typical of GCT has been observed in neoplastic and in nonneoplastic conditions. Therefore, definitive diagnosis can be confirmed by immunohistochemistry (Osipov and Shidham). These tumors are positive for S-100 and the granules show strong positivity for Periodic Acid Schiff (PAS) (LeGallo and Wick, 2010). We report this case because of its rarity and the rare site of involvement, emphasizing the role of preoperative FNAC in its diagnosis. The patient underwent wide local excision and no recurrence has been reported.

Conclusion

Finally to conclude, GCT is a rare tumor of neural origin which occurs rarely in lower extremity. It has characteristic cytological findings which help in early diagnosis on FNAC, irrespective of the site of involvement.

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