ABSTRACT:

A case of granular cell tumor of the umbilicus mimicking metastatic skin nodule diagnosed on fine needle aspiration cytology is reported. A 60-year-old female with a umbilical tumor underwent fine needle aspiration cytology and smear examination showed a granular cell tumor. Histopathological examination of excised mass confirmed the diagnosis.

KEY WORDS: fine needle aspiration cytology, granular cell tumor, umbilicus

INTRODUCTION:

Granular Cell tumor (GCT) is an uncommon soft tissue tumor with an incidence of 0.017 – 0.029% in general surgical specimen. They usually occur as solitary tumors, but are multiple in about 10% of the cases. Though the most common site of involvement is the tongue, it is also found in other sites. Granular cell tumor was originally described in 1926 as granular cell myoblastoma. After having several diagnostic labels, this tumor is now commonly known as granular cell tumor. GCT is a rare tumor of the soft tissues. The diagnosis of GCT is fairly straightforward by both fine needle aspiration cytology (FNAC) and histopathology.

CASE REPORT:

A 60 year old female presented with dome-shaped, hard nodule measuring 5 x 4 cm which had grown over 2 months on the umbilicus. The nodule was nontender and nonmovable. Clinical diagnosis of secondary from visceral malignancy was considered and fine needle aspiration cytology was advised. Laboratory evaluations were unremarkable. FNAC was performed and smears were stained with H & E and MGG. The FNAC smears studied showed scant cellularity and were suspected of suspicious of malignancy with a possibility of primary skin appendageal tumor. Repeat FNA was done. Aspirate smears were cellular and comprised of large cells with abundant pink granular cytoplasm with fairly well defined borders (Fig 1). Nuclei were uniform in size, round and eccentrically located in places. Tumors cells showed strong positivity for Periodic Acid Schiff (PAS) stain. The findings were diagnostic of granular cell tumor. The tumor was completely excised and diagnosis was confirmed by histopathology (Fig 2 & Fig 3). Histopathological examination revealed a tumor situated in the reticular dermis with extension into the papillary dermis. The tumor showed expansile growth with smooth and round borders, and was made up of sheets of cells arranged in nests or lobules separated by thin delicate connective tissue septa. The tumor cells were round, oval, or polygonal in shape with distinct cellular borders. The cells had abundant eosinophilic granular cytoplasm. The nuclei were round or oval, with mild variation in size. Occasional small nucleoli were seen. On periodic acid-Schiff staining, the granular cytoplasm of the tumor cells was positive and contained occasional larger, brightly positive granules. Immunohistochemically, the tumor cells were positive for S100 protein. Mitoses and necrosis were virtually absent.

DISCUSSION:

Weber first described GCT in 1854 in a young man’s tongue. Abrikossoff, in 1926, named the tumor as granular cell myoblastomas, because of their presumed skeletal
muscular origin. Later on, varied theories were defended but, nowadays, electron microscopy and immunohistochemical studies support a schwann cell origin and so the tumor has also been characterized as granular cell schwannoma and granular nerve sheath tumor. These techniques help to differentiate this tumor from other entities with a granular cytoplasm. S-100 protein, neurone-specific enolase and vimentin, markers of neural origin, are usually expressed in this tumour. On the other hand, ultrastructural and cytochemical studies indicate that the cytoplasmic granules are lysosome-like structures containing myelin or its metabolic products. GCT cells differ from xanthoma cells, which they may superficially resemble, by having a granular, as opposed to finely vacuolated, cytoplasm. The site of involvement is widely varied and apart from the fact that the most common site is the tongue (30 – 40% of GCTs), it has also been found in the scalp, abdominal wall, back, upper extremities, soft palate, orbit, salivary glands, true vocal cords, appendix, bronchus, stomach, ascending colon. About 6-8% of GCTs occur in the breast.

Very commonly, GCT presents as an asymptomatic slowly growing mass that may have either smooth or hyperkeratotic overlying skin. The lesions are usually less that 3.0 cm and may undergo partial regression. Most granular cell tumors are benign, but a malignant counterpart also exists. Malignant GCT is a rare entity described in 1-2% of cases. GCT are most common in females and in the black population, generally during the third to fifth decades of life. The most common preoperative diagnoses of solitary GCT are squamous cell carcinoma, dermatofibroma, keloid or lipoma. The origin of GCT is an ongoing debate and includes muscle, fibroblast, histiocyte, neural crest and nerve sheath. The cell of origin of GCT is now accepted to the schwann cell based primarily on S-100 protein positivity. However, S-100 protein has been found in a number of other tissues including chondrocytes, histiocytes, melanocytic tumors, chordomas and rarely some carcinomas including breast. The granules of GCT cells stain strongly with Luxol Fast Blue Stain. Ultrastructurally, intracellular myelin figures with subsequent autophagocytosis by lysosomes have been demonstrated. This evidence gives support to the hypothesis of schwann cell origin. The differential diagnosis of granular cells on FNAC includes macrophages, apocrine cells and foam cells. Macrophages have approximately the same size and abundant cytoplasm like that of tumor cells in GCT, but the cytoplasm is commonly without well defined borders and may contain ingested debris. The nucleus of a macrophage is also eccentrically located but is often irregular to reniform in shape and commonly reveals a small nucleolus. Foam cells of xanthoma are large pale cells with foamy cytoplasm whereas cells of GCT have a granular cytoplasm wherein granules are strongly PAS positive and take up fat stains only faintly.

Apocrine cells have abundant granular cytoplasm but the granularity is finer than that of cells of GCT. The apocrine cell nuclei show prominent eosinophilic nucleoli and some amount of pleomorphism. The distinction between benign and malignant GCT depends on general features of malignancy in the tumor cell i.e. cell and nuclear pleomorphism, mitosis, necrosis. The occurrence of metastasis would clinch the diagnosis of malignancy. Malignant GCTs can spread to bones, lungs, liver and regional lymph nodes. The size of malignant GCT is generally larger ranging from 5 to 20 cm. Contrary to the more common benign lesions, malignant tumors are larger, with a more aggressive clinical presentation of rapid growth and metastatic potential. Because the malignant variant shares many striking pathologic similarities with the benign variant, reliable histologic criteria have been debated. Multifocal GCTs have been reported i.e. presence of multiple GCTs at different sites. Clinically this may give an impression of malignancy, however a careful microscopic evaluation with attention to size of the lesion should resolve the question. Very rarely, multifocal GCTs are reported in association with malignancy. Fanburg-Smith et al. classified atypical, malignant, and benign granular cell tumors on the basis of six histologic criteria: necrosis, spindling, vesicular nuclei with large nucleoli, increased mitotic activity (> 2 mitoses/10 high power fields at x 200 magnification), high nuclear to cytoplasmatic ratio, and pleomorphism. Neoplasms that met three or more of these criteria were classified as histologically malignant, those that met one or two criteria were classified as atypical, and those that displayed only focal pleomorphism, but fulfilled none of the other criteria, were classified as benign. The cells of the present tumor showed some nuclear pleomorphism and vesicular nuclei with large prominent nucleoli. It can be classified as atypical granular cell tumor, suggesting malignant potential. S-100 negativity has rarely been reported in granular cell tumor of the skin showing a histologic appearance from low-grade malignant to fully malignant.

The treatment of choice for benign tumor is surgical removal with wide margins, and with further follow-up due to the possibility of recurrence or malignant transformation. Features observed histologically, such as neurotropic spread of tumor cells along peripheral nerves, the presence of a discontinuous lamina around peripheral satellite cells and, finally, the existence of a pleomorphic variant of GCT characterized by perineural extensions of tumor along the neural plexus of the dermis, suggest that wide excision is necessary in order to avoid recurrences.

CONCLUSIONS-
GCTs can be diagnosed by a simple FNA procedure. This would help the surgeon to make early diagnosis and exclude malignancy.

REFERENCES: