

Utility of FNA Cytology in Pre-Operative Diagnosis of Cutaneous Granular Cell Tumour Mimicking Skin Adnexal Tumour: A Rare Case Report with Review of Literature

Sainath K. Andola*, Rachana Lakhe**, Suresh Patil***

*Professor and HOD, Department of Pathology, Mahadevappa Ramapure Medical College, Gulbarga - 585105, Karnataka, India.

**Resident in Pathology, Mahadevappa Ramapure Medical College, Gulbarga - 585105, Karnataka, India.

***Associate Professor of Surgery, Basaveshwar Teaching and General Hospital, Gulbarga-585105, Karnataka, India.

Abstract

Granular cell tumours are uncommon tumors of putative neural origin, now incontrovertibly proven to be derived from Schwann cells. They can occur in almost any part of the body. The lesions presenting over the skin are located deep in the subcutis yet are not aspirated very often and so the reports of their cytological diagnosis at these sites are sparse in literature. We report a case of 39 year old male presenting with a nodule over nape of neck which presented as a subcutaneous nodule mimicking as an adnexal tumor. Cytologically, it showed clusters of large oval to polygonal cells with abundant amount of granular cytoplasm. The tumour was diagnosed as granular cell tumour with differential diagnosis of benign adnexal tumour. Histopathology and PAS stained sections from the excised lesion confirmed the FNA diagnosis. The aim of presenting this case is to highlight the importance of cytology in diagnosing the granular cell tumour, cytologically mimicking an adnexal tumour in subcutaneous site along with a review of literature.

Keywords: FNAC; Granular cell tumour; Subcutaneous.

Introduction

Granular cell tumour (GCT) is an uncommon neoplasm of uncertain histogenesis. As the knowledge about the aetiology of this tumour increased it has received different names such as tumour of Abrikossoff, myoblastoma, granular cell neurofibroma or granular cell Schwannoma.[1] The incidence of granular cell tumour is 0.017-0.029%.[2] Although it can occur at any site, tongue and dermis are frequently involved sites, preferences for middle aged, with slight female prepondrence. It usually appears as an asymptomatic slow growing solitary nodular growth in

subcutaneous, intradermal or submucosal regions, rarely measuring more than 3 cm in diameter.[3] Granular cell tumour generally follows a benign clinical course, however recurrence and malignant transformation are

**Figure 1: Nodule Over the Nape of Neck
m 2.5 x 2.5 x 2 cm**



Corresponding Author: Dr Sainath K Andola M.D, Dcp,F.I.C.P,F.I.A.M.S, Professor and HOD, Department of Pathology, Mahadevappa Ramapure Medical College, Gulbarga - 585105, Karnataka, India.

E-mail: drskandola@gmail.com

rarely seen.

Case Summary

A 39 year old male presented with a nodular swelling over the nape of the neck measuring 2.5 x 2.5 x 2.0 cm for the last 6 months. It was firm, nontender nodular mass (Fig 1). Clinical diagnosis was adnexal / soft tissue tumor. There was no history of trauma. FNAC was requested. Tumor was sampled by 22G needle and 10 ml syringe. The smears were prepared, air-dried and fixed in acetone free methyl alcohol. The smears were stained with May-Grunwald-Giemsa stain. Aspirate was highly cellular with cohesive clusters and many dispersed cells which were large oval to polygonal, fairly uniform, arranged in vague follicular pattern (Fig 2). The cytoplasm was voluminous, finely granular grey blue, with ill defined cytoplasmic borders. Nuclei were round to oval, centrally placed with fine chromatin and rarely small nucleoli (Fig 3). Few binucleate and multinucleate giant cells were also present. Some cells showed mild anisonucleosis, however, no nuclear atypia, pleomorphism, mitoses were seen. Cytological diagnosis of Granular cell tumor was offered with a differential diagnosis of benign adnexal tumor and excision biopsy was advised.

Figure 2 : Small Groups of Cells with Abundant Finely Granular Basophilic Cytoplasm, Eccentric Round to Oval Nuclei. (Giemsa Stain HP)

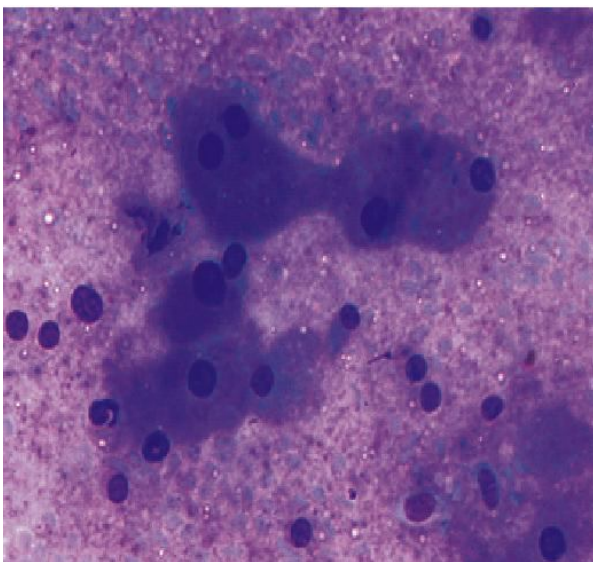
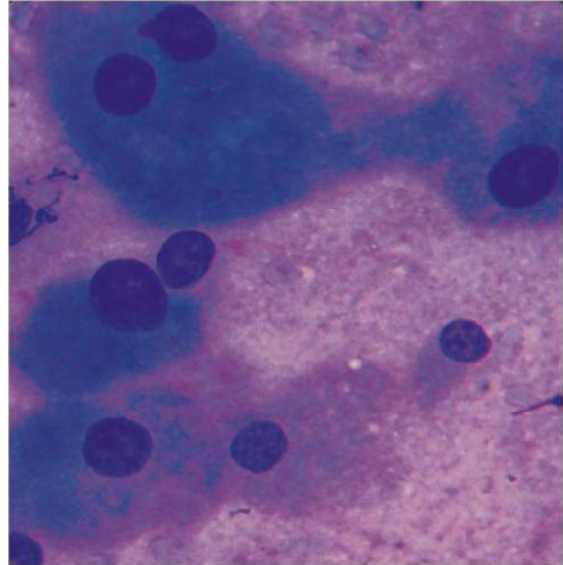


Figure 3: Large Cells with Ill Defined Borders, Abundant Finely Granular Basophilic Cytoplasm with Round to Oval Nuclei and Occasional Small Nucleoli (Giemsa Stain HP)

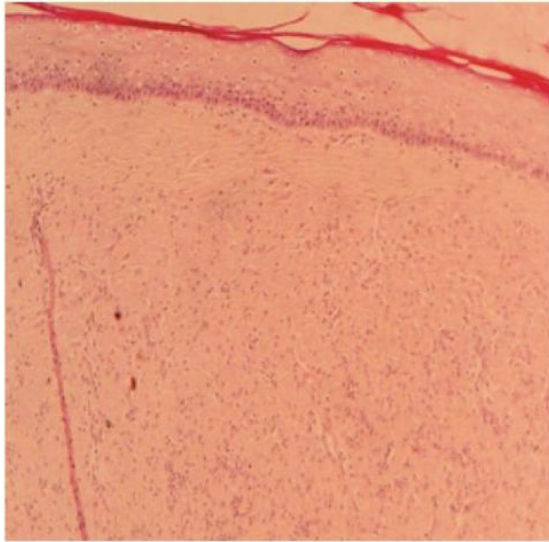


Total excision of nodule was performed. The tumor was located in subcutaneous location (Fig 4) without any underlying attachment, was excised completely with wide margins. Grossly, an encapsulated firm nodular mass measuring 2.5 x 2.5 x 2 cm. On cut section, greyish white. Histopathological examination revealed sheets of tumour cells which were large, polygonal with indistinct borders. Cells had abundant finely granular eosinophilic cytoplasm, round to oval nuclei with evenly distributed chromatin occasionally showing nucleoli (Fig 5). Cytoplasmic granules showed PAS positivity (diastase resistant) representing phagolysosomes (Fig 6). The diagnosis of Benign GCT was unequivocally confirmed.

Discussion and Review of Literature

Weber in 1854 first described granular cell tumours which are rare and benign.[3] GCT may occur at any age, more common in third to fifth decade of life of which two third of cases are reported in women and black population. [2] GCT is usually solitary but can be multiple in 5 to 15% of cases.[2] Besides

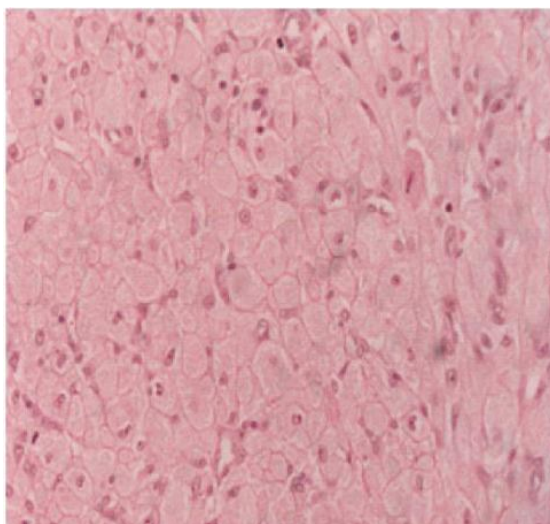
Figure 4: Diffuse Sheets of Tumour Cells Beneath the Skin (H&E: LP)



tongue, skin and subcutaneous tissue it can also been found in soft tissue, nerve, breast, scalp, abdominal wall, head and neck, back, extremities, lymph node, mediastinum, soft palate, orbit, salivary glands, respiratory tract, vulva, gastrointestinal tract, brain.[2]

Cutaneous GCT usually presents as asymptomatic slow growing skin-coloured or

Figure 5: Tumour Composed of Large Polygonal Cells with Well Defined Cell Borders, Abundant Granular Eosinophilic Cytoplasm, and Round to Oval Nuclei with Prominent Small Nucleoli (H & E HP).



brownish red firm dermal or subcutaneous nodule with smooth surface rarely exceeding 3 cms in size.[4] The tumour cell of origin is now accepted as Schwann cells due to strong expression of S-100. Ultrastructurally cytoplasmic granules show lysosomal vacuoles with myelin figures, prominent basal lamina, and intracytoplasmic filaments.[2]

The granularity of the cytoplasm is attributed to massive accumulation of lysosomes which show positive reaction to CD68 and Periodic acid Schiff stain.

Malignant GCT comprise not more than 2-3% of tumours.[4] The 6 histologic criterias proposed by Fanburg-Smith *et al*[5], are useful in classifying and predicting the biologic behaviour and malignant potential of GCT. These criterias are: necrosis, spindling, vesicular nuclei with large nucleoli, increased mitotic activity, (>2/10 hpf in 200X magnification), high nuclear-cytoplasmic ratio, and nuclear pleomorphism.[2,5,6]

Neoplasms are atypical when 2 of these 6 criteria are met, and are malignant when 3 or more of these six criterias are met, and those that displayed only focal pleomorphism but did not meet any of the criterias were designated as benign.

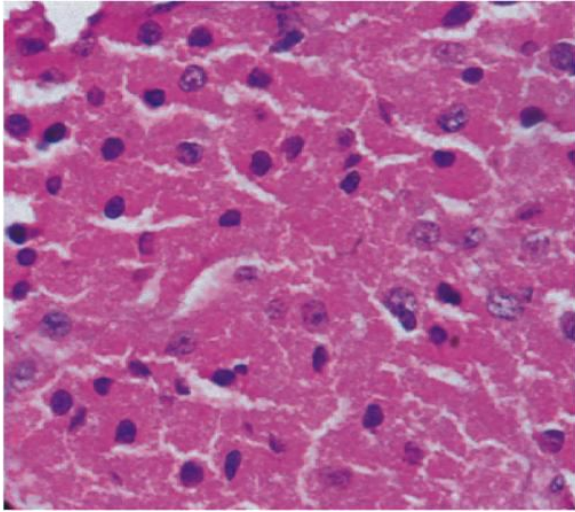
The first line treatment for GCT is surgical excision of the tumour with the overlying mucosa. The local recurrence rate in benign lesions is less than 5% and frequently a result of incomplete resection of original lesion.[4] Hence prognosis is generally excellent.

Conclusion

GCT may rarely present as a cutaneous lesion and can be confidently diagnosed by FNAC, however, the clinicians & pathologists need to be aware of this entity. Pre-operative cytologic diagnosis helps to avoid confusion with dermal adnexal tumour.

Thus, the distinctive cytologic features of GCT, allow a correct diagnosis even at an unusual site. Proper diagnosis of this neoplasm

Figure 6: Tumour cells showing PAS positive Granules (PAS stain HP)



is important, as it has good prognosis; and further, surgical excision is curative in most cases. This case is documented for its rare presentation as a cutaneous nodule with a clinical diagnosis of skin adnexal tumour. The cytologic and histopathologic findings discussed with review of the literature.

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