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Case Report

Granulosa Cell tumor of the male breast

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ABSTRACT

A granular cell tumor is an unusual benign soft tissue neoplasm, occurring in the tongue, oral cavity or subcutaneous tissue and rarely occurs in the breast. We report a case of 44 years old male, who presented with a swelling in the right breast since 7 years measuring 6 x 4 cm. Fine needle aspiration cytology was suggestive of low grade carcinoma and on histopathologic examination, it was diagnosed as granular cell tumour, with S-100 immunopositivity.

INTRODUCTION

Granular cell tumor (GCT) is an uncommon lesion affecting many organs, including the breast. In the breast, this tumor occurs in a wide age range that is from teenagers to the elderly. It was first described by Abrikosoff in 1926, as "granular cell myoblastoma", assuming a myogenic origin.[1] Based on immunohistochemical and ultrastructural features, schwann cells are considered to be the cell of origin of GCT.[2,3] Physical examination, mammographic and ultrasonographic findings are akin to breast malignancy.[3] We report a case of GCT of the left breast in a 44 year old male, presenting with a clinical suspicion of malignancy.

CASE REPORT

A 44 years old male presented with a slowly progressive, painless mass in the right breast of seven years duration. The lesion was 6 x 4cms in dimension and firm to hard in consistency. The overlying skin was normal, but the mass had restricted mobility. No lymphadenopathy was noted. Mammography was not done.

Fine needle aspiration cytology (FNAC) was done which revealed moderately cellular smears, comprised of medium to large-sized cells dispersed singly and in dyscohesive clusters. The cells had round to oval nucleus, anisonucleosis, coarse granular chromatin and occasional prominent nucleoli, with eosinophilic cytoplasm. The cytological features were suggestive of low-grade carcinoma (fig. 1A & 1B).

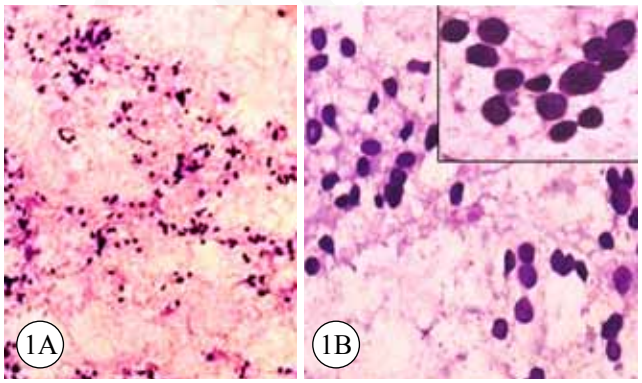

Figure 1A. *Smears, comprised of medium to large-sized cells dispersed singly and in dyscohesive clusters (HE stain, X40).* ***1B.*** *These cells had round to oval nucleus (HE stain, X100); B inset: anisonucleosis coarse granular chromatin and occasional prominent nucleoli, with ill-defined eosinophilic cytoplasm (HE stain, X400).*

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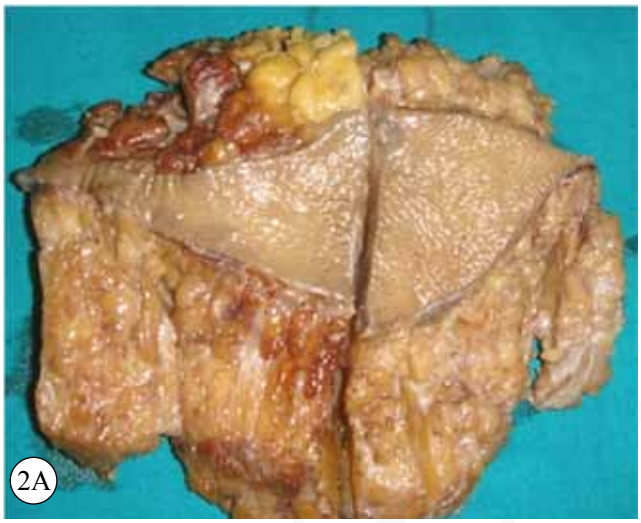


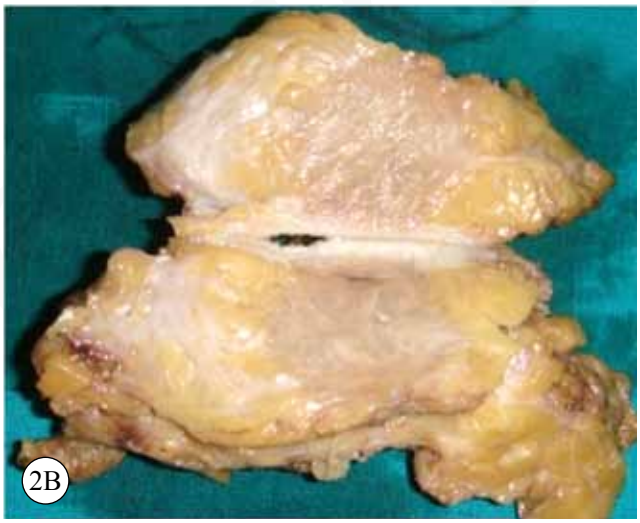
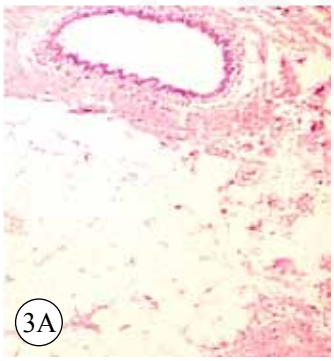
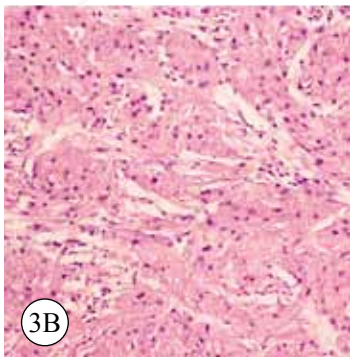
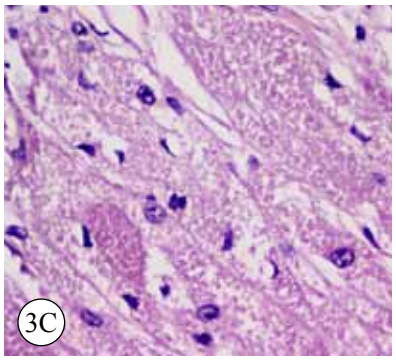


Figure 2A: *Radical mastectomy specimen with resected elliptical skin, nipple and areola.*

Figure 2B: *Cut section shows tan brown, ill-defined tumour measuring 6x3.8x3cms, with infiltrative margins and firm in consistency.*







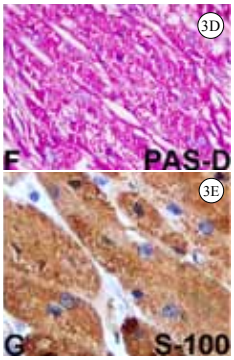


Figure 3A: *Normal terminal duct lobular units and mature adipose seen adjacent to the tumour (HE stain, X40).*
Figure 3B: *Large polygonal cells arranged in nests and trabeculae (HE stain, X40);*
Figure 3C: *Having small round nucleus, fine to coarse granular chromatin, occasional nucleoli and abundant eosinophilic granular cytoplasm (HE stain, X100).*
Figure 3D: *The cytoplasmic granules were Diastase resistant and Periodic Acid Schiff positive (PAS-D stain, X100).*
Figure 3E: *The tumour cells exhibit strong cytoplasmic positivity for S-100 (X100).*

Radical mastectomy was performed. Grossly the tumor was ill-defined, measuring 6 x 3.8 x 3cm in size, with infiltrative margins, firm in consistency and tan brown in colour mobility (fig. 2A&B). A total of 14 lymph nodes were sampled in the axillary pad of fat, largest measuring 0.8cm in diameter. Microscopically, the tumor was composed of large polygonal cells arranged in nests and trabeculae. The cells had small round nucleus, fine to coarse granular chromatin, occasional nucleoli and abundant eosinophilic granular cytoplasm (fig.3A-C). The cytoplasmic granules were Diastase resistant Periodic Acid Schiff positive (fig.3D). No nuclear pleomorphism, mitosis or necrosis was noted. Few residual normal terminal duct lobular units were observed in the adjacent breast tissue. None of the 14 lymph nodes showed evidence of metastasis. The resected margins were free from tumour. The diagnosis of granular cell tumour was offered. To confirm the diagnosis, immunohistochemistry was done. The tumor cells revealed strong cytoplasmic immunoreactivity to S-100 (fig. 3E), and were immunonegative to pan-Cytokeratin, Estrogen receptor (ER), Progesterone receptor (PR) and HER-2/neu.

DISCUSSION

Granular cell tumour of the breast occurs in a wide age groups from 15 to 74 years of age.[4] Review of literature shows a slight preponderance in premenopausal black women.[3,5] The most common site of occurrence is the tongue. In the breast it accounts for only 5 – 8% of all GCTs reported.[5] Fewer than 400 cases of GCTs of breast have been reported in literature.[6] According to Boulat J et al, 9.8% of breast GCTs were in males.[4] The ratio of GCT to breast carcinoma varies from 1:1000 to 6.7:1000.[2,6]

Clinical presentation of this tumor is similar to that of breast carcinoma. On palpation the mass may be hard, movable or fixed. Retraction of the overlying skin and fixation can occur when the tumor is superficially situated.[7] Mammographically, this tumor can be irregular to well-circumscribed and or speculated, suggesting parenchymal fibrosis. On ultrasonography, an acoustic shadowing, distal to the solid, hypoechoeic, non-homogenous mass can mimic carcinoma.[6,8] On magnetic resonance imaging, GCT of the

breast appears slightly hypointense compared with breast parenchyma with no signal was seen on T2WI.[9] Similarly, no T2WI signal was seen in 61% of invasive ductal carcinomas and 73% of the invasive lobular carcinomas.[10]

Grossly, an ill-defined, tan and firm to hard lesion suggest a pathologic diagnosis of scirrhous carcinoma.[8] On FNAC, moderately cellular smear, consisting of cluster of cells and single cells, with small regular nuclei, abundant granular cytoplasm and bare nuclei, suggest an equivocal or atypical, probably benign lesion. Such features entertain a differential of apocrine cells, granular cells and histiocytes.[11]

Apocrine carcinomas comprised of a pure proliferation of type A cells, that is cells with globoid hyperchromatic nuclei and prominent nucleoli, and having abundant granular, intensely eosinophilic cytoplasm. The cytoplasmic granules are diastase resistant PAS positive and hence superficially mimic GCTs. This variant of apocrine carcinoma has sometimes been referred to as myoblastomatoid type.[12] Criteria for subtyping as atypical and malignant GCTs is based on the presence of vesicular nuclei and large nucleoli, high nuclear/cytoplasmic ratio, nuclear pleomorphism, mitotic figures (>2 mitoses/10HPF) , spindling and necrosis.[5]

Immunohistochemically GCTs are diffusely positive for S-100 and also for CD68, owing to the abundance of phagolysosomes.[9,13] Both GCTs and apocrine carcinomas of breast are immunonegative for ER, PR and HER-2/neu. But apocrine carcinomas are immunoreactive to pancytokeratin and GCDFP15, hence easily distinguishable from GCT and histiocytoid proliferation in difficult cases.[14]

Recommended surgical management of benign breast GCT is wide local resection with tumor-free margins.[13] Chemotherapy, alone or in association with radiotherapy, is not given unless the tumor is malignant.[11]

CONCLUSION

Granular cell tumour of the male breast is an uncommon lesion. It clinically and radiologically mimics breast carcinoma, and pre-operative FNA cytology is not helpful. Hence diagnosis is based on histpathological examination.

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