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Invasive lobular carcinoma of breast with hyaline globules (Thanatosomes)

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Abstract
Hyaline globules have been observed in many neoplastic and non-neoplastic processes. They represent terminal cytoplasmic structures associated with cytoplasmic blebbing, which are related to cell injury and apoptosis. Thanatosomes are also such hyaline globules seen invariably associated with increased apoptosis and may contain nuclear fragments, occasionally observed in high grade tumours. Thanatosomes are reported rarely in breast tumours. Here we describe a case of invasive lobular carcinoma of breast with hyaline globules [thanatosomes].

Keywords: Breast, invasive lobular cancer, hyaline globules, thanatosomes

Introduction

Case history

A 66 year old female presented with right breast lump since 3 months. FNAC was suggestive for malignancy. Excisional biopsy was performed and received a firm tissue mass [Fig.1] of size 4 x 3 x 2 cm with greyish white cut surface. Microscopically [Fig.2] showed tumour tissue composed of atypical cells arranged in nests, groups, trabeculae and in Indian file pattern. Tumour cells revealed hyperchromatic nuclei and prominent nucleoli with intracytoplasmic hyaline globules. These hyaline globules were [Fig.3] PAS & diastase resistant PAS positive.

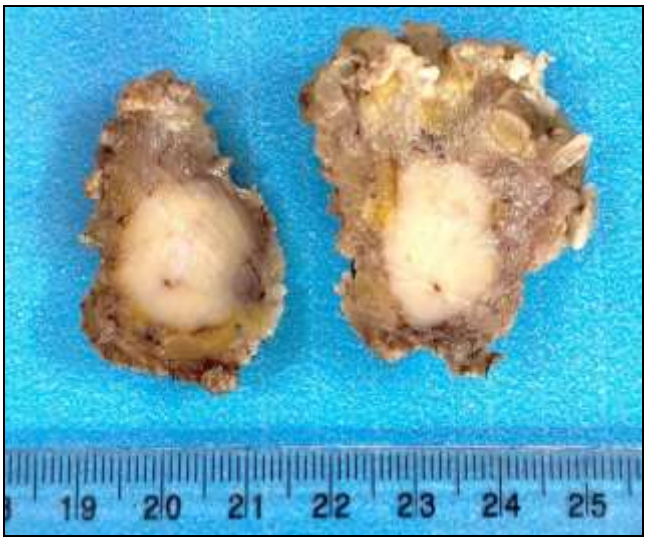

Fig 1: Gross: Tissue mass of size 4 x 3 x 2 cm with greyish white cut surface.

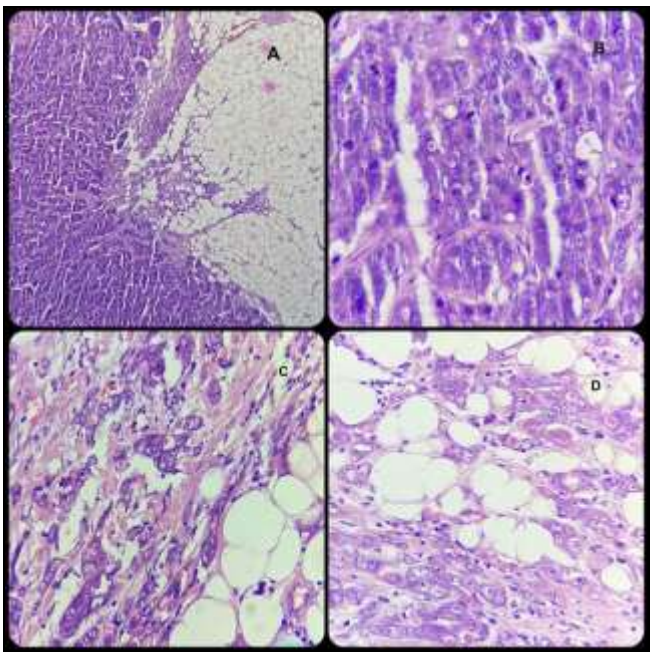

Fig 2: Microscopically showed cells arranged in sheets [A, B], nests, groups [C], trabeculae and in Indian file pattern [D]. Tumour cells [D] revealed hyperchromatic nuclei and prominent nucleoli with intracytoplasmic hyaline globules. [H & E: A: 10X; B, C, D; 40X]

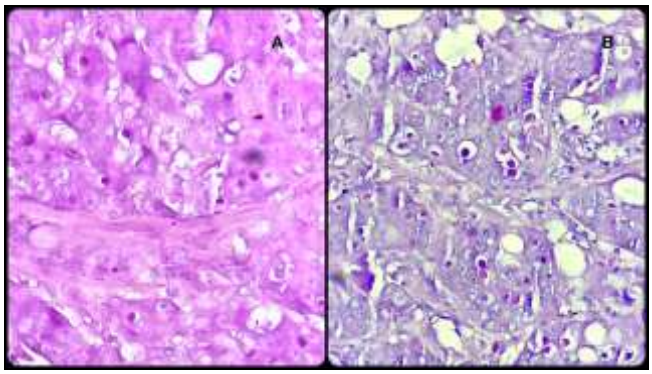

Fig 3: Microscopically showed PAS positive intracytoplasmic hyaline globules [PAS: A: D-PAS: B: 40X]

Discussion

Hyaline globules [HG], according to Papadimitriou *et al*. are terminal cytoplasmic structures related to cell injury and apoptotic cell death, specifically associated with cytoplasmic blebbing and condensation with secondary plasma protein insudation, resulting in formation of globoid hyaline cellular fragments. They proposed the name thanatosomes for the entire spectrum of hyaline globules to highlight their association to apoptotic cell death. D'Alfonso *et al*. have found thanatosomes in 16% of high-grade breast lesions [1].

HGs have been observed in many tumours and non-neoplastic conditions. Thanatosomes are independent of the tumour type and are related to apoptosis. They are large (3-30 micrometre) proteinous HGs seen within the cell cytoplasm or stroma having similar staining properties as other hyaline bodies. They are presumably the result of high membrane permeability of the apoptotic bodies, imbibing mostly plasma proteins and assuming the globular shape [2].

Thanatosomes, a term derived from the Greek words "Thanatos" meaning death and "soma" meaning body, are intracellular globular structures that are formed as a consequence of cell turnover. These bodies of death represent either an autophasic or heterophasic process and form as a consequence of apoptotic cell death. Thanatosomes in the breast have been described in 2 reports. Dekkar and Krause described the presence of abundant "thanatosomes" in a 49 year old woman who died of widely metastatic breast carcinoma Jenson *et al.* described the presence of "hyaline globules "in a mammary ductal adenoma. On haematoxylin and eosin stained preparations, true thanatosomes typically appear as intracytoplasmic round structures of varying size [3].

Thanatosomes stain brilliant red with PAS [Fig.3] as in our case and appear fuchsinophilic with Masson's trichrome preparation. In summary, our study suggests that thanatosomes can be found, albeit rarely and only focally in a variety of high-grade malignant breast tumours [3].

Conclusion

We reported herein a case of invasive lobular carcinoma with hyaline globules. These globules are related to apoptotic cell death and therefore called thanatosomes.

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