

Caso aislado

Pleomorphic adenoma of male breast: Report of a case and review of the literature

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RESUMEN

Se presenta el caso de un varón de 40 años que mostró en la mama un adenoma de glándula salival de tipo "mixto" (adenoma pleomorfo). El tumor se caracteriza por una proliferación de estructuras microglandulares compuestas por células epiteliales rodeadas de células mioepiteliales y estroma mixoide. La histología, el estudio inmunohistoquímico y los rasgos ultraestructurales confirman que el tumor es similar a un adenoma pleomorfo de las glándulas salivales. Rev Esp Patol 1997; 30(3): 232-237.

Palabras clave: Mama masculina - Adenoma pleomorfo - Tumor mixto

SUMMARY

An adenoma of the "mixed" salivary type (pleomorphic adenoma) located in the breast of a 40-year-old man is described. The tumor was characterized by a proliferation of microglandular structures composed of epithelial cells and surrounded by myoepithelial cells in a myxoid stroma. The histological, immunohistochemical and ultrastructural features of the tumor confirmed its close similarity to the pleomorphic adenoma of the salivary glands. Rev Esp Patol 1997; 30(3): 232-237.

Key words: Male breast - Pleomorphic adenoma - Mixed tumor

INTRODUCTION

Pleomorphic adenoma is an uncommon tumor in the female breast (1-8) and exceptional in the male breast (2-4). It morphologically resembles its counterparts in the salivary glands and skin (9, 10). The differential diagnosis of this tumor include papillomas with chondroid and osseous metaplasia, and it has been regarded as a form of intraduc-

tal papilloma (6, 11). We report a case of a pleomorphic adenoma ("mixed" salivary type tumor) in a male breast.

MATERIALS AND METHODS

Tumor samples were fixed in 10% formalin. Paraffin sections were stained with hematoxylin and eosin (H-E),

Masson's trichrome, periodic acid Schiff reagent (PAS) and orcein staining. Some pieces of formalin fixed tissue were washed in Karnofsky buffer, postfixed in glutaraldehyde and prepared for routine ultrastructural examination. Formalin-fixed and paraffin-embedded tissue sections were tested with antibodies against keratin (AE-1, AE-3 Hybritech), S-100 protein (Dakopatts), Actin (Enzo), vimentin (Biogenex) and glial fibrillary acidic protein (GFAP, Immunon) by the avidin-biotin complex method (ABC) technique.

CASE REPORT

A 40-year-old man was treated at our institution for a nodule in the left breast which had been growing slowly for 3 years. The mass was painful to the touch, and it had recently produced a nipple discharge of brownish-yellow fluid. The patient was an alcoholic, although he had stopped drinking 15 months before. His alcoholic habit suggested the possibility of gynecomastia although the lesion was unilateral. When he was first observed by the surgeon, he presented a painful suppurating mass in his left breast. His right breast was normal on palpation. He had no other symptomatology and routine analysis revealed no abnormalities. The patient had not taken any hormones or medication. Following the diagnosis of unilateral gynecomastia he underwent surgical excision of the breast nodule under general anesthesia. The patient was discharged after surgery, and after 4 years he remains healthy without recurrences.

PATHOLOGICAL FEATURES

The biopsy specimen consisted of an ovoid, brownish-grey tissue fragment measuring $3.5 \times 2.5 \times 1.5$ cm, partially covered by fat. On excision, the tumour was lobulated and fairly well delineated from the surrounding mammary tissue and had a somewhat shiny appearance with rubbery consistency.

Histological examination revealed a mass surrounded by an ill-defined collagenous capsule containing scattered elastic fibres. On low power, the tumor displayed a lobular architecture (Fig. 1a) and was composed of microglandular structures lined by benign glandular epithelium, with polyhedral eosinophilic cytoplasm and round to ovoid nuclei, embedded in a myxoid stroma (Fig. 1b). In some areas apocrine metaplasia was present. Additionally, ductal struc-

tures with a double cell layer of cuboidal epithelial cells with apocrine-like features surrounded by clear myoepithelial cells were seen in some areas (Fig. 1c). The epithelial component of the tumor was surrounded by a very peculiar myxomatous matrix; no cartilaginous or osseous components were seen. A great number of microcalcifications were present, mainly within glandular lumens. Many of the tumor cells showed PAS positive intracytoplasmic granules.

Immunohistochemistry showed strong positivity with AE-1, AE-3 antibodies in the epithelial cells. S-100 protein and anti-actin antibodies stained the clear myoepithelial cells surrounding the ductal structures (Fig. 1d), as well as scattered spindle cells within the myxoid stroma. Vimentin was positive in the stromal cells and occasionally in periductal cells. GFAP showed focal positivity in the spindle cells of the myxoid component.

Three types of cells were observed by ultrastructural examination: epithelial cells in the inner layer of the duct; myoepithelial cells in the outer layer (Figs. 2a and 2b); and some indeterminate cells generally found in the outer layer and within the myxoid stroma (Fig. 3). The epithelial cells showed a great number of tonofilaments, short cytoplasmic projections and numerous mitochondria. Myoepithelial cells had both tonofilaments and microfilaments and occasional dense bodies. In the myxoid areas, the cells were more undifferentiated, and showed abundant cytoplasmic intermediate filaments, strands of rough endoplasmic reticulum and scattered lipid droplets.

DISCUSSION

Neoplasms morphologically indistinguishable from pleomorphic adenomas of the salivary gland may occasionally arise in the female human breast (1-8) and are exceptional in the male breast (2-4). On the other hand, mixed tumors represent about 50% of canine mammary neoplasms and are the most common tumors found in aged, intact female dogs (3).

In 1969 Smith and Taylor (11) analyzed 35 mammary tumors containing bone or cartilage, and found 8 lesions which they named "mixed tumors". They concluded that these lesions represented intraductal papillomas with areas of chondroid and osseous metaplasia because of the close association between the epithelial proliferation and what they interpreted as stromal metaplasia. In our case, and in others described in the literature, no relationship to epithelial proliferation in the rest of the breast could be established (6).

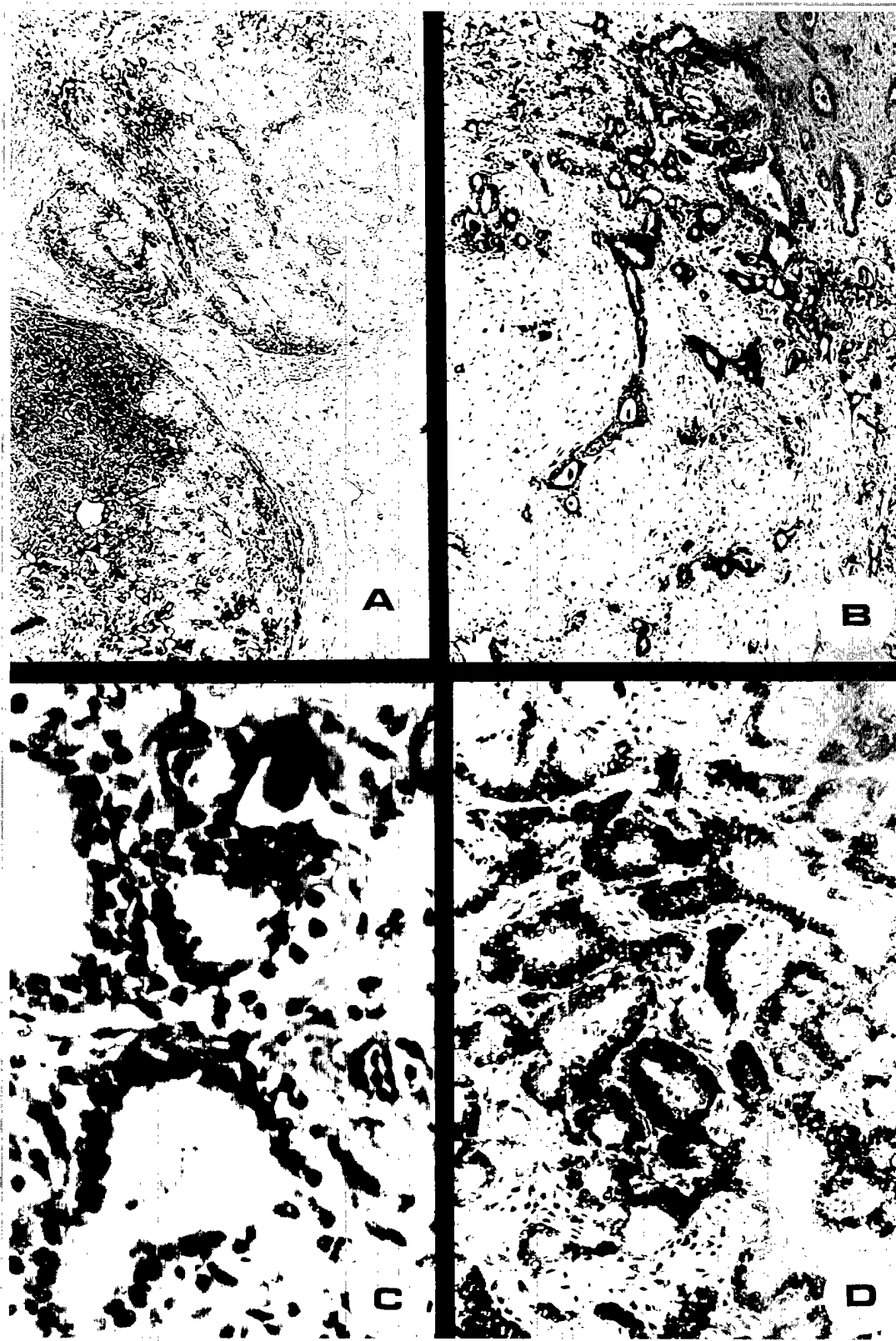


Figure 1. A) Lobular architecture of the tumor with a characteristic myxomatoid stroma. B) Low power view of the tumor, composed of microglandular structures in a loose stroma. C) Duct-like structures with apocrinoid changes in the inner layer and myoepithelial cells in the outer layer. D) Immunohistochemical positivity for protein S-100 in the nuclei and cytoplasm of the outer layer of the ducts.

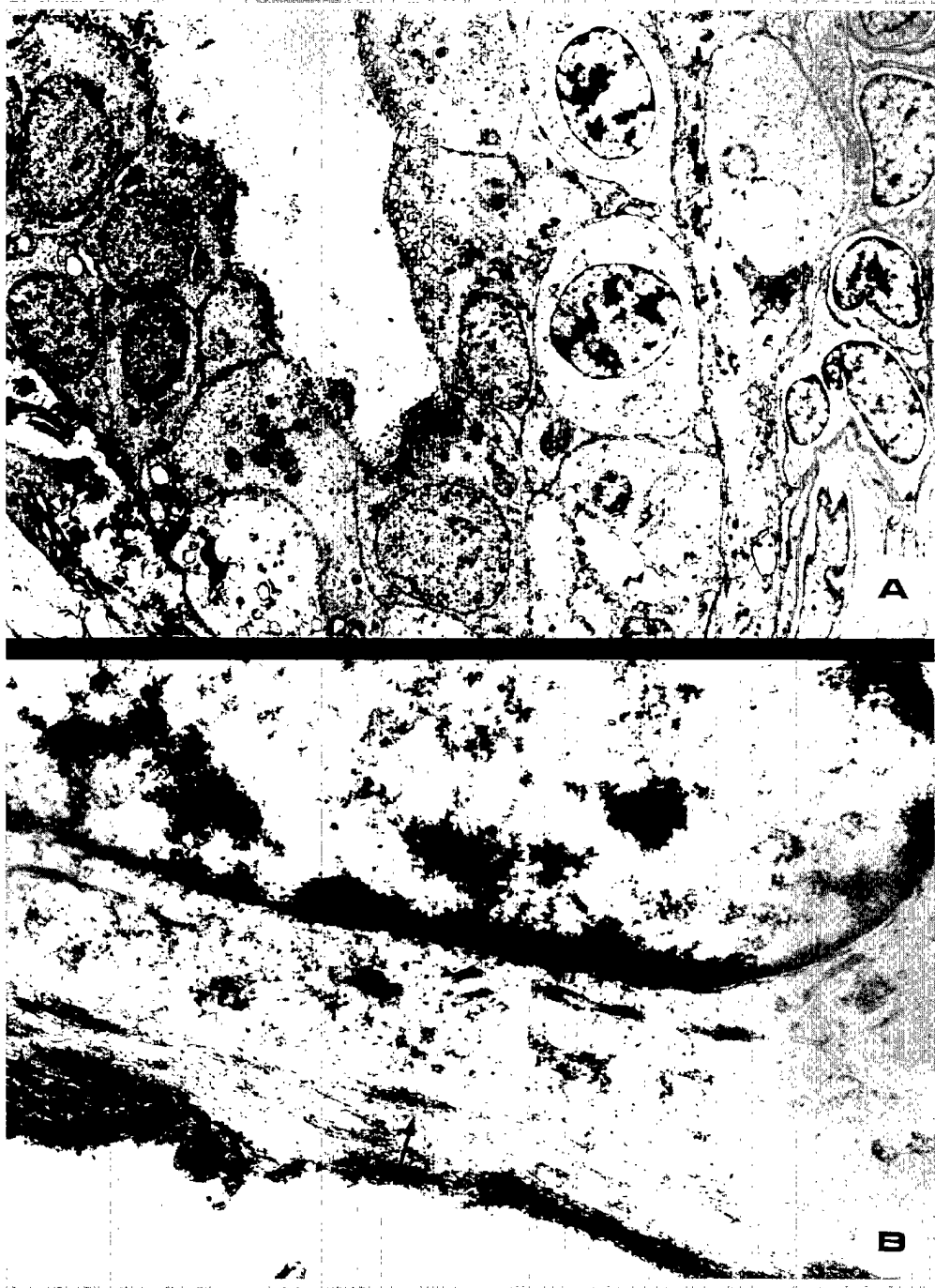


Figure 2. A) Ultrastructural features of the tumor glands; the epithelial cells show microvilli and the peripheral cells a clear cytoplasm (original, $\times 1875$). B) Detail of a myoepithelial cell which shows tonofilaments, microfilaments and dense bodies (arrow) (original, $\times 19,000$).

In the study by McClure et al. (3) the authors found three types of cells on ultrastructural examination: a) myoepithelial cells with both irregular, long, ovoid nuclei and conspicuous nucleoli and with characteristic myofilaments, and periodic densities in the cytoplasm; b) cells bordering

the lumen of the glands which were smaller and rounder than the myoepithelial cells and possessed microvilli and desmosomes between the cells; and c) cells which occurred mainly between the myoepithelial and the luminal cells that were larger than the other cell types, and contained numer-



Figure 3. Stromal cell of indeterminate type with abundant filaments (original, $\times 7,500$).

ous lipid droplets. Other ultrastructural studies of these tumors have described as many as eight different types of cells (2). In the present case, ducts with both epithelial and myoepithelial cells were observed, and frequent indeterminate cells were present in the stroma. In other studies, transitions between the epithelial and the mesenchymal cells have been described, suggesting that these stromal cells are modified myoepithelial cells (9).

Immunohistochemically, S-100 protein positive cells have been found mostly restricted to the basal layer of the double-layered ductal epithelium of pleomorphic adenomas of salivary glands, and in spindle cells within the chondromyxoid stroma (9, 12). Scattered GFAP and vimentin positivity in similar distribution highlighting the role of myoepithelial cells in these lesions have been described.

Benign tumors arising in the male breast are extremely rare and only a few cases of adenoma of the nipple and mixed tumors have been published (2-4). In cases of "mixed" salivary type breast tumor it could be questioned whether the tumor derives from the mammary gland itself or from the overlying skin. The fact that the tumor was deeply located and surrounded by mammary tissue reflected an origin in the mammary tissue.

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