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Case Report

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Invasive Ductal Carcinoma in the Setting of Mammary Duct Ectasia

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Introduction

Mammary duct ectasia is a condition occurring in 2.9-8% of the population [1,2]. Although it is a benign condition, clinical symptoms may mimic cancer. Our case reports an 88-year-old female who presented with bloody nipple discharge and a palpable mass. Imaging was consistent with solitary duct ectasia. Further workup revealed ductal carcinoma in-situ, with invasive ductal carcinoma on surgical pathology.

Case Report

An 88-year-old female presented with new-onset left bloody nipple discharge. Physical exam was significant for a 5-6cm palpable tubular mass in the left breast at the 3 o'clock position. Mammography revealed a solitary dilated duct extending from the left nipple deep into the upper outer quadrant of the left breast [Figure 1]. Ultrasound of the left breast confirmed this finding**,** revealing a complex tubular mass, consistent with an ecstatic duct complex [Figure 2]. Ultrasound guided biopsy revealed Ductal Carcinoma *In-Situ* (DCIS), low to intermediate grade without necrosis [Figure 3]. The patient subsequently underwent bracketed radioactive seed localization and left central partial mastectomy. Surgical pathology revealed multifocal invasive ductal carcinoma, largest focus measuring 4.5 mm, in the background of extensive DCIS measuring at least 2 cm [Figure 4], Estrogen Receptor positive (ER+), Progesterone Receptor positive (PR+), Ki-67 25%, and Human Epidermal Growth Factor Receptor 2 negative (HER2-). The patient declined radiation therapy, and remains disease free for one year on an aromatase inhibitor.

Figure 1: Left MLO and CC mammogram show a solitary dilated duct extending from the left nipple deep into the upper and outer quadrant of the left breast.

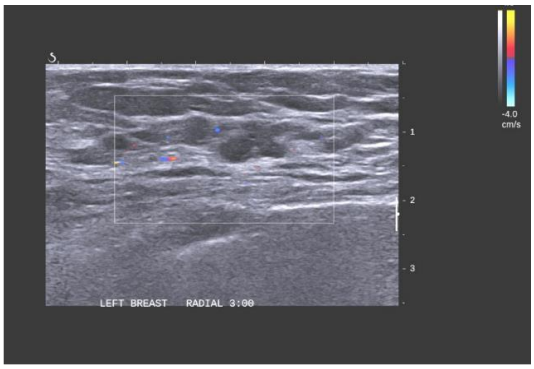

Figure 2: Targeted ultrasound corresponding to the mammogram finding in Figure 1 is a complex tubular mass, consistent with a complex ecstatic duct.

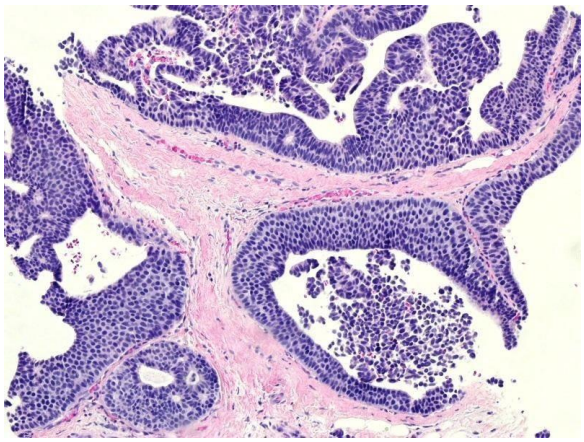

Figure 3: Core biopsy showing DCIS; papillary solid and cribriform patterns 100X.

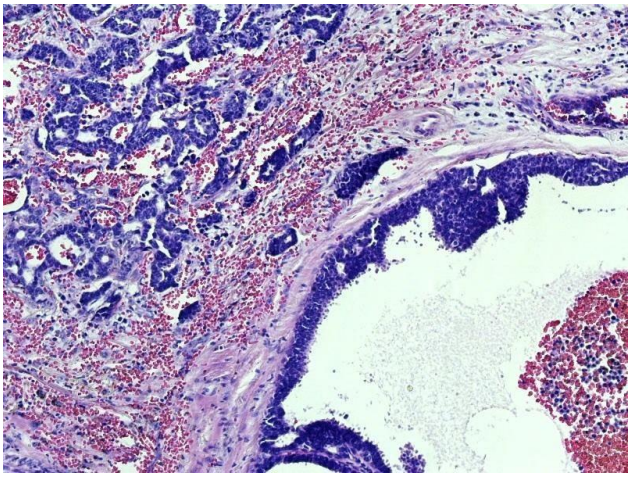

Figure 4: Partial mastectomy showing DCIS and invasive carcinoma 100X.

Discussion

Mammary duct ectasia is a disease process characterized by dilation of the duct with surrounding fibrosis and inflammation [3]. A study by Frantz in 1951, looked at autopsies of subjects with normal breasts, and found mammary duct ectasia to be prevalent in approximately 25% of cases [4]. Further studies based on mammographic imaging and subsequent biopsies of suspicious lesions have suggested a prevalence of 2.9-8% [1,2]. The pathophysiology of the disease includes a duct initially filled with cellular debris that becomes distended overtime, forming a palpable mass in its late stage. Although it may mimic signs and symptoms of breast cancer upon presentation, it is a benign pathology, not frequently linked to breast cancer [5]. Some symptoms include nipple discharge that may be brownish in color, or even bloody appearing, that is intermittent and spontaneous. Nipple retraction may occur as well, caused by ductal wall fibrosis that effectively thickens and shortens the duct, causing nipple retraction or dimpling of the skin [6]. However, up to two thirds of these "masses" cause tenderness over the area [7], which is usually inconsistent with symptoms of carcinoma.

A solitary dilated duct is a rare finding on mammography, recorded by Chang et al in 9 of 235,209 consecutive screening and for 12 of 29,267 consecutive diagnostic mammograms, of which 1 in each group was found to represent DCIS [8]. Kim et al investigated the likelihood of malignancy associated with duct ectasia observed on ultrasound, and found that ill-defined, heterogeneous, peripherally located duct ectasia had an increased incidence of malignancy [9]. However, malignancy was only found in 8 out of 54 cases, with only one biopsy proven invasive ductal carcinoma. Micro calcifications on ultrasound should raise suspicion for malignant lesions as well, as 50% of the malignant lesions biopsied by Kim et al had calcifications, while micro calcifications were absent in 73% of the benign lesions. Tiu, et al. further differentiated between solitary ductal ectasia vs. diffuse ductal dilatation, revealing invasive ductal carcinoma in 1.8% of solitary dilated ducts and only 0.8% of diffusely dilated ducts.

Although duct ectasia is rarely malignant, if a patient present with bloody nipple discharge, further investigation, including surgical intervention, is warranted. In 2011 a British study evaluating the incidence of breast cancer in women with spontaneous blood stained nipple discharge revealed that 10.2% of women were found to have malignant lesions on surgical excision [10]. According to the National Comprehensive Cancer Network (NCCN) guidelines, patients who present with nipple discharge should undergo mammography, with subsequent workup or intervention based on the findings [11].

Conclusion

Malignancy is rare in duct ectasia, with very few cases reported. In our case, the patient had the presence of a palpable structure as well as bloody nipple discharge, suspicious for

malignancy, supported by radiologic findings. Given the radiographic findings, further workup revealed a cancerous lesion, thereby allowing for treatment. Although mammary duct ectasia is commonly a benign disease, cases that manifest a solitary dilated duct on mammography, suspicious ultrasound findings, and bloody nipple discharge, must be viewed with suspicion and excised.

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