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Breast Supernumerary: Case Report

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Abstract

Breast cancer arising on ectopic breast tissue is a rare but clinically relevant entity that presents diagnostic and therapeutic challenges. Prompt recognition is essential, particularly when encountering subcutaneous nodules of uncertain diagnosis near the milk line. Utilizing comprehensive diagnostic tools such as ultrasound and biopsy is crucial for confirming the diagnosis and guiding appropriate management. In this article, we discuss the diagnostic intricacies and therapeutic considerations of breast cancer on ectopic breast tissue, emphasizing the importance of early detection and tailored treatment strategies for improved patient outcomes.

Introduction

The mammary gland derives from the mammary ridge or primitive lactiferous line **[1, 2]**. An anomaly in embryological development can rarely lead to the appearance of ectopic mammary tissue, which can be located along the path of the primitive lactiferous line, primarily in the axillary region **[3]**. The malignant transformation of this ectopic mammary tissue can pose a dual diagnostic and therapeutic challenge. Here, we report a rare case, through which we will highlight some diagnostic and therapeutic peculiarities **[4]**.

Case Report

A 42-year-old female patient, with no significant medical history, presented with a painless and progressively enlarging mass in the right axilla over the past 6 months. Clinical examination revealed a 4 cm nodular axillary mass, adherent to surrounding tissues. Upon breast examination, asymmetry was noted, with the right breast slightly larger than the left. Mammography and breast ultrasound showed a suspicious mass in the right breast, as well as a distinct lesion in the right axilla, outside the primary breast tissue.

A biopsy of the axillary mass confirmed a grade III infiltrating ductal carcinoma, strongly expressing hormonal receptors. Genetic tests revealed the presence of supernumerary breast tissue, explaining the tumor's presence in this unusual region.

The patient was managed by a multidisciplinary team. She underwent neoadjuvant chemotherapy with doxorubicin and cyclophosphamide, followed by right radical mastectomy with excision of the axillary mass and axillary lymph node dissection. Histopathological examination confirmed grade III infiltrating ductal carcinoma in both the primary breast and

the supernumerary axillary breast, with extension to local lymph nodes.

Post-surgery, the patient received targeted radiotherapy to the right axillary region and mastectomy site. Hormone therapy with tamoxifen was initiated to target positive hormonal receptors. Regular follow-up was established to monitor for recurrence or complications. After one year of follow-up, the patient achieved complete remission with good tolerance to treatments.

Discussion

From an embryological standpoint, the development of the mammary gland stems from the ectoderm. The ectodermal thickening gives rise to the primitive milk line or mammary ridge, extending from the axillary fossa to the inguinal fold. In human embryogenesis, only two mammary buds persist post-milking ridge regression by the 6th week. At birth, the mammary gland comprises a rudimentary system of tubules, accompanied by an areola and nipple where 15 to 20 lactiferous ducts converge. Subsequent development progresses gradually during prepuberty, accelerating notably at puberty under hormonal influences. Anomalies during embryonic development can lead to the persistence of ectopic breast tissue **[1,2]**.

The concept of ectopic breast tissue encompasses two primary types: supernumerary breast tissue, characterized by the presence of a persisting or atrophic gland along with a nipple and/or areola, and aberrant breast tissue, denoting the presence of breast tissue alone without nipple or areola structures **[3,4]**. Epidemiologically, ectopic breast tissue occurs in approximately 6% of the general population **[1,5,6]**, with breast cancer arising on such tissue being exceedingly rare, accounting for about 0.2 to 0.6% of all breast cancers **[1,3]**. While the axillary region represents the most frequent site for breast cancer on ectopic tissue (60-90% in various studies) **[1,3]**, other atypical locations reported include para-sternal, subclavicular, submammary, and vulvar regions **[2,3,6,7]**. In the axillary region, differential diagnosis often involves distinguishing it from axillary lymphadenopathy. This distinction is supported by the presence of breast tissue with adjacent ducts and lobules in proximity to tumor tissue, coupled with the absence of lymphoid tissue, effectively ruling out metastasis from an occult breast tumor **[1,3]**. Approximately half of these cases involve lymph node extension, primarily due to spatial proximity, which holds negative prognostic implications. Delays in diagnosis also contribute to prognosis since the absence of a nipple or areola renders ectopic breast tissue inconspicuous, particularly if it is not located in the axillary region **[1,2]**. Nevertheless, at equivalent stages, the prognosis of breast cancer on ectopic breast tissue mirrors that of eutopic breast cancer **[3,4]**.

Therapeutic interventions typically encompass wide local excision combined with ipsilateral axillary lymph node dissection. Adjuvant therapies mirror those employed in standard breast cancer management. However, debates surround the use of sentinel lymph node biopsy due to potential contralateral axillary or inguinal lymphatic drainage pathways. Given the rarity of this condition, establishing definitive therapeutic protocols remains a challenge **[5,6,7]**.

Conclusion

Breast cancer in ectopic breast tissue is a rare but clinically significant entity that requires a precise diagnostic approach and appropriate therapeutic management. Recognition of this condition is essential to ensure appropriate care and improve outcomes for the patients concerned. Further studies are needed to better understand this condition and to establish more precise clinical guidelines for its diagnosis and treatment.

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