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# Endometrial metastasis of a breast tumor: a case report and review of the literature

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***Abstract:*** *Background: Endometrial metastasis from breast cancer is a rare and often under-recognized clinical entity. While metastatic disease from breast carcinoma commonly involves the lungs, liver, and bones, involvement of the endometrium remains an infrequent occurrence. Clinical Presentation: This case report presents an unusual case of endometrial metastasis originating from invasive carcinoma of the breast and discusses the diagnostic and therapeutic challenges associated with such metastasis.****Discussion:*** *Endometrial metastasis from breast cancer is extremely rare, with only a few documented cases in the literature. The diagnosis often presents challenges due to nonspecific clinical symptoms such as abnormal bleeding. In this case, the diagnosis was made by histopathological evaluation, emphasizing the importance of considering endometrial metastasis in the differential diagnosis for patients with a history of breast cancer presenting with abnormal uterine bleeding.* ***Conclusion:*** *Endometrial metastasis from breast cancer, although rare, should be considered in patients with a history of breast cancer presenting with unusual gynecological symptoms. Early recognition and appropriate treatment are crucial for optimizing patient outcomes.*

**Keywords: Breast Cancer, Endometrial Metastasis, Immunohistochemistry, Diagnostic Challenges, Rare Metastasis.**

## 1. INTRODUCTION

Endometrial metastases from primary ectopic tumors, particularly breast cancer, are rare but should not be overlooked in the management of patients with a history of breast cancer.

Breast cancer is one of the most common malignancies in women, with a steadily rising incidence. It tends to spread to classic sites such as bone, lung, liver and brain, but metastases to more unusual sites, such as the uterus, remain relatively unexplored (1).

The presence of endometrial metastasis of breast origin represents a diagnostic and therapeutic challenge, all the more so as it can occur several years after the initial management of breast cancer.

## 2. CLINICAL CASE

We report here the case of a 48-year-old patient, admitted for management of a malignant breast tumor, clinically classified cT4dN2Mx of the TNM classification. and radiologically ACR5 of the BIRADS classification.

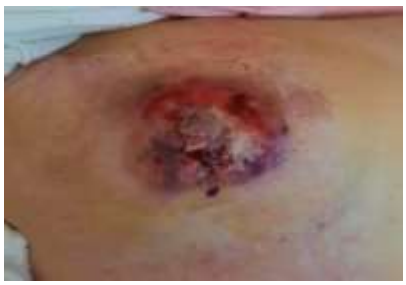

*Fig 1:* Clinical presentation of the tumor.

### 2.1 Echo-mammography

**Left breast:**

- Retroareolar tissue mass, 33*42mm, ACR5
- Supero external quadrant mass, 12*20mm, ACR5
- Signs of carcinomatous mastitis
- Highly suspicious axillary adenopathy, 20mm

**Right breast:**

- Lower quadrant junction tissue mass, 8*12mm, ACR5
- Suspicious axillary adenopathy, 8*13mm

### 2.2 Histology

**Left breast** biopsy in favor of NOS-type breast carcinoma, SBR grade III, with estrogen receptors at 100%, progesterone receptors at 25%, HER2 scored at 3 and Ki67 at 65%.

**Right breast** in favor of subacute mastitis without tumour lesion.

### 2.3 Thoraco-abdominal pelvic CT Scann

Thoraco-abdominal pelvic CT Scann revealed internal mammary adenopathy, axillary extension adenopathy, secondary localization of a tissue process in the posterior cerebral fossa, secondary bone localization, suspicious-looking pathological endometrial thickening.

### 2.4 Hysteroscopy with endometrial biopsy

In favor of suspicious-looking intracavitary budding process, with biopsy curettage of the endometrium, histological and immunohistochemical study of which revealed poorly differentiated carcinomatous tumour proliferation with a profile similar to that of breast carcinoma, suggesting endometrial metastasis of breast carcinoma.

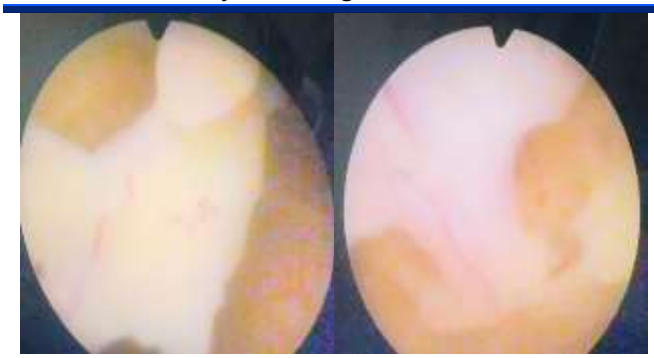

*Fig 6 : Budding process in hysteroscopy.*

### 2.5 Multidisciplinary consultation

The patient's case was presented at a multidisciplinary consultation meeting, and she underwent emergency palliative encephalic radiotherapy, followed by palliative chemotherapy.

## 3. DISCUSSION

### 3.1 Epidemiology and clinical presentation

Endometrial metastases of breast cancer are rare events, but their frequency may be underestimated due to their often discrete clinical presentation. In a study by Kuroda et al (2017), endometrial metastases of breast origin were present in just 0.1% of metastatic breast cancers, underscoring their rarity. These metastases are often seen in patients with hormone-dependent breast cancers, particularly those with positive estrogen and/or progesterone receptors. Patients may present with non-specific clinical symptoms such as irregular vaginal bleeding, pelvic pain or symptoms of uterine mass (2).

### 3.2 Mechanisms of spread

The mechanisms by which breast cancer can spread to the endometrium are not fully elucidated. It is generally accepted that spread occurs primarily by the hematogenous route via the bloodstream, although the lymphatic route and diffusion by direct contact through adjacent anatomical structures (ovaries, peritoneum) are also possible. Hormone-receptor-positive breast cancers are particularly likely to metastasize to hormone-sensitive tissues such as the endometrium, which is under the influence of regular hormonal cycles. As a highly vascularized tissue, the endometrium is a prime target for circulating tumor cells (3).

### 3.3 Diagnosis

The diagnosis of endometrial metastasis of breast cancer is based on a combination of clinical, histopathological and immunohistochemical criteria. Imaging methods such as pelvic ultrasound, computed tomography (CT) or MRI may suggest the presence of a uterine mass, but definitive diagnosis requires an endometrial biopsy. In immunohistochemistry, the presence of markers such as GATA3, CK7 and hormone receptor expression are essential to confirm the mammary origin of the metastasis. It is important to differentiate these metastases from primary endometrial and ovarian cancers, which may have similar features.

### 3.4 Treatment and prognosis

Treatment of endometrial metastases from breast cancer depends on a number of factors, including the nature of the primary cancer, hormonal status and extent of disease. First-line treatment is generally medical, with hormonal agents such as aromatase inhibitors or progestins. In some cases, a hysterectomy may be considered, particularly if the metastasis is isolated and localized. However, surgery is not systematic, especially if distant metastases are suspected (4).

The prognosis of patients with endometrial metastases is closely linked to the absence of distant metastases and to the hormonal sensitivity of the primary tumor. The overall prognosis also depends on the response to hormonal treatment, the duration of remission of the primary breast cancer and the patient's general status (5).

### 3.5 Review of the literature

Endometrial metastases from breast cancer have been documented in several recent studies. In a study by Wada et al (2018), it was observed that endometrial metastases occurred most frequently in hormone-dependent cancers, with a higher prevalence in infiltrating ductal type cancers. Patients were generally in the post-menopausal period, suggesting that the influence of estrogen on tumour spread could play an important role. Other studies (Singh et al., 2020) have reported cases of isolated metastases to the endometrium, where hormonal treatment showed notable efficacy, controlling disease progression for several years.

## 4. CONCLUSION

Endometrial metastases from breast cancer, although rare, should be considered in the management of patients with a history of breast cancer and gynecological symptoms. Diagnosis is based on rigorous histopathological analysis, combined with meticulous clinical and imaging evaluation. Treatment is based essentially on targeted hormonal therapies, with close monitoring. Although the prognosis of these metastases is often favorable in the absence of distant metastases, long-term clinical and biological follow-up is essential to ensure optimal management and improve patients' quality of life.

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