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RESEARCH ARTICLE

FROM MASTITIS TO METASTASIS: INFLAMMATORY BREAST CARCINOMA MASQUERADING AS MASTITIS — A DIAGNOSTIC CHALLENGE

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Abstract

Inflammatory breast carcinoma (IBC) is a rare and highly aggressive variant of breast cancer that often mimics benign inflammatory breast conditions, resulting in delayed diagnosis and poor outcomes.We report the case of a 35-year-old woman who presented with clinical features suggestive of mastitis involving the left breast. Initial clinical assessme nt and imaging favoured a benign inflammatory etiology; however, persistence and progression of symptoms prompted further evaluation.S equential imaging, cytological assessment, histopathological examinati on, and metastatic work up ultimately confirmed inflammatory carcino ma of the breast with extensive distant metastases.This case highlights the diagnostic challenges associated with inflammatory breast carcinom a and emphasizes the importance of maintaining a high index of suspici on in patients presenting with non resolving inflammatory breast condit ions.

Introduction:-

Inflammatory breast carcinoma (IBC) is an uncommon and aggressive form of breast cancer, accounting for approximately 1–5% of all breast malignancies. It is characterized by the rapid onset of erythema, oedema, warmth, and peau d'orange resulting from obstruction of dermal lymphatics by tumour emboli.Clinically, IBC often mimics mastitis or cellulitis, particularly in younger women and those in the postpartum period. Because of this clinical resemblance, patients are frequently treated initially with antibiotics for presumed infection, which can delay definitive diagnosis and treatment.The aggressive biological behaviour of IBC results in a high incidence of regional and distant metastases at presentation. Early recognition and prompt multimodal management are essential for improving survival outcomes.This case highlights the diagnostic dilemma of inflammatory breast carcinoma presenting as mastitis in a young woman and emphasizes the need for early biopsy in inflammatory breast conditions that fail to respond to conventional treatment.

Case Report:-

A 35-year-old woman presented with swelling of the left breast of two months duration associated with redness, pain, and a sensation of heaviness. The symptoms were sudden in onset and rapidly progressive, initially localized but later involving the entire breast.The patient had ceased lactation 4–5 months prior to presentation. There was no history of breast trauma or nipple discharge.She also reported cough with expectoration for 15 days prior to presentation. There was no significant improvement with conservative or symptomatic treatment.

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Past Medical History:-
The patient was not a known case of hypertension, diabetes mellitus, tuberculosis, chronic respiratory disease, or cardiac illness.She had a history of a road traffic accident 10 months earlier following a fall from a bike, resulting in a fronto-temporo-parietal subdural hematoma with mass effect and midline shift. Surgical evacuation was performed with cranial flap placement in the abdomen, followed by tracheostomy. The cranial flap was replaced after three months. At presentation, the patient was conscious and oriented with residual forgetfulness.

Family History:-
No history of breast malignancy in first-degree relatives:-
Menstrual and Obstetric History:-
Menarche at 13 years
Regular menstrual cycles with 5–7 days of flow
Married at 20 years
First childbirth at 22 years
No history of oral contraceptive use

Clinical Examination:-
Inspection:-
The left breast appeared diffusely enlarged compared to the right breast, with elevation of the nipple–areola complex.

Skin findings included:
Diffuse erythema involving the entire breast
Peau d'orange appearance
No dilated veins
No localized swelling or ulceration
Nipple examination revealed nipple retraction without discharge.
No visible swelling was observed in axillary or supraclavicular regions.

Palpation:-
Local rise of temperature present
Diffuse tenderness
Diffuse induration involving the entire breast
No discrete palpable lump
Skin not pinchable suggesting involvement
No definite fixation to pectoralis major muscle
No clinically palpable axillary lymphadenopathy.
Contralateral breast and axilla were normal.

Systemic Examination:-
Central nervous system: Conscious and oriented with mild forgetfulness
Cardiovascular system: S1 and S2 +, No murmur
Respiratory system: Bilateral air entry present with reduced air entry on the right side and basal crepitation's present
Abdomen: Soft and non-tender, No organomegaly BS+
Musculoskeletal system: Tenderness along thoracic and lumbar spine

Imaging and Investigations:-
Ultrasonography:-
Initial breast ultrasonography showed diffuse hyper echogenicity of subcutaneous tissue with oedema and a cobblestone appearance suggestive of mastitis. No abscess was detected.Repeat ultrasonography after 15 days showed persistent diffuse oedema, increased parenchymal echogenicity, and dilated lactiferous ducts. Sub centimetric bilateral axillary lymph nodes were noted.

Mammography:-
Mammography demonstrated diffuse skin thickening and increased breast density with trabecular thickening without a definite mass lesion.

CT Scan:-
Contrast-enhanced CT of thorax, abdomen, and pelvis revealed:
Diffuse skin thickening of left breast
Multiple hypo dense lesions in liver suggestive of metastases
Multiple lytic skeletal lesions
Grade I wedge compression fracture of D3 vertebra
Right-sided pleural effusion with consolidation
Interlobular septal thickening suggestive of lymphangitis carcinomatosis
Pleural fluid cytology showed malignant cells.

Cytological Evaluation:-
Fine-needle aspiration cytology from the left breast revealed ductal epithelial cells arranged singly and in loose clusters with mild nuclear atypia in a haemorrhagic background. Trucut biopsy was advised.

Histopathological Findings:-
Incisional biopsy showed unremarkable epidermis. The dermis demonstrated nests of pleomorphic tumor cells with hyperchromatic nuclei and increased nuclear-cytoplasmic ratio.Numerous dilated dermal lymphatic channels containing tumor emboli were identified. Perineural and vascular invasion were present.

Immunohistochemistry:-
Immunohistochemical receptor profiling including Estrogen receptor (ER), Progesterone receptor (PR), HER2/neu status, and Ki-67 proliferation index could not be performed in this patient due to financial constraints and the rapidly deteriorating clinical condition of the patient**.**As receptor status plays an important role in guiding systemic therapy in breast carcinoma, its absence represents a limitation in the present case.

Final Diagnosis:-
Inflammatory carcinoma of the left breast with dermal lymphatic invasion and distant metastases to liver, bone, and pleura (Stage IV disease).

Clinical Course and Outcome:-
The patient had advanced Stage IV disease at presentation with extensive pulmonary involvement, pleural effusion, and skeletal metastases**.**During hospitalization, the patient developed progressive respiratory distress secondary to malignant pleural effusion and pulmonary involvement**.** Despite supportive management, the patient's clinical condition deteriorated rapidly.Unfortunately, the patient succumbed to respiratory complications within five days of admission before definitive oncologic therapy could be initiated.

Discussion:-

Inflammatory breast carcinoma represents one of the most aggressive forms of breast cancer and is characterized by rapid clinical progression.The disease results from tumor emboli obstructing dermal lymphatic channels, producing erythema, edema, and peau d'orange.IBC frequently mimics mastitis, leading to delays in diagnosis. Guidelines recommend that inflammatory breast conditions that fail to respond to antibiotic therapy within 7–10 days should undergo biopsy to exclude malignancy.Radiologic findings may be nonspecific in early disease. Mammography typically demonstrates skin thickening and increased breast density, while ultrasonography may reveal diffuse edema.Approximately 20–30% of patients present with metastatic disease at diagnosis. Common metastatic sites include bone, liver, and lung.This case highlights the importance of maintaining clinical suspicion and performing early biopsy in non-resolving inflammatory breast conditions.

Importance of Early Diagnosis:-
This case highlights the devastating consequences of delayed diagnosis in inflammatory breast carcinoma**.** The patient presented at an advanced stage with widespread metastatic disease and severe pulmonary involvement, which significantly limited therapeutic options.Had the disease been recognized and diagnosed earlier during the initial inflammatory phase**,** systemic therapy such as neoadjuvant chemotherapy and targeted therapy (depending on receptor status) could have been initiated promptly. Early treatment may potentially improve survival and reduce metastatic spread in patients with inflammatory breast carcinoma.Therefore, clinicians should maintain a high index of suspicion for malignancy in patients with inflammatory breast symptoms that fail to respond to appropriate antibiotic therapy within 7–10 days**,** and early biopsy should be strongly considered.

Conclusion:-

Inflammatory breast carcinoma can closely mimic mastitis, leading to diagnostic delay, particularly in young women. Persistent inflammatory breast symptoms that fail to respond to antibiotic therapy should prompt early biopsy to exclude malignancy.This case illustrates how delayed diagnosis may lead to presentation at an advanced metastatic stage with limited therapeutic options and poor outcomes. Early recognition and prompt oncologic intervention are critical for improving prognosis.

Key Learning Points:-

Inflammatory breast carcinoma may mimic mastitis, especially in young or postpartum women.
Failure of mastitis to respond to antibiotics within one week should prompt biopsy.
Peau d'orange and diffuse breast induration are important clinical red flags.
Early diagnosis is crucial due to the aggressive nature of the disease.

Patient Consent:-

Written informed consent was obtained from the patient for publication of this case report and accompanying images while maintaining patient anonymity.

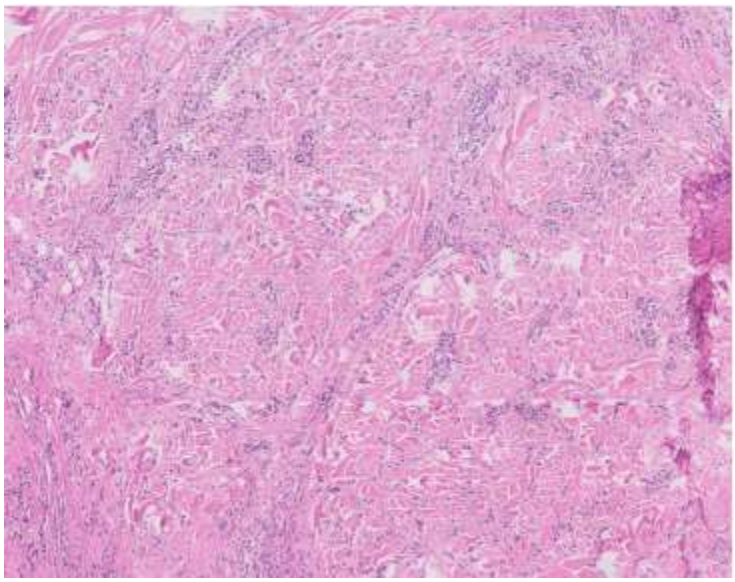
Conflict of Interest:-

The authors declare no conflict of interest.

CT scan

Multiple irregular lytic lesions involving the axial skeleton, consistent with extensive skeletal metastases.

Grade I wedge compression fracture of the D3 vertebra.



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