

# A RARE SITE OF GASTRIC CARCINOMA METASTASIS

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## ABSTRACT

Incidence of metastasis to breast from extra-mammary sites is very rare, ranging from 1.2-2%. Metastasis to breast arising from gastrointestinal tract is rare and only few such cases have been reported. It is mandatory to differentiate primary and secondary breast lesions on the basis of history, histopathology and immunohistochemistry in order to avoid unnecessary surgical intervention. Herein we report the case of a 42 year old male presenting with left breast metastasis from gastric adenocarcinoma.

**Key Words:** Breast cancer, Metastasis, Adenocarcinoma, Histopathology

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## INTRODUCTION

Carcinoma breast affects about half million women per annum worldwide; thus making it the second commonest malignancy. Due to high malignant potential, it metastasizes to various organs like bone, liver, lung and brain<sup>1</sup>. However incidence of metastasis to breast from extra-mammary sites is low ranging from 1.2-2% in clinical reports and 300 such cases have been reported. Out of these 300 cases, primary from gastric adenocarcinoma has been reported in 30 cases<sup>1</sup>. Metastasis to breast arising from gastrointestinal tract is rare and only few such cases have been reported, most of them were reported in a younger age group than primary cancer, supposedly due to high blood flow in breast<sup>2</sup>. Age of patients ranged from 22-70 years and only 1 of them was a male patient<sup>3</sup>.

Gastric carcinoma is the fourth commonest cancer in the world after carcinoma lung, breast and colorectal; and second leading cause of cancer deaths in both genders worldwide<sup>3</sup>. Gastric and esophageal cancer commonly metastasizes to liver, regional lymph nodes, lung and bone<sup>2</sup>. Almost every malignancy metastasizes to breast<sup>2,4</sup>. Mean target is patients in the fifth and sixth decade of life. Commonest primary is that from contra-lateral breast<sup>5</sup>. Other common primary tumors include lymphoma (17%), melanoma (15%), rhabdomyosarcoma (12%), lung tumors (8%), ovarian tumors (8%), renal cell carcinoma (5%), leukemia (4%), thyroid/cervical (4%), intestinal carcinoid (3%), squamous cell carcinoma of head and neck (3%) and leiomyosarcoma

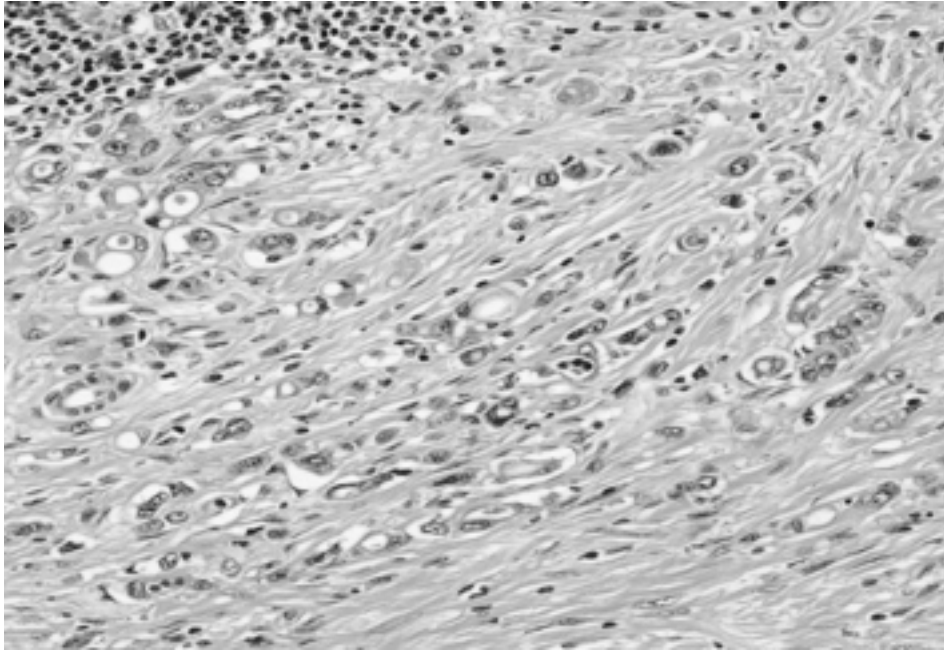
(2%)<sup>2</sup>. Commonest primary in paediatric age group is rhabdomyosarcoma<sup>5</sup>. Primary and secondary breast lesions can be differentiated on the basis of clinical history and histopathology in association with immunohistochemistry<sup>6</sup>. High index of suspicion in conjunction with detailed histopathological analysis will avoid unnecessary surgical intervention in a patient of gastric carcinoma presenting with breast metastasis<sup>7</sup>.

## CASE REPORT

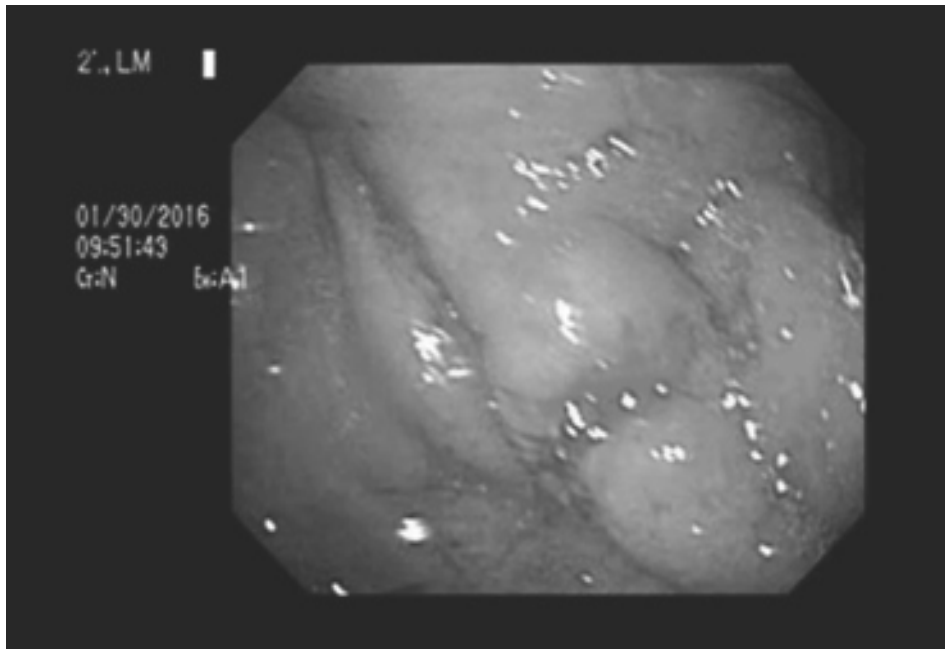
A 42 year old married male presented via surgery outpatient department in January 2016, with complaints of enlargement of left breast, with swelling of left arm and forearm, left nipple retraction, redness and tenderness of left breast and axilla which gradually increased for the past 3-4 months. Right breast was normal. There were no lumps in any other part of the body. No history of trauma was there. He also complained of on and off vomiting, bloating, intermittent squeezing abdominal pain as well as altered bowel habits over the past few months. Also, a marked weight loss of about 5 kg was reported over past 3 months.

Physical examination revealed enlargement of left breast, marked thickening of skin in left axilla from clavicle downwards till left costal margin, blanching of skin, tenderness to touch, left nipple retraction, palpable left axillary lymph nodes, swelling of left arm with tenderness and red discoloration. No evidence of supraclavicular lymphadenopathy was observed. Examination of other systems was unremarkable. Baseline

**Figure 1: Biopsy Specimen of breast mass showing signet ring cells**



**Figure 2: Gastric carcinoma on endoscopy**



investigations and serum lactate dehydrogenase (LDH) levels were normal. Ultrasonography of left arm showed few enlarged left axillary lymph nodes with left upper limb swelling. Fine needle aspiration cytology (FNAC) showed gynaecomastia which prompted the need for trucut biopsy. Trucut biopsy of breast tissue came out to be positive for metastatic malignant cells of signet cell variety (Figure 1). Contrast enhanced computed tomography (CECT) of abdomen and chest showed circumferential mural thickening of antrum and pyloric canal extending along lesser curvature of stomach into gastroesophageal junction and lower 1/3<sup>rd</sup> of esophagus with irregular enhancing walls, mild perigastric stranding, few enlarged perilesional lymph nodes. American Joint Committee on Cancer (AJCC) classification of neoplastic growth was T3N3M1, endoscopic biopsy co-relation was advised.

Upper GI endoscopy revealed multiple linear ulcers involving lower 1/3<sup>rd</sup> of esophagus with white slough, stomach was shortened, thick walled with a growth involving pyloric opening and first part of duodenum causing narrowing of pyloric opening in duodenum. Second part of duodenum was normal. Histopathology of gastric biopsy proved to be adenocarcinoma; thus confirming CECT scan findings of breast lesions as metastases from gastric carcinoma. Microscopy showed a focus comprising of signet ring cells suggestive of gastric carcinoma. The patient was counselled and referred to specialized oncology hospital for further management.

## DISCUSSION

Breast cancer is the commonest cancer affecting women; and the second leading cause of cancer related deaths, next only to lung cancer. Primary breast cancer in women with age less than 30 is associated with a relatively grave prognosis, thus they should be dealt with accordingly<sup>8</sup>.

Metastatic breast cancer from gastric carcinoma occurs in a younger age group than that for primary breast carcinoma<sup>3</sup>. About 18% of patients with gastric carcinoma will develop metastasis after gastrectomy, although metastasis may also be found at the time of diagnosis<sup>2</sup>. Distant metastasis from locally advanced oesophagogastric carcinomas occur in 26% cases in initial 2 years of therapy. Common sites include regional lymph nodes, liver, lung and bone<sup>3</sup>. Symptoms of both primary and secondary breast carcinoma are similar<sup>9</sup>. Differentiating them is difficult since it may be the first presentation of an occult primary and is mandatory in order to prevent unnecessary surgery by opting for palliative treatment<sup>9</sup>.

It has been speculated that physiological state of breast provides a fertile soil for metastasis<sup>1</sup> owing to its rich vascular supply and hormonal factors associated with adhesion and growth of carcinoma cells<sup>3</sup>. More than half of breast metastasis from gastric carcinoma occurred on left side<sup>3</sup>. Our patient also showed involvement of left breast. Lee et al<sup>10</sup> postulated that this laterality might be due to presence of lymphatic pathway or increased incidence of invasion to breast from stomach via left supraclavicular lymph nodes. However this hypothesis is yet to be verified.

Radiologically, metastatic tumors to breast are generally well circumscribed non-calcified dense masses lacking spiculation and micro calcifications along with architectural distortion and skin changes<sup>2,3,5</sup>. However, micro calcification, though not a feature of metastasis has been observed in metastatic ovarian carcinoma with psammoma bodies<sup>1,5</sup>. Hebbar et al<sup>1</sup> concluded absence of mass lesion or microcalcification to be specific for metastatic breast adenocarcinoma (signet cell carcinoma). But because of the non-specificity of radiological findings, metastatic breast carcinoma cannot be diagnosed solely on radiological findings<sup>3</sup>. One study concluded that in 24% of patients, secondary breast lesions were diagnosed either as primary breast lesions or as benign breast lesion on the basis of imaging<sup>5</sup>.

Immunohistochemistry positive for CK20, CER and negative for GCDFP, ER, PR, CK7 is a strong predictor of primary gastric adenocarcinoma instead of primary breast tumor<sup>1</sup>. Fine needle aspiration biopsy reliably diagnose extra-mammary breast malignancies for breast tumors that are either clinically or radiologically not typical of primary breast neoplasm. This provides a cost effective diagnostic tool as well as preventing unnecessary surgery<sup>4</sup>.

Circumscribed nodule with surrounding normal breast tissue is the most prevalent growth pattern of breast metastases, followed by infiltration around ducts and lobules especially seen with lymphomas, leukemias and malignant melanomas, while lymphangitis and diffuse infiltration are relatively rare patterns<sup>10</sup>. Signet cells are generally observed in mucin producing carcinomas such as gastric cancer and to a lesser extent with breast and lung carcinoma<sup>11</sup>. On microscopy, 66% of metastatic breast tumors show signet cell carcinoma which accounts for 10% gastric carcinomas<sup>2</sup>. Since gastric signet cell carcinomas are mostly witnessed among younger women, therefore occurrence of signet cell carcinomas may be higher in premenopausal women<sup>3</sup>. Signet cell gastric carcinoma has a higher tendency for distant metastasis and is known to cause lymphatic metastasis

sis more than the other histological subtypes<sup>11</sup>. In our patient, endoscopic biopsy of gastric lesion also confirmed to be of signet cell variety which highlighted the importance of pathologist in the correct diagnosis<sup>10</sup>.

Time for diagnosis of gastric cancer to breast metastasis generally ranges from 0-6 years, yet around 40% were diagnosed either simultaneously or within one year of the diagnosis of primary tumor; thus indicating that progression of gastric carcinoma with breast metastasis is quick and possibility of metastasis from gastric carcinoma cannot be ruled out even if there is no such history<sup>3</sup>. Presence of carcinoma in situ strongly favors diagnosis of primary breast carcinoma but it may be present in rare cases of breast metastasis from extra-mammary sites<sup>10</sup>.

More than 80% of patients with breast metastasis from primary gastric tumor die within 1 year, suggesting an extremely grave prognosis<sup>3,5</sup>. This is due to the fact that by the time breast lesion is discovered, an overwhelming majority of patients have already developed metastatic disease<sup>5</sup>.

## CONCLUSION

Accurate distinction of primary breast lesions from secondary breast lesions via imaging, histopathology, and immunohistochemistry is mandatory in order to make a correct diagnosis and hence provide the patient with the best possible management and save him from unnecessary surgical intervention.

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