 DOI: 10.18231/2394-6792.2017.0144

Signet ring cell carcinoma from the stomach presenting as a metastasis to soft tissue

R. Banukeerthana[1], Leena D. Joseph[2,*], CN Sai Shalini[3], Ramya R[4], M. Nikitha[5]

[1]PG Student, [2]Professor, [3]Associate Professor, Dept. of Pathology, [4]Professor, Dept. of General Surgery, [5]CRRI, Dept. of Surgery, Sri Ramachandra University, Chennai, Tamil Nadu

***Corresponding Author:**
Email: leenadj@gmail.com

Abstract

Soft tissue metastasis of visceral cancers are uncommon, as these cancers usually metastasize to surfaces near the primary tumor. Metastasis of signet ring cell carcinoma of stomach to soft tissue is a rare entity and we report a case which presented to us with swelling in the chest wall, the biopsy of which proved to be a metastasis from an unknown primary in the stomach, which was also biopsied and confirmed.

Keywords: Metastasis, Signet ring, Primary, Stomach, Soft tissue

Introduction

Signet ring cell carcinoma (SRC) has been described in many adenocarcinomas, the commonest sites been stomach, colon, urinary bladder, urethral, mediastinal and lung tumors.(1) The incidence is 3.4% in Japan and 29% in Western countries.(1) Isolated cases have been reported with metastasis of signet ring cell carcinoma to iris, breast, bronchus, and urinary bladder.(1) Here we report a rare case of signet ring cell carcinoma of the stomach metastasising to muscle and presenting as a first manifestation.

Case Report

A 46 year old male patient came to our out-patient department with complaints of a swelling in the left side of the chest for 2 months, which was insidious in onset, progressive and not associated with pain. There were no complaints of swelling elsewhere in the body. Patient is a known diabetic and is on oral hypoglycaemic agents. On examination there was a 10 x 6 cm swelling palpable in the left costochondral junction, which had smooth surface, skin over the swelling was mildly hyper pigmented, non-tender immobile, firm in consistency (Fig. 1). Further examination revealed enlargement of bilateral supraclavicular, right inguinal and left axillary nodes. Laboratory investigations revealed patient to be anemic and his sugar levels were elevated. Clinical diagnosis was either tuberculous osteomyelitis or soft tissue sarcoma and chest X-ray was done which showed incidental finding of acromioclavicular disruption.

Fig. 1: Swelling in the left costochondral junction

A CECT thorax was done following X ray which showed ill defined soft tissue mass measuring 9.2x8.8x3.2 cm in the left pectoralis major muscle. No bony erosions were noted and the possible differential diagnosis of myositis (infective/ proliferative) was rendered. A USG guided biopsy of the lesion was done which showed poorly differentiated carcinoma, signet ring cell type(Fig. 2, 3). Immunohistochemistry was done on the specimen which showed positivity for vimentin, CK7 and focal positivity for CDX2(Fig. 4, 5). Occasional cells were positive for CK20 and negative for TTF1. The diagnosis of a metastasis from poorly differentiated carcinoma (signet ring cell type) with possibility of gastrointestinal tract was rendered. Following this upper gastrointestinal endoscopy was done which showed ulceroproliferative growth in the lesser curvature of stomach and a biopsy was taken from it, which showed poorly differentiated adenocarcinoma with signet ring cell formation(Fig. 6). CECT abdomen was then done which also showed a growth in the stomach with multiple enlarged necrotic lymph nodes [T4b N3b M_1](Fig. 7). As the tumour was inoperable due to abutting of inferior surface of liver

and tail of pancreas with loss of fat plane, patient was then given palliative chemotherapy with 5 cycles of fluorouracil, Epirubicin and Cisplatin.

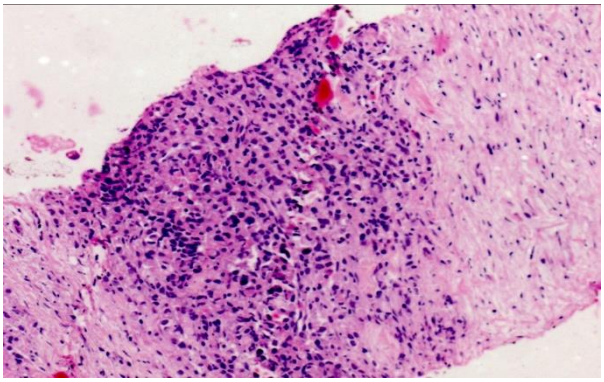

Fig. 2: Poorly differentiated cells in a background of fibrocollagenous stroma (H&E x 40)

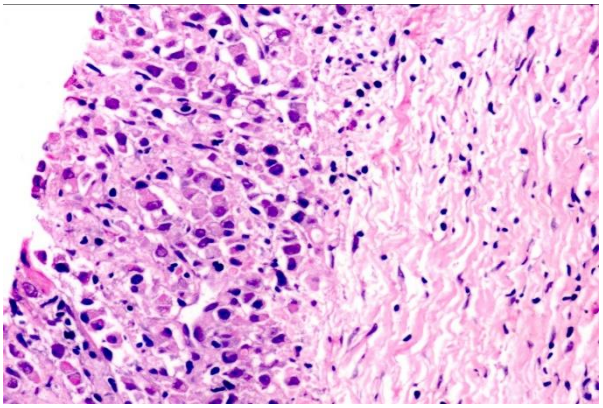

Fig. 3: Poorly differentiated carcinoma showing signet ring cells (H&E x 100)

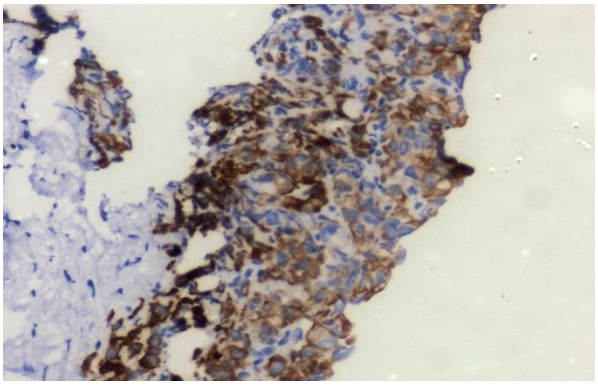

Fig. 4: Tumour cells are positive for CK 7 (H&E x 100)

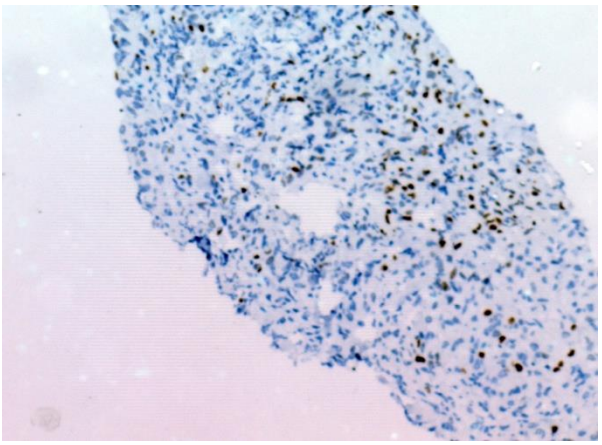

Fig. 5: Tumour cells are focally positive for CDX2 (H&E x 100)

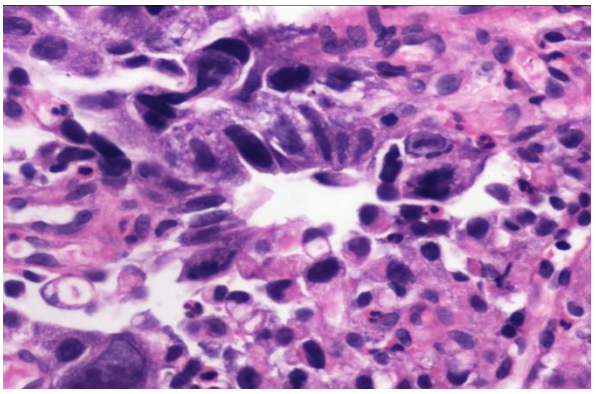

Fig. 6: Gastric biopsy showing poorly differentiated carcinoma with signet ring cells (H&E x 400)

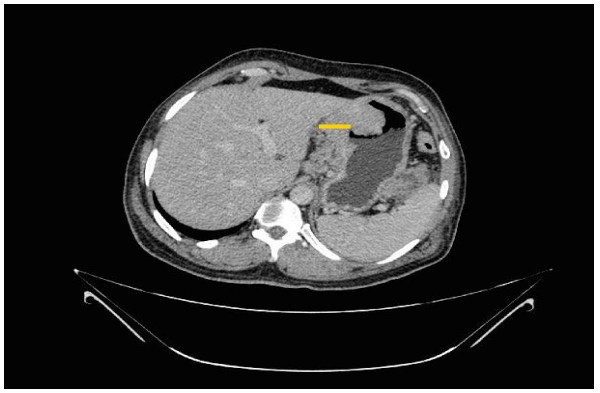

Fig. 7: CT abdomen showing thickened wall of lesser curvature

Discussion

Metastatic tumours in the unusual location of muscle and soft tissue are relatively rare which can cause diagnostic dilemmas to the clinician and the pathologists. These deposits may be the initial manifestations of an underlying malignancy.

Even to a pathologist, the soft tissue metastasis may resemble a primary soft tissue sarcoma. Ancillary techniques like immunohistochemistry aids the pathologist in arriving at a final diagnosis.

Though it is very difficult, distinction between a metastatic neoplasm and a primary soft tissue sarcoma is very important, because treatment and prognosis are different for both these entities. Plaza et al. reviewed 118 cases of metastasis to soft tissue, over a period of 30 years.[1] In this study, the primary tumour was located to skin, lung, breast, kidney, colon, rectum, uterus, ovary, head and neck, oesophagus, stomach, cervix, small bowel, bone, adrenal gland, eye, testis urinary bladder and salivary gland. Of the 118 cases, only two cases were from moderately differentiated adenocarcinoma of the stomach. Histopathological difficulties were resolved by immunohistochemical stains.

However in our case, the presence of signet ring cells, were clues to the origin being from the stomach, colon or breast. Hence we could narrow down our differential diagnosis. Gastric carcinoma is the fifth most common cancer among males and seventh most common cancer among women in India.[2]

Signet ring cell carcinoma of stomach is a subtype of all gastric malignancies with a greater occurrence in women and the younger groups.[3] This subtype of cancer has been referred to as diffuse type, infiltrative type and un differentiated type based on their ability to diffusely infiltrate into the stomach wall with no recognizable glandular architecture. This infiltration causes a marked scirrhous reaction. Advanced tumours mark a poor prognosis for the patient. Signet ring cell metastasis has been reported to rare sites like iris, breast[4] bronchus and urinary bladder.[5]

In most of the cases, the only manifestation of breast metastasis is diffuse thickening of skin, which clinically resembles inflammatory breast carcinoma. Cavazzini et al. also reported the clinical and radiological features of breast metastasis from gastric signet ring cell cancer.[6]

When a urinary bladder biopsy shows signet ring cells, the possibility of it being a primary mucin producing adenocarcinoma in the bladder also needs to be considered. However 95% of primary bladder tumours have transitional cell carcinoma histology. Adenocarcinoma of the bladder constitutes only 1% of all bladder tumours.[5]

Cutaneous metastasis from visceral tumours is again a very rare entity with a reported incidence between 0.3% and 9.8%. In few instances cutaneous metastasis may be a pointer to an underlying undiagnosed malignancy. George AA et al. reported two patients, who presented with soft nodular cutaneous lesions, which was a metastatic signet cell carcinoma arising from the gut.[7] Another case of gastric metastasis to scalp was reported by Kundu et al.[8] Cutaneous metastasis to the scalp confuses the pathologist, with more differentials of primary carcinoma of the skin such as adenoid squamous cell carcinoma, adenoid cystic variant of basal cell carcinoma, sweat gland carcinoma and primary signet ring cell carcinoma of the skin also to be considered. Metastasis to the skin of an internal malignancy portends a poor prognosis as it suggests a wide spread disease.

Ancillary techniques such as immunohistochemical markers for CK7, CK20, MUC5AC, P63 and podoplanin can be employed in the diagnostically difficult cases.

Soft tissue metastasis of gastric primary is very rare. Even though soft tissue constitutes approximately 55% of body mass, haematogenous metastasis to soft tissue are very rare. Most of the cases are extension from the primary tumour. Changes in pH, accumulation of metabolites, and the local temperature of soft tissue sites make hematogenous spread to soft tissues even more difficult.[9]

Conclusion

Visceral malignancies metastasing to the soft tissues and other organs, denote haematogenous widespread dissemination. But in rare cases, they may be helpful in diagnosing a hidden malignancy, which may be the only sign of an underlying malignancy. Biopsy with histopathological and immunohistochemical confirmation will help the clinician to look for the underlying malignancy and to initiate appropriate therapy.

References

1. Jose Antonio Plaza, Delia Perez-Montiel, Joel Mayerson, Carl Morrison, Saul Suster. Metastases to soft tissue - A review of 118 cases over a 30 year period. Cancer 2008;112:193-203.
2. V Rao DN, Ganesh B. Estimate of cancer incidence in India in 1991. Indian J Cancer. 1998;35:10–8.
3. Antonioli DA, Goldman H. Changes in the location ant type of gastric carcinoma of the stomach. Cancer 1982;50:775-781.
4. Jin-Young Kwak, Eun-Kyung Kim, Ki Keun Oh. Radiologic findings of metastatic signet ring cell carcinoma to the breast from stomach. Ions medical journal 2000;41:669-672.
5. Kerem Okutur, Orhan Onder Eren, Gokhan Demir. Metastasis of gastric signet ring cell carcinoma to the urinary bladder. Acase report and review of literature. Case reports in Oncological medicine,2015:127516, 6 pages.
6. Cavazzini G, Colpani F, Cantore M, Aitini E, Rabbi C, Taffurelli M et al. Breast metastasis from gastric signet ring cell carcinoma, mimiking inflammatory carcinoma. A case report. Tumori,1993;79:450-3.
7. George AA, Peter D, Masih D, Thomas M, Pulimood S. Cutaneous metastases from signet ring cell carcinoma of the gut: A report of two cases. Indian dermatol online J 2016; 7:281-4.
8. Reetu Kundu, Niti Singhal, Uma Handa, Rajpal Singh Punia, Harsh Mohan. Signet ring gastric carcinoma with scalp metastasis: A case report. Arch Clin Exp Surg 2016;5:190-193.
9. Herring CL Jr, Harrelson JM, Scully SP. Metastatic carcinoma to skeletal muscle. A report of 15 patients. Clin.ortho Relat.Res.1998;272-281.