



## **A Rare Case of Metastatic Adenocarcinoma of Stomach Metastasizing into Metachronous Gist of Small Intestine**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Author JR designed the study and wrote the first draft of the manuscript. Author SK managed the literature searches. Author OPV was the corresponding author and wrote the final draft. All authors read and approved the final manuscript.*

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### **Case Study**

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### **ABSTRACT**

Gastrointestinal stromal tumours (GIST) are rare mesenchymal neoplasms in the gastrointestinal tract. The metachronous existence of GIST and gastric adenocarcinoma, though are tumours of distinct histotype, and very rare, have been reported in medical case reports in recent years. We report a case of a 74 year old man who initially presented with moderately differentiated adenocarcinoma of the stomach, underwent Billroth 2 gastrectomy followed by chemotherapy. Subsequently, after 15 months he developed a GIST of small bowel with metastasis from adenocarcinoma of stomach. Taking into consideration the fact that metachronous occurrence of GIST of the gastrointestinal tract and adenocarcinoma of stomach is rare and further metastasis of one tumour into the other makes this case a rare one as per available literature.

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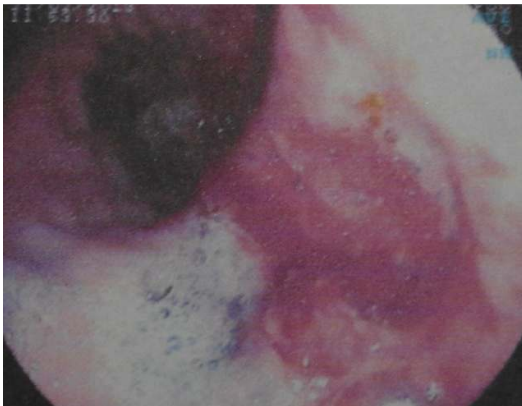
**Keywords:** GIST; adenocarcinoma of stomach; metastasis.

## 1. INTRODUCTION

In the past, several cases of synchronous adenocarcinoma of stomach or small intestine and GIST have been reported in literatures worldwide [1,2,3]. In this particular case of interest, metastasis from operated adenocarcinoma of stomach is metachronously found metastasizing in a small bowel GIST. A hypothesis of gene mutation/deregulation can be put forth [2,3]. Proliferation of different cell lines induced by the same carcinogen at different points of time cannot be ruled out. We would also like to stress on the unusual metastasis into the GIST which might be the first to be reported in these two metachronous tumors.

## 2. Case History

A 74 year old man presented to the emergency department in February 2013 with chief complaints of vomiting after meals, giddiness, haemetemesis and weight loss for 2 months. Routine investigations of the patient were insignificant except for anaemia. Oesophagogastroduodenoscopy showed oesophageal deformity and tea-pot stomach with ulcerative growth in the lesser curvature close to the pylorus [Fig. 1]. Biopsy of this lesion showed moderately differentiated adenocarcinoma of the stomach.



**Fig. 1. Endoscopic view of ulcer**

Contrast enhanced CT scan was performed which showed a growth along the lesser curvature of the stomach extending from the GE junction involving body, antrum and pylorus [Fig. 2]. Solitary splenic metastasis and few coeliac lymph nodes were also noted.



**Fig. 2. CECT image of gastric malignancy**

Elective total gastrectomy with splenectomy with Roux-en-Y oesophagojejunal anastomoses and feeding jejunostomy were performed and the patient was discharged 3 weeks later. Post operative specimen on histology confirmed moderately differentiated adenocarcinoma infiltrating the submucosa, muscularis and serosa with metastases to two periserosal fat lymph nodes and one perisplenic fat lymph node. The pathological staging was T 4a N 1 M0, Stage III A (AJCC 7th Edition). Six cycles of cisplatin and capecitabine based chemotherapy 3 weeks apart was administered. At follow up, an ultrasonography showed a well defined heterogeneous nodular mass lesion in the right pelvis 5.4 X 4 cm posterior to the urinary bladder in relation to the rectum, which radiologically suggested a peritoneal deposit. A FNAC/biopsy was advised but patient did not comply.

After a period of 18 months, the patient was readmitted to the emergency facility with complaints of pain in abdomen and vomiting for 3 days. X-ray showed free air under the diaphragm and CT scan showed dilated fluid filled small bowel loops with pneumoperitoneum and a 6 X 5 cm growth in the distal ileum. A diagnosis of peritonitis secondary to hollow viscus perforation with tumor mass in distal ileum was made and emergency exploratory laparotomy was carried out. Intra-operative findings showed perforation of 2 X 2 cm in the distal jejunum at previous jejunostomy site and the presence of a tumor 6 X 6 cm on the antimesenteric border of distal ileum, 25 cm proximal to ileo-caecal junction [Fig. 3]. Sixty cms. of proximal jejunum, 20 cm distal to Roux-en-Y anastomosis was ischaemic and non-viable. Resection of tumour along with adjacent

bowel with the resection of ischaemic bowel and exteriorisation of both ends as diverting ileostomy were done. Histopathology of the resected tumour was reported as GIST with metastasis from adenocarcinoma. Immuno histochemistry performed tested positive for CD117/C-KIT [4-7]. The mitotic score was <1 % in the GIST component [8]. The tissue tested negative for bcl-2, CD 34 [4,9] and Ki-67. The MIB-1 proliferative index was non contributory [8].



**Fig. 3. Intraoperative view of the GIST**

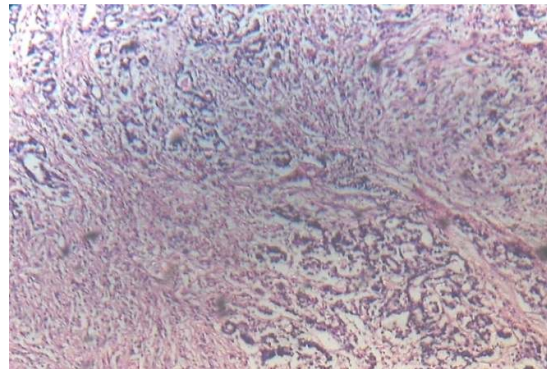
Four weeks later patient was taken up for surgery and the two ends of the exteriorised ileum were reanastomosed. He was discharged after an uneventful hospital stay. The patient, however, was lost to follow up.

### 3. DISCUSSION

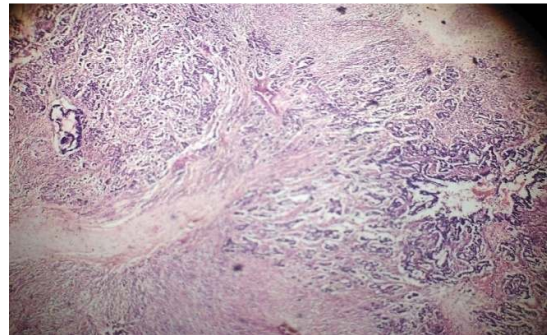
The presence of malignancies of two different cell lines in the same organ have been observed in clinical practice and published [1-3] It has been hypothesised that the carcinogenesis may be due to a single carcinogen acting under different milieux [1,3].

However the patient in discussion had two malignancies in two different areas of the gastrointestinal tract originating from two different cell lines. It was also observed on histopathological examination that there was metastasis of the adenocarcinoma of stomach into the GIST of the ileum. The occurrence of two malignancies has been reported however the metastasis of one malignancy into another of a different cell line is rare. Hypothesis of a single carcinogen inducing proliferation of two different cell lines have been put forth in Asian [4] and European [3] studies, however, those have been in the same organ. Here the malignancies were in the gastrointestinal tract but in

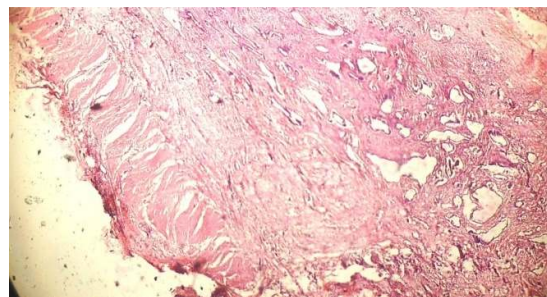
anatomically distant structures viz. stomach and ileum.



**Fig. 4. Histopathology showing moderately differentiated adenocarcinoma metastasizing into the GIST**



**Fig. 5. GIST shows spindle shaped cells arranged in interlacing pattern, parallel bundles and whorls [10]**



**Fig. 6. The cells show moderate amount of cytoplasm with occasional mitosis [10]**

The patient refused further investigations on detection of the peritoneal deposit during a follow up ultrasonography, which if treated properly would have prevented his presentation with perforation peritonitis. In this scenario a FNAC with a PET-CT would have been the ideal approach.



#### 4. CONCLUSION

The presence of a synchronous GIST along with an adenocarcinoma is a rare occurrence, but even more seldom is the metastasis of an adenocarcinoma in a GIST after resection of the primary tumour which was seen in this patient. The treatment is resection of the tumour with bowel maintaining oncological margins. Literature on the management of synchronous GIST and adenocarcinoma is scarce. With the presence of two tumours of different cell lines, it may be hypothesised that there may be a single or multiple carcinogens at play causing proliferation of different cells [4,10] depending, perhaps, on the surrounding milieu or co existing factors. This case, to the best of the authors' knowledge, is a rare presentation.

#### CONSENT

All authors declare that 'written informed consent was obtained from the patient for publication of this case report and accompanying images.

#### ETHICAL APPROVAL

It is not applicable.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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