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## **Metastatic seminoma with isolated gastric metastases**

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## Introduction:

Testicular cancer is the most common malignancy amongst men between ages 15 and 35 (1), but incidence decreases with increasing age. Metastatic spread often occurs via the lymphatic system to retroperitoneal lymph nodes, and haematogenous spread most commonly to the lungs(2). Gastric metastases are a rare presentation of any solid malignancy (3) and have only been rarely reported in the setting of a germ cell primary (**Table 1**) (4-10).

We present a case of a 67 year old man, with a background of myelofibrosis, who was diagnosed with metastatic seminoma following an endoscopy for dyspepsia. Further investigation revealed isolated gastric mucosal disease as his sole extra-testicular site of disease. This case is unique in the literature owing to the patient's age, co-morbidity, pure seminoma histology, site of metastases, lack of retroperitoneal lymph node involvement or visceral metastases and the surgical management of the metastatic disease.

Reference	Primary	Age at presentation	IGCCC Prognosis Stage at presentation	Presenting complaint	Presumed route of metastasis	Retroperitoneal lymph node involvement	Visceral Metastatic Involvement of other sites	Management
Mesa et al. Int J ClinOnc 2009 (4)	Seminoma	55	Intermediate	Melaena and haematemesis	Haematogenous	Yes	No	VIP chemotherapy
Lauro et al. Journal of Gastrointestinal Cancer 2014 (5)	NSGCT	44	Poor	Haematemesis	Haematogenous	No	Yes	1 <sup>st</sup> line BEP 2 <sup>nd</sup> line TIP
Mazumdar et al. Ann Transl Med 2016 (6)	NSGCT	49	Poor	Epigastric pain	Haematogenous	Yes	Yes	Not listed
Goyal et al S Asian J Cancer 2015 (7)	NSGCT	29	Poor	Haematemesis	Haematogenous	Yes	Yes	3 <sup>rd</sup> line Gemcitabine/Oxaliplatin
Sweetenham et al. Cancer 1988 (8)	Seminoma	37	Unknown	Upper Abdominal pain	Haematogenous	No	Yes	BEP chemotherapy
Sweetenham et al. Cancer 1988 (8)	NSGCT	25	First presentation of relapsed disease	Occult GI bleeding	Haematogenous	No	Yes	PVB chemotherapy

Shibuya et al. Internal Medicine 2009 (9)	NSGCT	27	Poor	Acute Upper GI bleed	Retroperitone al extension	Yes	Yes	BEP, EP and VIP chemother apy, brain and pulmonary metastatic resection
Pollheimer et al. Gastrointestin al Endoscopy 2008 (10)	Semino ma	39	Intermediate	Epigastri c Pain	Haematogeno us	Yes	No	Not listed

**Table 1.** Previously published case reports of gastric involvement in the setting of metastatic testicular cancer. NSGCT – Non-seminomatous germ cell tumour; BEP – Bleomycin/Etoposide/Cisplatin; PVB – Cisplatin/Vinblastine/Bleomycin; EP – Etoposide/Cisplatin; VIP – Vincristine/Ifosfamide/Cisplatin.

## Case Report:

Our patient was a 67-year-old man with a background of cholelithiasis and stable transfusion-dependent JAK-2 associated myelofibrosis. His medication included Ruxolitinib, a JAK1/JAK2 inhibitor (11), which had been started two years previously. The median overall survival following commencement of Ruxolitinib is approximately 15 months.

He presented to the team managing his myelofibrosis with a six month history of increasing dyspepsia and nausea following eating. There was no evidence of weight loss, melaena or haematemesis. He was a current smoker with a 40 pack year history, drank 10 units of alcohol per week and was independent at home. There was no history of testicular cancer in his family, though his father had died of bowel cancer. At the time of presentation, he had not had inguinal-scrotal surgery, there was no history of maldescent of testes and no syndromes associated with testicular cancer. He was referred for routine gastroendoscopy and commenced omeprazole for symptom control.

Gastroendoscopy identified three ulcerated sessile polyps in the gastric body, from which biopsies were taken. Pathology review of the biopsies revealed an infiltrate of large pale cells with vesicular nuclei and abundant clear cytoplasm. In the lamina propria, focal atypical infiltrate was visible. The infiltrate was positive on immunohistochemistry for OCT 3/4, PLAP and CD117 but negative for CD3, CD20, CD30, CD34, CD45, S100 and bHCG. In addition, immunohistochemistry for markers of GI adenocarcinoma was also negative (**Figure 1**). Based upon these findings, a diagnosis of metastatic seminoma was made, and the patient was referred to oncology.

### Figure 1.

The patient underwent further clinical examination, imaging and blood tests. Abdominal examination revealed mild epigastric tenderness on palpation and previously documented splenomegaly

secondary to his myelofibrosis. Testicular examination was normal, heart sounds were normal and chest was clear on auscultation. Chest x-ray showed no evidence of metastatic disease. On testicular ultrasound, a 2.1x1.5cm homogenous mass was identified in the right testicle. CT chest, abdomen and pelvis identified no evidence of retroperitoneal disease or other metastatic sites of disease. The patient went on to have Positron Emission Tomography (PET) (**Figure 2**). This identified two sites of metastatic disease within the stomach, with an FDG-avid area corresponding to the primary in the right testis. There was no evidence of retroperitoneal or pelvic lymph node avidity. Alpha-fetoprotein (AFP) was <3 kU/L, Beta HCG (HCG) <3 U/L, and LDH 764 U/L (baseline LDH was approximately 500U/L as a consequence of myelofibrosis). In view of his gastric involvement he was classified as having Royal Marsden Hospital Stage IV disease and according to the International Germ Cell Consensus Classification (IGCCC) was in the intermediate prognosis group(12).

## **Figures 2.**

Given the isolated site of metastases, the potential complications with platinum-based chemotherapy, the patient's age and the prognosis from his pre-existing myelofibrosis (accompanied grade 1 anaemia and thrombocytopenia), a decision was made by the multi-disciplinary team to treat his disease via a surgical approach alone. The patient underwent total gastrectomy and right inguinal orchidectomy. Post-operatively he developed a hospital acquired pneumonia which was treated successfully with intravenous antibiotics. Pathological examination of the gastrectomy showed three macroscopic foci of metastatic seminoma within the body of the stomach, confirmed on microscopy (**Figures 3-5**). No lymph nodes from around the resected stomach were positive for seminoma. Post-operative tumour markers remained negative. Six months on from the surgery, the patient remains well with no evidence of recurrent disease.

**Figure 3.**

**Figure 4.**

**Figure 5.**

**Discussion:**

Testicular germ cell cancers (GCTs) represent 95% of testicular tumours(13) and 1% of new cancer cases in males. In the United Kingdom, there are more than 2,000 new cases of testicular GCTs annually, with a peak in incidence at age 30-34 with 19 cases per 100,00 population)(1). Incidence steeply declines as age increases, with 2 cases per 100,000 population by age 65-69<sup>2</sup>. Pathologically, these tumours can be sub-divided into seminoma and non-seminomatous germ cell tumours (NSGCTs), with implications for outcomes and management(13, 14).

Pure seminomas account for approximately 50% of all GCTs(15). They are composed of cells which resemble the primitive germ cell and which appear microscopically as sheets of uniform tumour cells(13). NSGCTs include a diverse range of tumours with embryonic and extra-embryonic lineage. Any evidence of NSGCT within a seminoma alters management to that of a NSGCT(14).

When there is evidence of extra-testicular disease (all Royal Marsden stages except for Stage 1), either on imaging or in elevation of tumour markers, clinicians use the International Germ Cell Consensus Classification (IGCCC) prognostic grouping of GCTs to assist in selecting the best management approach (16). This grouping is based upon site of primary, presence of visceral non-pulmonary metastases, and level of tumour markers (AFP, HCG and LDH). Seminomas are grouped into good and intermediate prognosis disease, and NSGCTs into good, intermediate and poor prognosis. Importantly, even when testicular GCTs have metastasised, cure is possible.. Good and intermediate prognosis metastatic seminoma have an 86% and 72% 5 year survival respectively. In comparison, good, intermediate and poor prognosis metastatic NSGCTs have a 5 year survival of 92%, 80% and 48% respectively (14, 16).

Gastric metastases from any solid tumour are rare and usually represent a late stage in the disease process. When they occur they are often managed with palliative chemotherapy(3), with a median overall survival of 3-4.75months(3, 17). Incidence of gastric metastasis from any primary, based both

on endoscopic findings and post mortem analysis, is estimated at 0.2-0.7%(3). In a case series of 2579 patients(12) with gastric tumours only 9 of these (0.3%) were metastatic solid tumours without features of direct invasion. None of the cases reported had arisen from a germ cell primary. The most commonly reported cancers associated with of gastric metastasis are breast, lung, renal and melanoma(3).

Published findings of gastric metastases arising from GCTs tend to be limited to single case reports(**Table 1**)(4-10), with some additional case reports of GCT metastasis to other areas of the GI tract(18). Most reported cases of gastric metastases from GCTs are NSGCTs (**Table 1**), occur in the age range 15-35 (where incidence is highest), have retro-peritoneal lymph node involvement and visceral metastatic involvement of sites other than the gastric mucosa (often representing advanced disease). None of these common features are present in our case. Likewise, the management of this case with surgery alone is unique. The common presenting complaint of occult upper GI bleeding may have been masked in our patient by his regular red cell transfusions for myelofibrosis.

#### **Conclusion and learning points:**

- Our case presents a rare and unique presentation of a GCT at an advanced age with isolated metastases to the gastric body without retroperitoneal nodal involvement.
- We also report the possibility of achieving surgical control of gastric metastatic disease.
- Whilst rare, it is important to consider metastatic GCTs manifesting in the gastric mucosa as they represent a cancer with a high rate of cure.



## References

1. UK CR. Testicular Cancer incidence statistics 2018 [Available from: <https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/testicular-cancer/incidence>].
2. Hainsworth JG, FA. Malignant Germ Cell tumours. Holland-Frei Cancer Medicine. 6th ed: BC Decker; 2003.
3. Weigt J, Malfertheiner P. Metastatic Disease in the Stomach. *Gastrointestinal tumors*. 2015;2(2):61-4.
4. Mesa H, Rawal A, Rezcallah A, Iwamoto C, Niehans GA, Druck P, et al. "Burned out" testicular seminoma presenting as a primary gastric malignancy. *International journal of clinical oncology*. 2009;14(1):74-7.
5. Lauro S, Righini R, Onesti CE, Pucci E, Bramini A, Marchetti P. Gastric metastases from testicular cancer: case report and review of literature. *Journal of gastrointestinal cancer*. 2014;45 Suppl 1:22-4.
6. Mazumdar S, Sundaram S, Patil P, Mehta S, Ramadwar M. A rare case of metastatic germ cell tumor to stomach and duodenum masquerading as signet ring cell adenocarcinoma. *Annals of translational medicine*. 2016;4(16):309.
7. Goyal P, Upadhyay AK, Chandragouda D, Gandhi J, Agarwal M. Mucosal gastric metastases: A very rare site of metastasis from germ cell tumour. *South Asian journal of cancer*. 2015;4(3):153-4.
8. Sweetenham JW, Whitehouse JM, Williams CJ, Mead GM. Involvement of the gastrointestinal tract by metastases from germ cell tumors of the testis. *Cancer*. 1988;61(12):2566-70.
9. Shibuya T, Osada T, Kodani T, Hojo M, Saito H, Ueyama H, et al. Gastrointestinal hemorrhage as the first manifestation of metastatic extragonadal choriocarcinoma. *Internal medicine (Tokyo, Japan)*. 2009;48(7):551-4.

10. Pollheimer VS, Gurakuqi GC, Pollheimer MJ, Beham-Schmid C, Langner C. Testicular seminoma presenting with gastric metastasis. *Gastrointestinal endoscopy*. 2008;67(4):726-7; discussion 7.
11. Quintas-Cardama A, Vaddi K, Liu P, Manshoury T, Li J, Scherle PA, et al. Preclinical characterization of the selective JAK1/2 inhibitor INCB018424: therapeutic implications for the treatment of myeloproliferative neoplasms. *Blood*. 2010;115(15):3109-17.
12. International Germ Cell Consensus Classification: a prognostic factor-based staging system for metastatic germ cell cancers. International Germ Cell Cancer Collaborative Group. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 1997;15(2):594-603.
13. Winter C, Albers P. Testicular germ cell tumors: pathogenesis, diagnosis and treatment. *Nature reviews Endocrinology*. 2011;7(1):43-53.
14. SIGN. Scottish Intercollegiate Guidelines Network (SIGN). Management of Adult Testicular Germ Cell Tumours. . In: SIGN, editor. <https://www.sign.ac.uk/assets/sign124.pdf2011>.
15. Oldenburg J, Fossa SD, Nuver J, Heidenreich A, Schmoll HJ, Bokemeyer C, et al. Testicular seminoma and non-seminoma: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Annals of oncology : official journal of the European Society for Medical Oncology*. 2013;24 Suppl 6:vi125-32.
16. Kobayashi O, Murakami H, Yoshida T, Cho H, Yoshikawa T, Tsuburaya A, et al. Clinical diagnosis of metastatic gastric tumors: clinicopathologic findings and prognosis of nine patients in a single cancer center. *World journal of surgery*. 2004;28(6):548-51.
17. Campoli PM, Ejima FH, Cardoso DM, Silva OQ, Santana Filho JB, Queiroz Barreto PA, et al. Metastatic cancer to the stomach. *Gastric cancer : official journal of the International Gastric Cancer Association and the Japanese Gastric Cancer Association*. 2006;9(1):19-25.
18. Shogbesan O, Abdulkareem A, Jehangir A, Byreddy S, Swierczynski S, Donato A. Gastrointestinal Involvement of Testicular Germ Cell Tumor: A Case Report and Literature Review. *Case reports in gastrointestinal medicine*. 2017;2017:4789259.

