

Diagnosis and Management of Gastrointestinal Stromal Tumor in the Upper Gastrointestinal Tract- Case Report

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ABSTRACT

Aim of the work: gastrointestinal stromal tumours (GISTs) are a type of mesenchymal tumours of the gastrointestinal (GI) tract. The tumour can originate anywhere from the oesophagus to the rectum, but most often comes from the stomach or small intestine. Despite the fact that GISTs are the most common mesenchymal neoplasms of the GI tract, they remain a diagnostic challenge because of the overlapping clinicopathologic features with GIST. Large GISTs are usually associated with complications such as gastrointestinal (GI) haemorrhage, GI obstruction, and bowel perforation. GISTs are predominantly found in people in their 60s, but a small population can develop it a younger age. **Patient and methods:** this was a report the case of a 65-years old male presented to our hospital with upper gastrointestinal bleeding. **Results:** vomiting and severe anaemia findings were detected in diagnostic image studies which suggested a gastric GIST without evidence of metastatic disease; therefore, totally tumour excision was performed. Cytologic and immuno-histochemistry analysis confirmed diagnosis of GISTs.

Conclusion: the present case report highlighted the need of early recognition and appropriate investigation of gastrointestinal symptoms at all ages for ruling out potential malignancy.

Keywords: gastrointestinal stromal tumours, GIST, endoscopic ultrasonography, mesenchymal tumours.

INTRODUCTION

Stromal or mesenchymal tumours that affect the gastrointestinal tract typically appeared as subepithelial neoplasms and they are classified in two groups. The most common is Gastrointestinal Stromal Tumours Group (GIST), which arise from mesenchymal stem cells programmed to differentiate into interstitial cells of Cajal in the myenteric plexus ^[1]. Gastrointestinal stromal tumour (GIST) is a gastric submucosal tumour (SMT), and it originates from the interstitial cells of Cajal. Around 40% of GISTs occur in the stomach. Gastric GIST is treated with surgery, including laparoscopy, endoscopic mucosal resection, or endoscopic submucosal dissection and imatinib is used for the treatment of GIST ^[2]. Most subepithelial tumours do not cause symptoms and are usually discovered incidentally during the endoscopic or radiologic examinations. The overlying mucosa usually appears smooth and normal at endoscopy. If symptoms do occur, they are nonspecific such as abdominal pain, obstruction, haemorrhage and intussusceptions ^[3]. Large submucosal neoplasms may outgrow their blood supply, ulcerate through the mucosa and present as GI bleeding. Firm subepithelial tumours may also present with obstructive symptoms, especially if they are located near the cardia or the pylorus. Subepithelial tumours obstruct the major or minor papilla may cause jaundice or pancreatitis. Pain and weight loss often associated with large submucosal GI stromal tumors (GISTs), are symptoms that suggest malignancy ^[3]. Here, we

report a case of gastric GIST diagnosed with specimens obtained by EUS-FNA with a 25G biopsy needle. **The study was done after approval of ethical board of Hail university.**

CASE REPORT

A 65 years old male admitted to the emergency unit under hematologist care.

He was suffering from anemia (Venous blood tests revealed a hemoglobin level of 6 g/dL) and had vomiting 3 days before admission, he also mentioned back pain and renal failure symptoms (Oliguria and Itching).

Meanwhile, patient's historical medical record revealed no past medical or surgical history (no hypertension HTN or diabetes Miletus DM)

Moreover, the patient had no history of medications for chronic diseases.

The work up started to rule out multiple myeloma (Anemia ,renal failure ,bone changes and high ESR 96) through laboratory blood test, the results came as follows:

- ESR= 96
- Bence-Jones proteins test result was negative
- Blood smear test was negative.

After resuscitation and stabilization, he underwent to upper GI endoscopy under sedation. Endoscopy was performed in 3 phases as illustrated in **figures 1- 3**. Endoscopic Ultrasonography findings suggested that volvulus could be excluded (surgical case), but the appearance revealed that it was part of the stomach slipped through the pylorus).



Figure 1: 1st endoscopy done performed revealed food materials in oesophagus

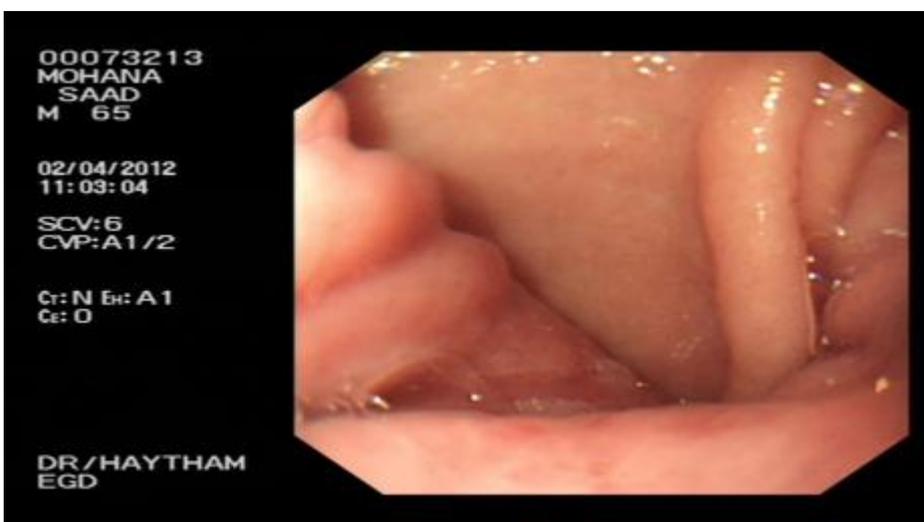


Figure 2 : 2nd endoscopy showing pre-pyloric obstruction; endoscopy cannot pass to the duodenum , size of stomach looking small in size
Differential diagnosis : gastric vuluos

- The endoscope was slowly advanced through the narrow lumen formed by the twisted gastric folds of the fundus or body into the antrum. Once the antrum was entered, a J-turn maneuver was performed to confirm the passage of the endoscope through the gastric volvulus. The endoscope was then withdrawn back into the fundus allowing untwisting of the alpha-loop and reduction of the gastric volvulus



Figure 3: 3rd endoscopy performed after 9 days endoscopic repeated.

Volvulus can be excluded (surgical case), but the appearance revealed that part of stomach slipped through the pylorus. Endoscopic trial to pull back this part of stomach succeeded and revealed a final pedunculated gastric mass slipped to the duodenum on/off , resulting in the obstruction symptoms. Endoscopic diagnosis was gastrointestinal stromal tumour “GIST”.



Figure 4. Contrast-enhanced computed tomography showing GIST presenting as a SMT of the stomach

Soon after, a biopsy was obtained and the results declared no malignancy and normal mucous findings. Patient was then sent to the surgical department and GIST mass was removed completely which was later sent to the oncologist who prescribed “Imatinib” 400 mg to the patient with a 1 year follow up schedule.



Figure 5. Intraoperative tumor attached to the posterior wall and also to the greater curvature.



Figure 6. A photograph for the resected gastric mass.

Precautions

* Possible high-risk features of endoscopic ultrasonography include irregular border, cystic spaces, ulceration, echogenic foci and heterogeneity.

• Endoscopic ultrasonography surveillance should only be considered after a thorough discussion with the patient regarding the risks and benefits.

DISCUSSION

Despite that the GIST are the most common benign (not epithelial neoplasm of the gastrointestinal tract), it just represents 1% of all gastrointestinal primary tumours [4]. With a worldwide incidence of 11–19.6 per million populations, we did not know incidence and prevalence in Saudi Arabia.

However, in USA, studies estimated an annual incidence of 4000 to 6000 new cases (7–20/1,000,000 per year) [5]. Typically, GIST affects the population over 50-years old, rarely those under 40 and the average age of diagnosis was around 63 year-old [5].

Preoperative pathological diagnosis must be obtained because all subepithelial lesions of the gastrointestinal tract are not GIST.

Endoscopy alone has suboptimal accuracy of as low as 40% for identifying the cause of submucosal bulges [6]. Most often the mucosal surface is normal and conventional forceps biopsy results are frequently negative. Other noninvasive imaging methods such as

transabdominal ultrasound and computed tomography are also suboptimal for evaluating submucosal indentations [7]. EUS syndicates the endoscopic view with ultrasonographic images generated by a high-frequency intraluminal probe. This allows clear imaging of the gastrointestinal wall layers and precise evaluation of the submucosal tumor whether from extrinsic compression or the layer in which the intramural lesion originates. Although EUS provides important morphologic information from submucosal lesions, including some features suggestive of malignancy (size > 3-4 cm, irregular margins, internal echogenic foci or cystic spaces and rapid growth rate at follow-up EUS) [8].

The case under study corresponded to a male patient in his third decade of life with a gastric GIST in a habitual localization, notwithstanding the unusual age of the patient. Clinically, this type of GIST usually begin with symptoms like upper gastrointestinal bleeding, followed by abdominal chronic pain and when the tumor size was considerably big; it could be detected during abdominal manual exploration [9].

Imatinib mesylate is a potent and selective inhibitor of tyrosine kinase (including KIT, BCR-AL, and PDGFR-alpha) [10]. By considering that GIST is not sensitive to radio or chemotherapy, the surgical resection was not enough in the patients and increased their survival rate since Imatinib FDA approval [4].

CONCLUSION

The present case report highlighted the need of early recognition and appropriate investigation of gastrointestinal symptoms at all ages for ruling out potential malignancy.

REFERENCES

1. **AC (2011):** Sociedad Mexicana de Oncología Tumores del estroma gastrointestinal (GIST), avances en el conocimiento y manejo Gaceta Mexicana de Oncología, 10 :1-13.
2. **Nishida T, Kawai N, Yamaguchi S, Nishida Y(2013):** Submucosal tumors: comprehensive guide for the diagnosis and therapy of gastrointestinal submucosal tumors. Dig Endosc .,25: 479–489.
3. **Chak A(2002):** EUS in submucosal tumors. Gastrointest Endosc., 56:S43–S48.
4. **AC (2011):** Sociedad Mexicana de Oncología Lineamientos actualizados en el tratamiento de los tumores del estroma gastrointestinal (GIST) en México. Gaceta Mexicana de Oncología, 10 (1) :23-25.
5. **K. Kawanowa, Y. Sakuma, S. Sakurai et al. (2006):** High incidence of microscopic gastrointestinal stromal tumors in the stomach. Hum Pathol., 37: 1527
6. **Rösch T, Kapfer B, Will U, Baronius W, Strobel M, Lorenz R, Ulm K(2002):** Accuracy of endoscopic ultrasonography in upper gastrointestinal submucosal lesions: a prospective multicenter study. Scand J Gastroenterol., 37:856–862.
7. **Nesje LB, Laerum OD, Svanes K, Ødegaard S(2002):** Subepithelial masses of the gastrointestinal tract evaluated by endoscopic ultrasonography. Eur J Ultrasound,15:45–54.
8. **Shen EF, Arnott ID, Plevris J, Penman ID(2002):** Endoscopic ultrasonography in the diagnosis and management of suspected upper gastrointestinal submucosal tumours. Br J Surg., 89:231–235.
9. **Agaimy P, Wünsch F, Hofstaedter R et al.(2007):** Minute gastric sclerosing stromal tumors (GIST tumorlets) are common in adults and frequently show c-KIT mutations. Am J Surg Pathol., 31:113.
10. **Hirota S, Ohashi A, Nishida T et al.(2003):** Gain-of-function mutations of platelet-derived growth factor receptor alpha gene in gastrointestinal stromal tumors. Gastroenterology, 125 : 660.