Local Resection of Gastrointestinal Stromal Tumor of the Second Part of Duodenum

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ABSTRACT

Gastrointestinal stromal tumors are relatively rare in the duodenum, representing 2–4% of Gastrointestinal stromal tumors of the gastrointestinal tract. We describe a huge Gastrointestinal stromal tumor arising from the second part of the duodenum invading the transverse colon which was removed successfully by local resection of the second part of the duodenum along with a segment of transverse colon.

Keywords: *duodenum, gastrointestinal stromal tumor, segmental resection*

INTRODUCTION

Stromal tumors are relatively rare in the duodenum, representing 2–4% of all primary Gastrointestinal stromal tumor (GIST) of the gastrointestinal tract.[1] GISTs are thought to arise from the mesenchymal cells, from the interstitial cells of Cajal.[2] Recent immunohistochemical examinations have shown that these tumors occupy an intermediate position which arises from neither muscles nor nerves. The mutation of c-kit (cording KIT) has been shown to be essential in the development of GIST. The management of GISTs by local resection of second part of duodenum is quite controversial. We describe a huge GIST arising from the second part of the duodenum which was removed successfully by local resection of the second part of the duodenum.

CASE REPORT

A 35 year old lady presented to our outpatient department with the complaints of right flank pain, recurrent episodes of melena and hematemesis for the past 5 years. She received repeated blood transfusions in the past. On examination her vitals were stable, she was pale and abdominal examination revealed a mass extending from the right hypochondrium to the right lumbar region which was firm non tender and fixed. She had undergone repeated endoscopies which reported large penetrating duodenal ulcer in second part of duodenum with bleeding. Barium examination showed a deformed duodenal cap with diagnosis of duodenal ulcer.

Ultrasonography of abdomen reported a mixed echoic mass 11.4 x 5.8 cm in right side of the abdomen with circumferential thickening involving bowel. Endoscopic examination was repeated in our center which revealed a fistulous connection in the second part of the duodenum with visible clots. Contrast computer tomography (CECT) of the abdomen reported a 13 x 11 x 8 cm thick walled heterogeneously enhancing mass in the right subhepatic area extending up to the right iliac fossa communicating with the duodenum with cavitation in the centre. Laterally the mass was abutting the transverse colon and displacing it anteriorly and superiorly with no appreciable plane between mass

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and transverse colon and involving the mesentry in the lower segment. The CT impression was GIST with the differential diagnosis of lymphoma.

So with the provisional diagnosis of GIST and differential diagnosis of duplication cyst/ lymphoma surgery was performed. The intra operative finding was a large fleshy mass arising from the second part of antimesentric border of duodenum around 15 x 10 cm in size with cavitation in the middle around 2 cm above the major duodenal papilla containing dark brown fluid. The mass was adherent to the liver and surrounding structures. Transverse and ascending colon was pushed anteriorly and was grossly adherent to its mesentry. There was no ascites liver metastasis or peritoneal deposits.

Complete excision of the mass along with wedge resection of part of duodenum with 1 cm margin with segmental resection of transverse colon was done. The primary closure of duodenum, T- tube drainage of CBD, pylorus exclusion, gastrojejunostomy, end to end anastomosis of transverse colon and feeding jejunostomy was done. The postoperative period was uneventful. The histopathology report of the specimen reported GIST with 2-3 mitotic figures involving the second part of the duodenum with tumor free margins and local invasion of the transverse colon up to the muscular layer. Follow up after 6 months the patient was doing fine and endoscopy and CT scan abdomen revealed no evidence of recurrence.

DISCUSSION

GISTs are mesenchymal tumors and may occur anywhere along the gastrointestinal tract from the esophagus to the anus the most common site being the stomach. The most common presentation of duodenal GIST is bleeding (50%) which is similar to other small bowel GIST (49%) but different from gastric GIST which is most commonly an incidental finding (62%)[3] but in our practice gastric GIST have also mostly presented with bleeding. Despite their large size they rarely present with duodenal obstruction or obstructive jaundice.[4]

Hyo-Cheol et al[5] has described three patterns of growth in CECT of GIST, Endoluminal where mass is completely confined to the bowel lumen, Exoenteric where mass is confined to the extraluminal space and Mixed type with a dumbbell appearance. Our mass fits into the exoenteric growth pattern.

The most favored treatment for GIST is surgical resection. For GIST of the second part of the duodenum complete resection of the mass with pancreatoduodenectomy has been the choice of treatment.[6,7] In literature search there have only been a few reported cases of segmental resection of the duodenum for GIST.[8-11] The complex anatomical structures around the duodenum make it difficult for segmental resection. So when the mass is lying in the antimesentric border with a exoenteric growth pattern, a 1 cm margin can be achieved and is away from the ampulla distal common bile duct and the pancreatic duct local resection is possible. Goh BK et al[12] reviewed 22 patients with duodenal GIST among whom 7 patients underwent local resection and concluded that local resection was a viable option with similar recurrence rates and less operating time with less morbidity.

They can sometimes directly invade the surrounding structures like in our case the transverse colon. The GIST rarely shows lymph node metastasis so lymph node dissection is unnecessary. Advantage is due to the preservation of the pancreas, avoiding various complications related with pancreatoduodenectomy. Tumor size is an important prognostic factor, tumor size more than 5 cm have more chances of malignancy and tumors more than 10 cm has a 5-year survival of only 20 % after resection.[13] Local recurrence is common[14] and rupture of the tumor can cause intraperitoneal dissemination.[15] Solitary liver metastasis can be surgically resected.[16] Chemotherapy has not shown to be very effective.[17] Complete resection of the tumor is one of the most important factors related to survival.[14] The advantage of local or segmental resection is due to the preservation of the pancreas and avoiding various complications related with pancreatoduodenectomy. In our patient, complete resection of the tumor with tumor free margin was possible. Before surgery was the only option but now Imatinib and sunitinib tyrosine kinase inhibitors are being tested in phase III trials for treatment of unresectable or metastatic GIST.[18]

REFERENCES

1. Uehara K, Hasegawa H, Ogiso S. Diagnosis and treatment of gastrointestinal stromal tumor of the duodenum. Geka. 2001;63:1058-61.
2. Heinrich MC, Rubin BP, Longley BJ, Fletcher JA. Biology and genetic aspects of gastrointestinal stromal tumors: KIT activation and cytogenetic alterations. Hum Pathol. 2002;33:484-95.
3. Winfield RD, Hochwald SN, Vogel SB, Hemming AW, Liu C, Cance WG, et al. Presentation and management of gastrointestinal stromal tumors of the duodenum. Am Surg. 2006;72(8):719-22.
4. Levy AD, Remotti HE, Thompson WM, Sobin LH, Miettinen M. Gastrointestinal stromal tumors: radiologic features with pathologic correlation. Radiographics. 2003;23(2):283-304.

5. Hyo CK, Jeong ML, Kyu RS, Se HK, Kyoung HL, Kyoung WK et al. Gastrointestinal stromal tumors of the duodenum: CT and barium study findings. AJR. 2004;183:415-9.

6. Akkus MA, Kismet K, Erel S, Adibelli MA, Pulat H. Case report: duodenal stromal tumor. Acta Gastroenterol Belg. 2005;68:95-7.

7. Takahashi T, Noguchi T, Takeno S, Uchida Y, Shimoda H, Yokoyama S. Gastrointestinal stromal tumor of the duodenal ampulla: report of a case. Surg Today. 2001;31:722-6.

8. Kurihara N, Kikuchi K, Tanabe M, Kumamoto Y, Tsuyuki A, Fujishiro Y et al. Partial resection of the second portion of the duodenum for gastrointestinal stromal tumor after effective transarterial embolization. Int J Clin Oncol. 2005;10(6):433-7.

9. Sakamoto Y, Yamamoto J, Takahashi H, Kokudo N, Yamaguchi T,Muto T, et al. Segmental resection of the third portion of the duodenum for a gastrointestinal stromal tumor: a case report. Jpn J Clin Oncol. 2003;33:364-6.

10. Cavallini M, Cecera A, Ciardi A, Caterino S, Ziparo V. Small periampullary duodenal gastrointestinal stromal tumor treated by local excision: report of a case. Tumori. 2005;91(3):264-6.

11. Liyange CA, Abeygunawardhana S, Kumarage S, Deen KI. Duodenum-preserving local excision of a gastrointestinal stromal tumor. Hepatobiliary Pancreat Dis Int. 2008;7(2):214-6.

12. Goh BK, Chow PK, Kesavan S, Yap WM, Wong WK. Outcome after surgical treatment of suspected gastrointestinal stromal tumors involving the duodenum: is limited resection appropriate? J Surg Oncol. 2008;97(5):388-91.

13. Dematteo RP, Lewis JJ, Leung D, Mudan SS, Woodruff JM, Brennan MF. Two hundred gastrointestinal stromal tumors: Recurrence patterns and prognostic factors for survival. Ann Surg. 2000;231:51-7.

14. Croom KF, Perry CM. Imatinib mesylate: in the treatment of gastrointestinal stromal tumours. Drugs. 2003;63:513-22.

15. Ng EH, Pollock RE, Munsell MF, Atkinson EN, Romsdahl MM. Prognostic factors influencing survival in gastrointestinal leiomyosarcomas. Implications for surgical management and staging. Ann Surg. 1992;215:68-77.

16. Stratopoulos C, Soonawalla Z, Piris J, Friend PJ. Hepatopancreatoduodenectomy for metastatic duodenal gastrointestinal stromal tumor. Hepatobiliary Pancreat Dis Int. 2006;5(1):147-50.

17. Plaat BE, Hollema H, Molenaar WM, Torn Broers GH, Pijpe J, Mastik MF, et al. Soft tissue leiomyosarcomas and malignant gastrointestinal stromal tumors: Differences in clinical outcome and expression of multidrug resistance proteins. J Clin Oncol. 2000;18:3211-20.

18. Judson I, Demetri G. Advances in the treatment of gastrointestinal stromal tumours.Ann Oncol. 2007;18:20-4.