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RESEARCH ARTICLE

PANCREAS SPARING DUODENECTOMY.

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Abstract

Gastrointestinal stromal tumors (GISTs) are uncommon tumors that arise mostly in the gastrointestinal tract. Duodenal GIST (DGIST) comprises 4.5% of all GISTs. Surgery is the mainstay of treatment for localized, resectable GISTs although imatinib mesylate, a tyrosine kinase inhibitor, is effective for GISTs. In this study, we describe a case in which segmental resection of the third portion of the duodenum, have been performed for the treatment of a DGIST. Recent anatomical knowledge of the head of the pancreas has facilitated duodeno-pancreas surgery and duodenal resection preserving the pancreatic head can now be performed safely for larger tumors which are located below the papilla of Vater in the third or fourth duodenal portions with end-to-end or side-to end duodeno-jejunal anastomosis. Local resection can be beneficial for patients because it contributes to a better quality of life and does not involve the excessive resection associated with duodenopancreatectomy.

Introduction:-

Gastrointestinal stromal tumors (GISTs) are uncommon tumors that arise mostly in the gastrointestinal tract (GIT) nevertheless they are the most common mesenchymal tumors. They can occur in the stomach (45% to 65%), small intestine (15% to 25%), colon and rectum (5% to 10%) or esophagus (5% to 10%) [1-2].Due to their similar appearance by light microscopy GISTs were previously thought to be smooth muscle neoplasms and most were classified as leiomyomas, leiomyoblastomas, leiomyosarcomas or schwannomas[2-3]. There are only sporadic reports of extra-gastrointestinal stromal tumors (e-GISTs) arising in the omentum, mesentery or retroperitoneum. Duodenal GIST (DGIST) comprises 4.5% of all GISTs. Surgery is the mainstay of treatment for localized, resectable GISTs although imatinib mesylate, a tyrosine kinase inhibitor, is effective for GISTs. Different surgical procedures for DGIST have been described, such as wedge and local resection, pancreas-preserving segmental duodenectomy, pancreas-preserving total duodenectomy and pancreaticoduodenectomy. Since they are encapsulated tumors, GISTs do not widely infiltrate at the microscopic level and rarely metastasize to lymph nodes pancreatoduodenectomy may be an excessive means of treating this disease [4].In this study, we describe a case in which segmental resection of the third portion of the duodenum, have been performed for the treatment of a DGIST.

Case report

A 59-year-old woman was admitted to our departement for the treatment of a duodenal tumor. Her past medical story was not significant. The patient was suffering from asthenia, weight loss for more than one year. She had inconstant symptoms of pyrosis and regurgitation. On clinical examination all vital signs were stable. She was pale .no abdominal pain were found. Laboratory tests on admission were as follow: haemoglobin 14,1 g /dl. Leukocyte

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count 3670/mm3 C -reactive protein level .The tumor markers were within the normal levels: CEA 1,34 ng/ml (normal range 0.00-3.00) CA 19.9 2,4 UI/ml (normal range 0.00-37.00).Abdominal CT was performed showing a 27-mm nodular lesion well demarcated in the third portion of the duodenum with enhancement in post-post-contrast study. No enlarged nodes were detected. Endoscopic examination revealed a round lesion ulcerated bleeding during biopsy and located in the third duodenum.

Histological and immunohistochemical examination of biopsy revealed that the tumor was a GIST positive for c-kit. After being assessed by the general surgery and anaesthesia teams, the patient was consented for a laparotomy. A midline incision was zone and there were no signs of metastatic disease. The duodenal tumor was palpable in the 2nd/3rd portion of the duodenum. The right colon was mobilized and a Kocher manouver was performed.

The tumor was located a few centimeters distal to the papilla. There was no macroscopic invasion into adjacent vessels or structures. No lymph nodes were palpable. The proximal jejunum was transected using a gastrointestinal stapler.
The duodenum was carefully dissected and separated from the pancreatic head. The proximal margin of the duodenum was transected at the level of the inferior part of second portion approximately 1.5 cm above the tumor next to the ampulla of Vater. A hand sewn end-to-side anastomosis between the second portion of the duodenum and the jejunum was performed. The anastomosis was sewn in two layers using a 3-0 PDS stitch. A suction drain was placed in the proximity of the anastomotic site and the abdomen closed. The operative time was three hours and the intraoperative blood loss estimated to 250 ml. The post -operative course was uneventful and the patient discharged one week after sugery. Histological examination of the specimen demonstrated a GIST of the duodenum.The duodenal neoplasm had a low mitotic activity (3 mitoses/50 HPF) and immunohistochemical studies revealed positivity for c-Kit (CD 117).

Discussion:-

GISTs usually occurs sporadically, about 5-10% occur in hereditary familial syndrome (Type I neurofibromatosis, carney triad syndrome, Carney-Stratakis syndrome) [5]. There is usually no predilection for either gender but some series suggest a slight male predominance (GIST). The clinical manifestations of duodenal GISTs are variable depending on their origin, growth (intramural or extramural) and tumor size [2]. The most common clinical presentation is gastrointestinal bleeding (Hematemesis and melena) especially (when mucosal ulceration is present leading to anemia), also abdominal pain and abdominal discomfort [6]. They can also be incidentally diagnosed as they can be asymptomatic especially for small tumors or when the tumor growth is extraluminal. Some events like jaundice (compression of common bile duct) or bowel obstruction have been described however it's rare. Lymph node metastases are uncommon in GIST. Distant metastases most commonly occur in GISTs of the peritoneum, omentum, mesentery and the liver [3]. In general duodenal GISTs most frequently involve the second portion of the duodenum, followed by the third portion, fourth portion and first portion [7]. Histologically duodenal GISTs do not differ from other GITSs. They usually present with spindle cell differentiation, which is more frequent than epithelioid cell differentiation or mixed types. There is no apparent correlation between histologic subtype and risk of tumor recurrence [8]. GISTs in the duodenum do not differ from other GISTs in immunohistochemical reaction. Most of them express CD-117 (c-kit) and CD-34. According to the NIH risk stratification, they are more frequently identified as very low risk and low risk tumors. Preoperatively, a variety of alternative examinations can be adopted. Gastrointestinal endoscopy remains the most common diagnostic procedure in duodenal GISTs, especially in patients with intramural growth or mucosal ulceration and bleeding. CT and MRI seem to be the best imaging modalities for assessment of the primary lesion and detection of metastases, whereas EUS (endoscopic ultrasound) is the optimum non-invasive tool for the clinical diagnosis [6-8].

Surgical operations for DGIST are often difficult because of anatomical and physiological specificities (the proximity of the head of pancreas, common bile duct, ampullary part, kidney, and mesenteric vessels). The optimal surgical procedure for DGISTs is controversial [2]. The curative treatment comprises surgical resection with clear surgical margins (RO resection) and without intraoperative tumour rupture [3-4 -7-9-10 -]. The size of the surgical margin along the segment of the digestive tract is not formally defined; however, there is little submucosal spread in GIST and clear margins of 1 or 2 cm are recommended (comparison-surgical management). The choice of surgical procedure for a DGIST mainly depends on its size, location and proximity to the duodenal papilla [2-7]. Various surgical procedures have been reported, such as pancreaticoduodenectomy (PD) and local resection (LR), including wedge resection (WR) or segmental resection (SR). In general, WR with primary closure can be performed for small lesions if the resulting lumen is adequate and the Vater ampulla can be preserved [6]. Recently, partial

duodenectomy with a Roux-en-Y duodeno-jejunal anastomosis has been proposed for large tumors which involved the antimesenteric border of the second and third portions of the duodenum. Duodenectomy that preserves the pancreas has been reported in recent years. It offers many advantages such as reconstruction of a large duodenal defect caused by surgical resection [10].

Recent anatomical knowledge of the head of the pancreas has facilitated duodeno-pancreas surgery and duodenal resection preserving the pancreatic head can now be performed safely for larger tumors which are located below the papilla of Vater in the third or fourth duodenal portions with end-to-end or side-to end duodeno-jejunal anastomosis [6-8-11]. WR or SR can also be safely performed by means of laparoscopic and robotic approaches for DGIST [2].
PD is only indicated when the tumor is located in the D2 and involves the papilla, pancreas, or if the tumor is large with high malignant potential and has involved the adjoining organs [6-7]. PD can provide a wider tumor clearance, but reconstruction is difficult and there is an increased risk of long-term anastomotic stenosis, as both the pancreatic and common bile ducts are likely to be smaller in diameter [6].
LR can be beneficial for patients because it contributes to a better quality of life and does not involve the excessive resection associated with PD. However, the main concern regarding LR is the risk from the margins involved and hence the theoretical increased risk of local recurrence [7].

In our case we did not choose WR because because of the risk of subsequent stenosis and we wanted to have enough surgical margins to avoid recurrence. PD have not been performed because it appeared to be excessive due to the distality of the tumor with papilla and the fact that the tumour was not involving pancreas or adjoining organs. The most important surgical clues for successful duodenal resection were the dissection of the duodenum from pancreatic head without hurting it.

The disease-free survival (DFS) rate at 1-3 years after surgical complete resection, in allkinds of resection, has been reported to vary from 86 to 100% [7-8].

According to several studies performed such as Bo Zhou and al.[7],Buchs and al.[1] or Liang X et al.[6] the data seems to suggest that local recurrence is not influenced by the kind of surgical resection (limited resection vs. pancreaticoduodenectomy). Prognosis and recurrence are mainly dependent on tumor biology, which is determined by size and mitotic index (Fletcher scale) and also by the presence of positive resection margins [6-7].

Conclusion:

Duodenal gastrointestinal stromal tumors represent a subset of small bowel gastrointestinal stromal tumors that require special consideration. Because the recurrence of DGIST is correlated to tumor biology rather than type of operation, LR with clear surgical margins is a reliable and curative option for DGISTs. Segmental resection should be preferred, when possible, to more extensive procedures for duodenal GIST. However, for tumors located in the vicinity of the ampulla of Vater, PD remains a good option.

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