

Laparoscopic Distal Pancreatectomy for Insulinoma

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Abstract

Insulinomas are benign neuroendocrine tumors which are the most common of the pancreatic islet cell tumors, yet they remain a rarity. The incidence is 1-4 cases in one million patients a year. 60% are woman with a median age at presentation of 47 years. 90% are solitary and 10% multiple. More than 90% are benign adenomas and about 5%-6% of cases are malignant, and 5%-8% are associated with multiple endocrine neoplasms (MEN type I). Most insulinoma are 1-3 cm in size. Hyperinsulinism causes severe hypoglycemia and leads convulsion, depression and coma. Initial operation is curative in 88%, and long-term survival is normal. Recurrence rates of 7% (sporadic) and 21% (MEN type I) have been reported at 20 years.

Clinical manifestation related with endogenous hyperinsulinism: autonomic (less specific) like sweat, worried, tremble, nausea, hungry palpitation and tingling. The more specific neuroglycopenic are confusion, changes of behavior, dizzy, headache, and weakness. The classic diagnostic criteria (Whipple's triad): hypoglycemic symptoms, fasting hypoglycemic (< 45 mg/dL) and reversal of changes with glucose.

The treatment is surgical, except in advanced metastatic disease, where streptozotocin is helpful. Enucleation is performed for solitary insulinoma, and pancreas resection is performed for multiple insulinomas. Sometimes ultrasonography intra operative is useful to determine the insulinoma location.

The surgical can be done by laparotomy or laparoscopic surgery. The benefit of laparoscopic surgery is small incisions, less pain, faster mobilization, short hospitalization and better cosmetic. In the other side, laparoscopic pancreatectomy should be done by experience surgeon with availability of supporting instruments.

We report a case insulinoma in 39 years old woman. The locations were in body and tail pancreas. Laparoscopic distal pancreatectomy with spleen preservation is done successfully. The operation time was 3, 5 hours. Post-operative care in ICU for one day. We start enteral nutrition in the third day post-operative and the patient may leave hospital in the fifth day post-operative.

Keywords: Insulinoma - Laparoscopic Distal Pancreatectomy

Introduction

Insulinomas are benign neuroendocrine tumors which are the most common of the pancreatic islet cell tumors, yet they remain a rarity. The incidence is 1-4 cases in one million patients a year. 60% are woman with a median age at presentation of 47 years. 90% are solitary and 10% multiple. More than 90% are benign adenomas and about 5%-6% of cases are malignant, and 5%-8% are associated with multiple endocrine neoplasms (MEN type I). Most insulinoma are 1-3 cm in size. Hyperinsulinism causes severe hypoglycemia and leads convulsion, depression and coma. Initial operation is curative in 88%, and long-term survival is normal. Recurrence rates of 7% (sporadic) and 21% (MEN type I) have been reported at 20 years [1].

Following biological and biochemical confirmation of an insulinoma preoperative localization is sought using computed tomography (CT), magnetic resonance imaging (MRI) endoscopic

ultrasonography (EUS) intra-arterial calcium stimulation test with hepatic venous sampling, and/or angiography and arterial stimulation venous sampling (ASVS). Surgical resection is the primary treatment modality for insulinomas, and so accurate localization of the tumor before or during surgery is important. Intraoperative manual palpation of the pancreas by an experienced surgeon and intraoperative ultrasonography are both sensitive methods with which to localize insulinomas, supporting the argument by some surgeons that preoperative localization of the tumors is not necessary. The present review describes some of the latest findings regarding the clinical diagnosis and medical management of insulinomas in the adult population that are not associated with either multiple endocrine neoplasms or von Hippel-Lindau disease [2].

Case report

We report a case insulinoma in 39 years old woman. Defines hypoglycemic attacks for 3 years, frequent unconscious, dizziness, fatigue, cold sweet, shaking, and palpitation, for the physical

examination: no abnormalities found. Laboratory finding: Hb 13.5, HT 40, Leukocytes 26.200, thrombosis 333.000, Albumin / Globulin: 3, 4 / 3, 2, GDS: 45, Amilase: 97, 3, Lipase: 57, 9, CT whole abdomen with contrast showed, mass on cauda pancreas [Figure 1 & 2].

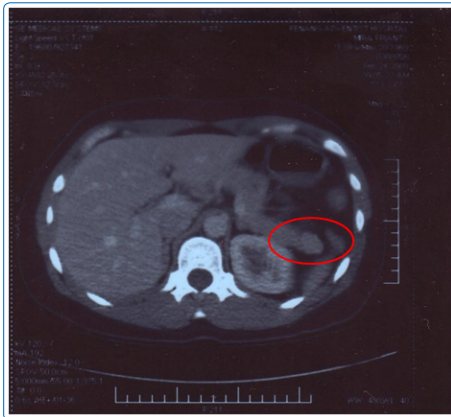


Figure 1: Mass on cauda pancreas



Figure 2: A Mesentrica Superior

She was scheduled for surgical operation with minimal surgical invasive Spleen Preserving Distal Pancreatectomy and the mass found at anterior corpus pancreas [Figure 3]. After operation the patient treated at HCU for 1 day, the general conditions is good, vital sign is stable, for the lab result: HB 12.1, Leucocyte 20.100, HT 38, Trombocyte 333.000, Blood glucose 231, and day by day glucose blood became a normal, dan the patient discharge post operation day five.

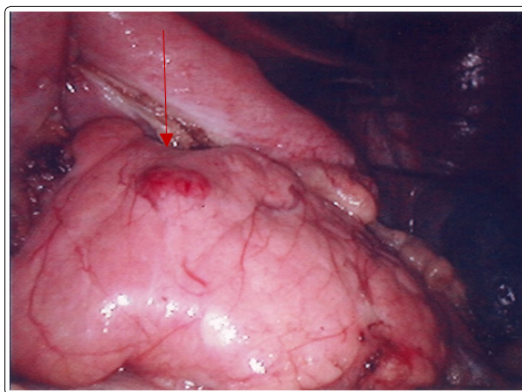


Figure 3: Mass on Anterior Corpus Pancreas

Discussion

Insulinomas are the most common functioning endocrine neoplasm of the pancreas. They are insulin-secreting tumors of pancreatic origin that cause hypoglycemia. Insulinomas occur in 1-4 people per million in the general population and represent 1%-2% of all pancreatic neoplasms. Insulinomas can occur at any age and have an equal gender distribution. As many as 90% of insulinomas have been reported to be benign, 90% are solitary, > 90% occurs at intrapancreatic sites, and 90% are < 2 cm in diameter. Insulinomas are evenly distributed over the entire pancreas. Most insulinomas are located in the pancreas or are attached directly to the pancreas. Extra pancreatic insulinomas causing hypoglycemia are extremely rare (incidence < 2%); extra pancreatic insulinomas are most commonly found in the duodenal wall. The etiology and pathogenesis of insulinomas are not known [2].

For this patient generally diagnose with insulinoma because the patient have a classic diagnostic criteria (Whipple's triad): hypoglycemic symptoms, fasting hypoglycemic (< 45 mg/dL) and reversal of changes with glucose and the CT scan showed mass at cauda pancreas. Surgery is the treatment of choice for insulinoma, while the choice of surgical procedure depends on tumor size, location and histopathological characteristics. Laparoscopic tumor resection is recommended in tumors located in the body or tail of the pancreas. Classic surgery is performed, if exact tumor location is impossible to

Determine, or when multiple lesions are suspected [3]. It is then possible to use the intraoperative ultrasound scan and to perform gradual pancreatectomy with the intraoperative insulin level measurement in order to assess the extent of the surgery. When the lesion is located within the head of the pancreas, it is usually necessary to carry out a pancreatoduodenectomy, an extensive surgical procedure associated with a high risk of intraoperative and postoperative complications, significantly decreasing the quality of life, particularly in patients with neuroendocrine tumors [4]. If the tumor is malignant, total pancreatectomy and lymphadenectomy can be performed [2]. Conservative treatment is recommended when surgical intervention is impossible due to the lack of consent or patient's health status, or when radical treatment is contraindicated due to advanced disease. Somatostatin is a natural inhibitor of pancreatic, intestinal and pituitary hormones and somatostatin analogues are used to prevent hypoglycemia. While observational studies have confirmed the efficacy of glycemia control using longacting somatostatin analogues, this treatment is only effective in patients whose tumors contain somatostatin receptors, i.e., approximately 50% of all insulinomas [5]. Short-acting somatostatin analogues are used solely to stabilize a patient's condition and assess their therapeutic response to a drug. Diaz oxide (not available in Poland) can be used as an alternative treatment but it causes edema, renal damage and hirsutism [6]. Interferon alpha can also be used as a part of conservative treatment. In case of inoperable, malignant tumors, chemotherapy using 5-fluorouracil and streptozotocin are viable options [7].

Laparoscopic Operative Technique

Laparoscopic distal pancreatectomy may be performed with or without splenic preservation. Splenic preservation avoids the risk of overwhelming post splenectomy infection, which has an annual incidence of 0.23 - 0.42% per year & a lifetime risk of 5%. In cases in which malignancy is suspected or there is a strong a family

history of pancreatic cancer, the surgeon should consider removing the spleen with the tail of the pancreas en-bloc to achieve a wide resection [Figure 4].

Division of Gastroic Ligament near Inferior Pole of The Spleen

- The gastro colic ligament is opened near the inferior pole of the spleen and posterior aspect of the stomach is exposed [8].
- Short gastric vessels are dissected to the most superior part of the stomach as possible (short gastric vessels are preserved if Wars haw procedure is going to be performed) [8].

Mobilization of the Splenic Flexure

- The splenic flexures mobilized and the meso-colon is dissected away from the Gerota's fascia.
- Gravity allows the retraction of the colon inferiorly and the inferior margin of the pancreas is exposed [8].

Dissection of Inferior Margin of the Pancreas

- The inferior margin of the pancreas is dissected from lateral to medial and the superior mesenteric vein is exposed medially, and the pancreas is mobilized over the superior mesenteric vein [8].

Laparoscopic Distal Pancreatectomy with Splenectomy

- Continue with pancreatic parenchyma transection
- Splenic vessels are isolated and transected
- The spleen is detached from its lateral, superior and posterior attachments [8]

Conclusion

Insulinomas are the most common neuroendocrine tumors of the pancreas and cause hypoglycemia related to endogenous hyperinsulinism. Laparoscopic distal pancreatectomy is treatment of choice for insulinoma. Conservative treatment is recommended when surgery is impossible or contraindicated for inoperable, malignant tumors.

References

1. Antonakis PT, Ashrafian H, Martinez-Isla A (2015) Pancreatic insulinomas: Laparoscopic management. *World J Gastrointest Endosc* 7: 1197-1207.
2. Okabayashi T, Shima Y, Sumiyoshi T, Kozuki A, Ito S, et al. (2013) Diagnosis and management of insulinoma. *World J Gastroenterol* 19: 829-837.
3. Zhao YP, Zhan HX, Zhang TP, Cong L, Dai MH, et al. (2011) Surgical management of patients with insulinomas: Result of 292 cases in a single institution. *J Surg Oncol* 103: 169-174.
4. Norton JA, Kivlen M, Li M, Schneider D, Chuter T, et al. (2003) Morbidity and mortality of aggressive resection in patients with advanced neuroendocrine tumors. *Arch Surg* 138: 859-866.
5. Vezzosi D, Bennet A, Courbon F, Caron P (2008) Shortand long-term somatostatin analogue treatment in patients with hypoglycaemia related to endogenous hyperinsulinism. *Clin Endocrinol (Oxf)* 68: 904-911.
6. Kong MF, Lawden M, Dennison A (2010) Altered mental state and the Whipple triad. *BMJ Case Rep* 2010: bcr08.2009.2158.
7. Karpathakis A, Caplin M, Thirlwell C (2012) Hitting the target: Where do molecularly targeted therapies fit in the treatment scheduling of neuroendocrine tumours? *Endocr Relat Cancer* 19: R73-R92.
8. Ozmen MM, Şahin TT, Gündoğdu E (2014) Laparoscopic Distal Pancreatectomy: Techniques, Pearl Tips and Pitfalls. *Eur J Endosc Laparosc Surg* 1: 132-138.

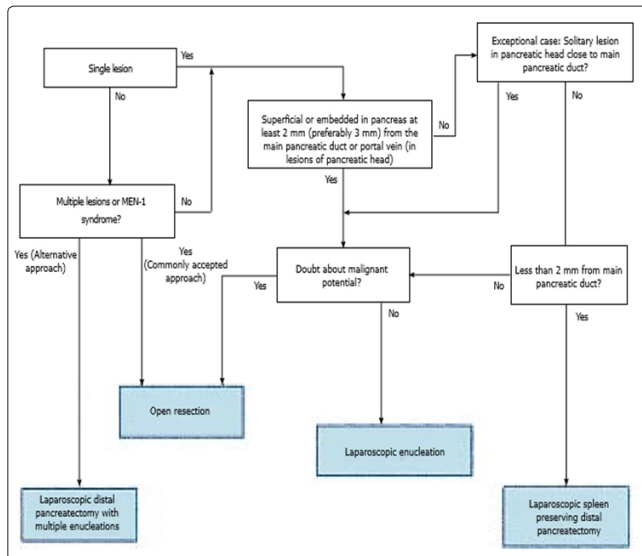


Figure 4: Flow Chart Demonstrating Our Surgical Decision-Making in Pancreatic Insulinomas

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