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Case Report
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Pancreatoduodenectomy for Presumed Malignancy with an Unexpected Final Benign Histopathology: Report of a Case and Review of the Literature

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Abstract

Pancreatoduodenectomy (PD), commonly referred as the Whipple resection with or without pylorous preserving, is the treatment of choice for pancreatic and periampullary malignancies.

Despite recent advances in diagnostic imaging, 5% to 10% of the patients that underwent Whipple's procedure for presumed malignancy had a benign disease in the final histological exam.

The aim of this study is the report of a case and review the literature in cases of presumed pancreatic carcinoma with benign histopathology final exam of the specimen after Whipple's procedure. The crucial role of imaging in preoperative diagnosis so as to decide if the surgery is recommended or not, will be also discussed.

Keywords: Pancreatoduodenectomy; Benign histology; Pancreatic cancer; Diagnosis

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Abbreviations

PD: Pancreatoduodenectomy; MRI/MRCP: Magnetic Resonance Imaging/Magnetic Resonance Cholangiopancreatography; ERCP: Endoscopic Retrograde Cholangiopancreatography; US: Ultrasound Exam; CT: Computed Tomography Scan; EUS-FNA: Endoscopic Ultrasound with FINE Needle Aspiration; PTC: Percutaneous Transhepatic cholangiography

Introduction

Pancreatic cancer accounts as 2% of malignancies, with 5 years survival rate less than 7% [1]. The treatment of choice for pancreatic head and periampullary malignancies is the pancreatoduodenectomy (Whipple's procedure). The mortality rates of this procedure vary between 0% and 9.31% and the morbility remains high at 25%, even in medical centers with high experience [2-4].

Usually a combination of Computed Tomography, Magnetic Resonance Imaging and Magnetic Resonance Cholangiopancreatography (MRI/MRCP), Endoscopic Retrograde Cholangiopancreatography (ERCP) combined with Bruch Biopsy and Endoscopic Ultrasound combined with Fine Needle Aspiration (EUS with FNA) are important diagnostic exams before making the decision of surgery.

Despite advances in imaging techniques, it is estimated that 5% to 10% of patients with presumed malignancy of the pancreas who underwent Whipple resection, will present benign pathology on the final histological exam [2,5].

The purpose of this study is to present a case report where the final histological exam is different from the expected preoperative suspected diagnosis.

It is also important to review the literature of Whipple procedures that have been performed in cases of presumed malignant pancreatic disease and analyzed if the Whipple procedure is the treatment of choice in these cases and if it's recommended.

Case Presentation

A 60 years-old man with painless jaundice and 14 kilograms weight loss in 2 months, visited the Emergency Room (ER) of Venizelio, General Hospital of Heraklion, Crete. The initial Ultrasound

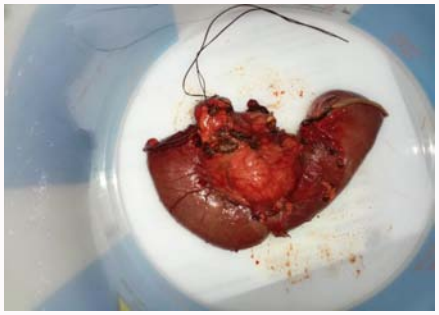

Figure 1: Wipple's procedure specimen.

Figure 2: Wipple procedure (pancreas).

Exam (US) was not diagnostic except for a dilatation of the gallbladder without stones.

The Computed Tomography Scan (CT) which was performed showed a dilatation of the common bile duct without any further findings. Due to a mass near the sphincter of Oddi and a stenosis in the bile duct, Endoscopic Retrograde Cholangiopancreatography (ERCP) was not able to catheterize and without brushing for histology exam. In the third day of hospitalization the jaundice of the patient was elevated.

An unsuccessful Percutaneous Transhepatic Cholangiography (PTC) was conducted with the mention to catheterize the bile duct. The findings were a mass originated from the head of the pancreas as it was indicated by the ERCP. The patient had a persistent painless obstructive jaundice so a Wipple procedure was performed (Figure 1-3). A mass was identified in the head of the pancreas, intraoperatively.

The patient remained for 24 h in the intensive care unit and then remained in the surgical department for 18 days. He was dismissed in generally good condition.

The final histological exam showed an inflammatory mass with cellular atypia originated from the head of the pancreas, including the sphincter of Oddi.

Discussion

There are many recent studies concerning patients who underwent Whipple procedure for malignancy with prevalence of benign disease ranging from 8.4% to 15.6% [6-8]. Pancreaticoduodenectomy (PD) (Whipple's procedure) is the mainstay of treatment for pancreatic head and periampullary malignancies. Despite the progress in imaging techniques, 5% to 10% of patients who underwent Whipple's procedure for a presumed malignant disease, revealed a benign disease in the final pathology exam.

Figure 3: Pancreatico and epaticojejunostomy.

Tompson et al., [9] reported 11 patients with benign findings out of 67 who underwent Whipple procedure from 1978 to 1993. In another study by Tessler et al., [6] in which participated 102 individuals with no tissue diagnosis before the surgery, 27 patients presented final benign pathology. From 1993 to 2004 Kennedy et al., [10] reported that 21 (12.9%) of 162 patients that underwent Wipple surgery had benign findings. In the same study, CT scan, MRI, EUS presented mass lesions in 67% of the patients and they concluded that these imaging tests can be highly accurate in resectable versus unresectable disease but they are not accurate in the differential diagnosis of chronic pancreatitis and pancreatic cancer.

Weber et al., [11] reported an incidence of 4.6% of autoimmune pancreatitis on final exams after Whipple procedure in 1287 patients. Similar results were presented by Van Gulik et al., [12] and Smith et al., [13] with 6% and 5% benign findings, respectively.

Abraham et al., [14] published a retrospective review with 442 patients who underwent Whipple procedure the period 1979-2001. About 9.2% of them presented benign inflammatory disease of pancreas or biliary tract. They concluded that the percentage of benign findings when performing Wipple procedure should not stop surgeons from performing this procedure in patients with suspected malignancy.

Higher incidence of benign disease after Whipple procedure were presented at The John Hopkins Hospital where the 21% of the patients underwent surgery for benign disease and the 16% of them underwent for suspicion of pancreatic cancer [15].

The incidence of benign disease in patients undergoing a PD for presumed pancreatic cancer, varies in different medical centers from 7.25% to 12.96%, despite the progress in diagnostic imaging (CT scan, MRI, ERCP, etc.) and the increased number of EUS/FNA that is performed [3,5].

The use of EUS and FNA revealed in these patients a head mass and in particularly the FNA revealed a diagnosis of "suspicious for cancer" [16]. Studies referred that the use of EUS and ERCP has not decreased the percentage of benign findings after surgery for presumed pancreatic malignancy [3,17,18].

The preoperative investigation of these cases using Computed tomography, MRI and ERCP is useful in selected cases to provided samples with brushing for cytology and histological exam [5,19,20].

Since 2006, endoscopic ultrasound guided fine needle aspiration was introduced routinely. Cytology and tumor markets to determinate the patients who will be treated with resection. Although EUS-FNA has reported diagnostic specificity of 94% it still fails to convince

clinicians of the correct diagnosis when the suspicion of malignancy is high. There are reports with normal EUS-FNA results as missed diagnosis of cancer with disastrous consequences to the patients [3,17,21].

A series of cases that EUS-FNA identified malignant lesions as pseudotumoral masses has been reported [17,18].

Even with all these old and new advanced imaging techniques, there are patients who underwent resection with final histological exams presenting benign pathology.

Performing pancreaticoduodenectomy when the diagnosis is uncertain is considered to be acceptable but we also have to take into consideration the high mortality rates associated with this surgery procedure. In presence of high suspicion of malignancy operation should be considered even if preoperative histology or cytology is negative [2,18,19].

Conclusion

Presence of final exams with benign disease after PD for suspected malignancy even in small percentages seems to be inevitable. The advanced imaging, the use of EUS-FNA, the ERCP procedure, etc., help to reduce the number of the Whipple procedures performed for presumed malignancy with final histological exams for benign disease to 7% to 10%. The ultimate goal is to reduce this number even further.

As long as pre-operative diagnosis will not guarantee a correct diagnosis of benign and malignant disease, the patients undergo surgery for suspected cancer with final exam of benign disease remains a necessary sacrifice.

To sum up, it is of utmost importance to conduct further studies so as to formulate practical criteria for diagnosis of benign disease before surgery.

Consent

Written informed, consent was obtain from the patient of this case report. A copy of the written consent is available for review by the Editor in Chief of this journal.

Authors Contribution

KS, MF and KG analyzed and interpreted the patient's data and were the major contributors to the writing of the manuscript, GD, ES, EV participated in design and coordination. IG, EK and MC help to the draft of the manuscript. All authors read and approved the final manuscript.

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