CASE REPORTS

Multivisceral Resection for Pancreatic Adenocarcinoma. Case Report and Literature Review

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Abstract

Adenocarcinoma of the pancreatic tail remains a malignancy with a generally dismal outcome owing to the delayed presentation of the disease. Surgery remains the goldstandard of treatment for pancreatic ductal adenocarcinoma and complete removal of the cancer confers a definite survival advantage. We report the case of a 48 year old male patient with imagistic findings (CT scan, MRI) that reveal a pancreatic tail tumor with advanced loco-regional invasion and liver metastasis. Multivisceral resection with liver metastasectomy was performed, with postoperative outcome complicated by *Clostridium difficile* infection (CDI). No signs of local recurrence or distant metastasis were present at three months follow-up. Chemotherapy was delayed due to pulmonary thromboembolism 5 weeks after surgery and a severe recurrence of the CDI was diagnosed 9 weeks postoperatively. We consider that a multidisciplinary meeting is mandatory to optimize the outcome in these type of patients.

Keywords: pancreatic cancer, multivisceral resection, *Clostridium Difficile*

Rezumat

Adenocarcinomul de coadă de pancreas rămâne în continuare o tumoră malignă cu un prognostic rezervat datorită diagnosticării tardive. Ablația chirurgicală a tumorii rămâne tratamentul de referință pentru adneocarcinomul ductal de pancreas, înlăturarea completă a tumorii fiind cu siguranță asociată cu o îmbunătățire a ratei de supraviețuire. În această lucrare vă prezentăm cazul unui pacient de 48 de ani diganosticat prin intermediul mijloacelor moderne de imagistică (CT și RMN) cu o tumoră de coadă de pancreas invazivă loco-regional și cu metastaze hepatice. S-a efectuat rezecție multiviscerală și a metastazelor hepatice, cu evoluție postoperatorie complicată de apariția unei infecții cu *Clostridium difficile* (CDI). Nu s-au înregistrat recurențe locale sau metastaze la 3 luni de la intervenția chirurgicală. Datorită trombembolismului pulmonar ce a survenit la 5 săptămâni și unei recurențe severe a infecției cu *Clostridium difficile* la 9 săptămâni de la intervenție, chimioterapia a fost întârziată. În concluzie, considerăm colaborarea ininterdisciplinară esențială în aceste cazuri, cu scopul optimizării rezultatelor.

Cuvinte cheie: cancer de pancreas, rezecție multiviscerală, *Clostridium Difficile*

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INTRODUCTION

Pancreatic cancer (PC) remains a deadly disease with a dismal prognosis in which the mortality rate nearly equals its incidence[1,4]. Despite advances in modern chemoradiotherapy, the best and only chance of cure for patients with PC is an oncological surgical resection aimed at complete removal of all gross and microscopic disease[5]. Early disease and curative-intent surgery are the best predictors of outcome. Locally advanced cancer of the pancreatic tail involving adjacent organs is often considered unresectable. Radical distal pancreatectomy with en bloc resection of the invaded viscera with or without vascular reconstruction was introduced to treat these tumors[2,3]. Tumors of the body and tail have evidence of involvement of surrounding structures either by tumor infiltration or inflammatory adhesions. In such circumstances, it is advisable to perform en bloc resections to obtain negative surgical margins[6]. According to Shoup, multivisceral resections are technically feasible and, based on the limited data available, these resections are associated with improved survival (5-year survival rates of 16–22%)[7,8]. Given the high morbidity and mortality associated with these procedures, they should be performed only when the possibility of achieving R0 seems distinctly feasible[3,6,8].

MATHERIAL AND METHOD

We report the case of a 48 year old male patient, heavy smoker (40 cigarettes per day for 22 years), referred by hospital where he was diagnosed with retropancreatic tail abscess due to Hinchey I acute diverticulitis of the descending colon that was treated with antibiotics for two weeks (ceftriaxone and metronidazole). At admission, the patient presented nausea and vomiting, chills and fever higher than 38°C, with spontaneous pain in the left flank, left hyponchondrium and left lower hemithorax. Lab tests revealed leukocytosis (11830/mm^3), dyslipidemia and elevated CA 19.9 levels (686 U/ml). The CT scan with contrast (Figure 1,2) and MRI suggested a 7/5 cm pancreatic tail tumor with invasion of the splenic artery, vein and the left adrenal gland, with liver metastasis in segment II. Upper endoscopy showed no pathological findings and lower endoscopy revealed uncomplicated diverticulosis of the descending and sigmoid colon. Spirometry demonstrated obstructive ventilatory disorder with normal VEMS and decreased VEMS/CV values.

During surgery, a 10/10 cm pancreatic tail tumor (Figure 3) with invasion of the splenic artery and vein and posterior development in the left adrenal gland and kidney was found (Figure 4). A segment of 3 cm
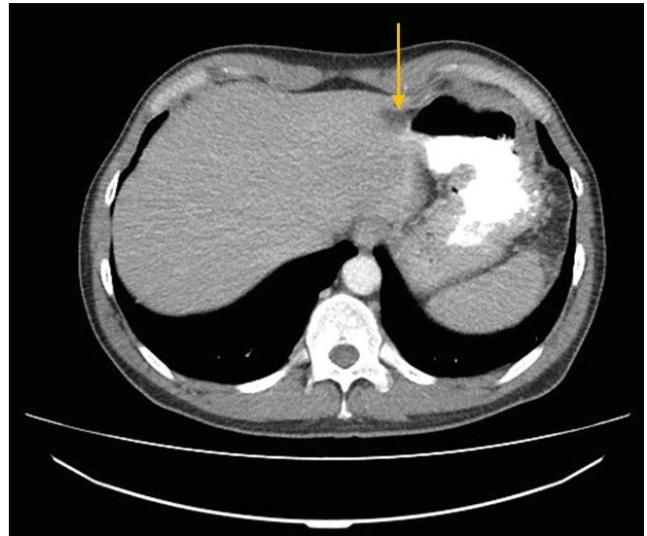

Figure 1. Liver metastasis - Segment II.

Figure 2. Pancreatic tumor with posterior invasion.

of the greater curvature of the stomach and left hemidiaphragm (Figure 5) were adherent to the tumor and a 1 cm superficial metastasis was present in segment IV of the liver and a 3/3 cm metastasis in segment II (Figure 5). Frozen section biopsy from the tumor, the anterior surface of kidney and diaphragm showed pancreatic adenocarcinoma. A caudal splenopancreatectomy with en bloc gastric wedge resection, left andrenalectomy and nephrectomy, resection of the invaded left diaphragm, atypical hepatic resection of segment II, thermal ablation with Covidien Cooltip of the liver metastasis in segment IV, excision of the lesser omentum, periesophageal and left diaphragm peritoneum. The gastric resection was performed using linear staplers. Pancreatic resection was completed by TA stapler with reinforcement of the remaining pancreatic stump with continuous monofilament running suture. The

Figure 3. Pancreatic tail tumor.

Figure 4. Pancreatic tail tumor – posterior development (posterior and superior aspect).

patient received antibioprophylaxy with three doses of Cefoperazone/Sulbactam.

RESULTS

The postoperative course was simple during the first week, with oral contrast intake X-ray exam in postoperative day 5 that revealed no gastric fistula. Analogues of octreotide (Sandostatin) were used for 5 days. The CT scan in postoperative day 7 showed a 5/5/8 cm subdiaphragmatic collection with effective drainage and normal amylase drainage levels. In postoperative

Figure 5. 1- Hepatic segment II with adjacent lesser omentum and diaphragmatic peritoneum; 2- Left kidneywith left adrenal gland; 3 – Resected diaphragm and left costodiafragmatic sinus; 4 - Segment IV liver metastasis.

day 14, the patient presented persistent diarrhea with positive tests for *Clostridium difficile* infetion (CDI). The outcome under antimicrobial therapy for 12 days with Vancomycin 1 g per day (250 mg at 6 hours, orally intake) and Metronidazol 1 g per day (500 mg at 12 hours, oral intake) was favorable. The Clostridium test was negative in day 7 of antimicrobial therapy.

The pathology exam revealed poorly differentiated pancreatic ductal adenocarcinoma with necrosis and tumor embolism in angiolimfatic peripancreatic tissue; peri and intraneural tumoral invasion; adenocarcinoma metastasis in 10 of 25 lymph nodes; spleen with poorly differentiated adenocarcinoma infiltration; left kidney with adenocarcinoma infiltration of the capsula, subcapsular tissue and in the pericapsular fibro-adipose tissue; left ureter with no signs of infiltration; gastric wall and lesser omentum with no signs of adenocarcinoma; liver metastasis with adenocarcinoma infiltration; left diaphragm and pleural sinus with poorly differentiated adenocarcinoma cells.

The patient was discharged postoperative day 25. Ten days later, despite thromboprophylaxis with low molecular weight heparin, patient was admitted in another hospital for bilateral pulmonary thromboembolism and right superior lobar pneumonia, with favorable outcome in the Intensive Care Unit under therapy with heparine and wide-spectrum antibiotherapy with Piperaciline-Tazobactam and Moxifloxacin for three weeks. Whole-body CT scan with contrast

3 months after surgery showed no recurrence or distant metastasis, but chemotherapy is currently delayed by severe recurrence of Clostridium difficile infection, with positive cultures for toxin A after 14 days of treatment.

DISCUSSION

Ductal pancreatic carcinoma is currently the fourth most common fatal cancer disease with a survival rate of less than 5% when all stages are considered. Other malignant pancreatic tumors have markedly better prognoses. Even after complete resection and adjuvant chemotherapy, the 5-year survival rate is less than 20-25%[11]. To obtain complete removal of pancreatic cancer, we resorted to en bloc resection that entailed removal of adjacent viscera that were grossly infiltrated by the tumor. According to Ozaki et al. there has been considerable confusion in the literature as to the definition of extended resections. Some authors have included splenectomy as an extended resection for a pancreatic body and tail tumor[10]. Others have performed extended resections including gastrectomy even in the absence of gross invasion[8-10]. Thus, multivisceral resections should strictly be defined as those resections that include removal of adjacent viscera that are not normally removed during the course of the operation but in whom gross involvement by the tumor entails their resection en bloc to achieve an R0 resection[9,12]. Improved safety of pancreatic surgery has led to consideration of more aggressive approaches, such as resection for primary pancreatic ductal adenocarcinoma (PDAC) with metastatic disease (M1), which can be performed with acceptable safety in highly selected patients[2]. Considering the patient age and no major comorbidities, despite the failure of imaging studies to define the extended invasion, we opted for en bloc resection in this case in order to achieve an R0 resection. The postoperative outcome was complicated by CDI. This occurs especially in patients with cancer and immunodeficiency disorders due to the resource consumption disease and can be a major health system problem, with prolonged hospital stay and increased costs. Risk factors associated with CDI in general surgery patients are poorly characterized. Recent studies show that while the incidence and severity of MR *Staphylococcus aureus* infection is decreasing, the incidence of CDI continues to escalate with increasing resistance to medical therapy[13-15]. From the well-known risk factors for CDI, the patient had two: decreased immunity and prolonged use of antibiotics before surgery[16]. According to Zerey et al. imunocompromised patients undergoing surgical interventions can lead to more virulent strains of CDI[17], probably this being the reason for the severe recurrence that is currently restraining the patient from adjuvant chemotherapy.

CONCLUSIONS

Curative resection is the only potential cure for patients with pancreatic cancer, but some patients present with advanced tumors that are not suited for standard pancreatic resection. Multivisceral resections may be performed with increased morbidity but comparable mortality and long-term prognosis as compared with standard pancreatic resections at high volume centers. The evidence for the benefit of this type of aggressive surgery on overall survival and quality of life is so far lacking, the published reports being conflicting and often confusing. Therefore we conclude that complex resections should only be undertaken in high volume specialized centers of pancreatic surgery after careful assessment of the risk benefit ratio in the individual patient.

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