

Distal pancreatectomy with celiac axis resection for locally advanced pancreatic carcinoma: case report

Pancreatectomia distal com ressecção do eixo celíaco para carcinoma pancreático localmente avançado: relato de caso

Renato Morato Zanatto¹ , Patrícia Medeiros Milhomem Beato², Maurício José Vieira³, Celso Roberto Passeri¹

ABSTRACT

Long-term survival of pancreatic ductal adenocarcinoma after surgery is still rare. One of the main reasons for unresectability is the tumor invasion of the main vessels, such as the celiac axis, common hepatic artery and superior mesenteric artery. The optimal management of these patients is controversial. Despite the challenges on the topic, we present a case of pancreatic ductal adenocarcinoma with invasion of the celiac axis treated with pancreatectomy and vascular resection plus perioperative chemoradiotherapy. After 30 months of follow-up, hepatic and peritoneal recurrence were identified. Palliative chemotherapy was administered until disease progression and death in March 2020. Surgical resection when used in selected patients, proved to be feasible with acceptable morbidity. Besides that, the aggressive surgical approach associated with multimodal schemes provided an improvement in disease-free and overall survival.

Keywords: Neoadjuvant therapy; Pancreatic neoplasms; Surgery.

- 1.Hospital Amaral Carvalho, Gastrocirurgia - Jaú - São Paulo - Brazil
- 2.Hospital Amaral Carvalho, Oncologia - Jaú - São Paulo - Brazil
- 3.Diagi - Clínica de diagnóstico por imagem SS, Radiologia - Jaú - São Paulo - Brazil

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Correspondence author: Renato Morato Zanatto

E-mail: renato.zanatto@gmail.com

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RESUMO

A sobrevida a longo prazo do adenocarcinoma ductal pancreático após a cirurgia ainda é rara. Um dos principais motivos da irrecesecabilidade é a invasão tumoral dos principais vasos, como o eixo celíaco, a artéria hepática comum e a artéria mesentérica superior. O manejo ideal desses pacientes é controverso. Apesar dos desafios no assunto, apresentamos um caso de adenocarcinoma ductal pancreático com invasão do eixo celíaco tratado com pancreatectomia e ressecção vascular associada à quimiorradioterapia perioperatória. Após 30 meses de acompanhamento, foram identificadas recidivas hepática e peritoneal. A quimioterapia paliativa foi administrada até a progressão da doença e óbito em março de 2020. A ressecção cirúrgica, quando utilizada em pacientes selecionados, mostrou-se viável com morbidade aceitável. Além disso, a abordagem cirúrgica agressiva associada a esquemas multimodais proporcionou melhora na sobrevida livre de doença e global.

Descritores: Terapia neoadjuvante; Neoplasias pancreáticas; Cirurgia.

INTRODUCTION

Approximately 57,600 people develop exocrine pancreatic cancer each year in the United States and more than 90% of them are expected to die from their disease.⁽¹⁾ The most common histological type is pancreatic ductal adenocarcinoma (PDAC), responsible for more than 85% of cases. Surgical resection is the only potentially curative treatment. Unfortunately, due to the late presentation of the disease, only 15 to 20% of patients are candidates for pancreatectomy.⁽²⁾

Vascular involvement is related to the low rates of resectability observed in the disease, but its relationship with the prognosis is controversial. Resection of the portal vein (PV) and superior mesenteric vein (SMV) combined with pancreatectomy is a safe and viable procedure, which may increase the number of patients undergoing potentially curative resection and, therefore, provides important survival benefits for selected cases.^(3,4) On the other hand, few data in the literature are available to support arterial resection in PDAC. Surgical treatment in these cases is infrequent and when performed, it is related to an increase in morbidity and mortality.^(5,6)

Currently, chemotherapy has been the initial treatment with locally advanced or unresectable PDAC. The approach aims to “shrinkage the tumor volume” before surgical exploration using chemotherapy with or without RT. As demonstrated in ESPAC-5F, a prospective, multicenter international phase II randomized four-arm clinical trial that compared immediate surgery with gemcitabine neoadjuvant plus capecitabine (GEMCAP) or FOLFIRINOX or chemoradiotherapy (CRT) in PDAC with borderline resectable disease. The results demonstrated the one-year survival rate was 40% [95% CI, 26%-62%] for immediate surgery and 77% [95% CI, 66%-89%] for neoadjuvant therapy.⁽⁷⁾ Regarding to the addition of RT in the neoadjuvant treatment, unfortunately, it is not known whether it contributes to the R0 resection rate in patients treat-

ed with aggressive combination regimens, such as FOLFIRINOX.^(7,8)

We present a case of PDAC with invasion of the celiac axis (CA) treated with surgical resection after proven disease stability with neoadjuvant chemotherapy, despite the controversies and challenges on the subject.

CASE REPORT

A 42-year-old, female, previously healthy patient presented with low back pain on the right and 7kg weight loss for 4 months. Contrast-enhanced CT showed a nodule in the body of the pancreas 2.6x2.4cm involving the bifurcation of the CA. Anatomical variations were not observed (Figure 1) and CA 19-9 was in 130. Endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) evidenced nodule of the pancreas body of 3,2x3,0cm and the involvement of the splenic artery emergence near the celiac trunk with histopathologic findings adenocarcinoma. PET scan showed the nodule of the pancreas body with SUV 5,8 (Figure 2).

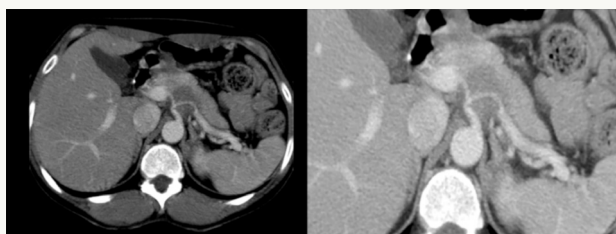


Figure 1. Contrast-enhanced CT showed a nodule in the body of the pancreas 2.6x2.4 cm involving the bifurcation of the celiac axis

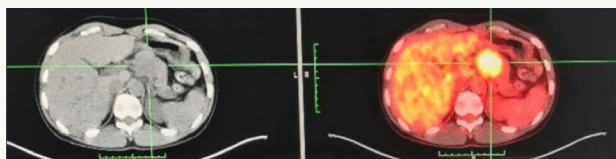


Figure 2. Positron emission tomography (PET) scanning showed the nodule of the pancreas body with SUV 5,8

After multidisciplinary discussion, we decided to start treatment for this clinical staging III-cT4N0M0 patient, with chemotherapy consisting of 3 cycles of the FOLFIRINOX regimen. In her tumor access after chemotherapy, the patient was classified by the RECIST 1.1 method as a stable disease.

Surgical exploration was carried out on September 2016, it took place without complications for duration of 240min and without the need for blood transfusion. Preoperative preparation included a vaccine against encapsulated germs. After complete the dissection and repair the vascular structures, surgery included a block resection of the body and tail of the pancreas, celiac axis and branches, spleen and stomach (Roux-en-Y reconstruction). Primary anastomosis of common hepatic artery (CHA) with CA was made and suture of the stump and pancreatic duct (Figure 3). Histological work-up revealed R0 resection, PDAC, G2, and ypT4N1Mx.



Figura 3. Photographs showing pancreatic stump, superior mesenteric vein, primary arterial anastomosis of the common hepatic artery with celiac axis

The patient's clinical course was uneventful, only transient alteration of liver functions, remaining in the intensive care unit for 48 hours and being discharged on the 9th postoperative day. It evolves without pancreatic fistula but with weight loss and difficult to control diarrhea managed with pancreatic enzyme replacement and nutritional support. Received adjuvant CRT (gemcitabine plus RT) due to the high-risk of developing metastases.

After 30 months of oncological follow-up, the patient evolved with an elevation of CA19.9 - 3000. Restag-

ing tests and EUS-FNA biopsy showed hepatic and peritoneal recurrence. FOLFIRINOX in an adjusted dose was administered until disease progression followed by sequential treatments of gemcitabine and capecitabine managed through disease progression and death on March 2020.

DISCUSSION

Long-term survival of PDAC after surgery is still rare. One of the main reasons for unresectability is the tumor involvement of the main vessels, such as the CA, CHA, and SMA.⁽⁵⁾ The optimal management of these patients is controversial, and there is no standard approach.⁽⁹⁾

The aim of the staging workup is to delineate the extent of disease spread and identify patients who are eligible for resection or preoperative treatment.⁽¹⁰⁾ Imaging exams should be analyzed with special attention to vascular variations of the CHA, because, when not detected, may represent a risk of accidental iatrogenic injury in vessels with consequent hepatic infarction.⁽¹¹⁾ An initial assessment of resectability can usually be made based upon the CT scan or magnetic resonance imaging (MRI). The utility of positron emission tomography (PET) scans in the staging of suspected PDAC remains controversial.⁽¹²⁾

The lack of staging laparoscopy did not compromise the outcome of the treatment of this case. However, based on current data, this approach should be used⁽¹³⁾ with occult metastases identified in 29% of patients with resectable tumor on CT scan.⁽¹⁴⁾

EUS-FNA or CT-guided percutaneous core needle biopsy (CT-CNB) is mandatory and provide histologic diagnostic before neoadjuvant therapy, as well an assessment of the serum levels of CA 19-9.⁽¹²⁾ This approach increase the amount of patients becoming eligible for surgery, avoiding unnecessary operations on tumors with aggressive biology that evolve despite neoadjuvant therapy.⁽²⁾

Tumors with limited venous involvement, resection of the portal vein (PV), and superior mesenteric vein (SMV) combined with pancreatectomy provide an increase in the number of patients undergoing potentially curative resection and, therefore, important survival benefits for selected cases.^(3,4) On the other hand, unresectable PDAC with arterial involvement, resections are performed infrequently, with most of tumors treated non-surgically with chemotherapy or chemotherapy associated with radiotherapy (CRT).^(15,16)

The 5-year overall survival (OS) for metastatic PDAC remains at 2%,⁽¹⁵⁻¹⁷⁾ with a median life expectancy of <1 year with current treatments.^(18,19) In our report, the patient underwent pancreatectomy with vascular resection of CA after neoadjuvant therapy. Received adjuvant CRT (gemcitabine plus RT) due to the high risk of developing metastases. Concerning, hepatic artery reconstruction, albeit postoperative liver infarction is unusual, it is a potentially deadly complication. There are some reports standing the use of

preoperative hepatic artery embolization or hepatic common artery ligation by laparoscopy to promote development of collateral pathways prior to pancreatectomy with hepatic artery resection.⁽²⁰⁾ Due to this specific approaches, hepatic artery reconstruction could be avoided in few previous accessed cases.

In our report, after perform a primary anastomosis of CHA with CA, a total gastric resection was the option founded to remediate fund gastric ischemia, arising from splenic and left gastric artery ligation. The right gastroepiploic arcade was not enough to provide fund gastric irrigation and the patient did not have a distal left gastric artery stump with matching gauge to allow anastomosis without microsurgery.⁽²¹⁾

CONCLUSION

Although complex, pancreatectomy with vascular resection proved to be viable with acceptable morbidity in our service. The OS achieved in our report was 42 month. To maximize the result, it was mandatory a careful selection of the patient, neoadjuvant chemotherapy, and adequate radiological evaluation.

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