

Atypical Presentation of Advanced Tail Pancreatic Adenocarcinoma – Splenic Abscess Mimicking a Pseudocyst: Case Report

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Apresentação Atípica de Adenocarcinoma Avançado de Cauda de Pâncreas – Abscesso Esplênico Mimetizando Pseudocisto: Relato de Caso

Presentación Atípica de Adenocarcinoma Avanzado de la Cola del Páncreas – Absceso Esplénico que Simula un Pseudoquist: Informe de Caso

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ABSTRACT

Introduction: Pancreatic cancer is highly lethal and occurs at similar rates in men and women, with a slight predominance in males. In Brazil, it accounts for a small fraction of cancer diagnoses but represents a disproportionately high share of cancer-related deaths. Due to its complex and predominantly late diagnosis, therapeutic options are often limited. **Case report:** A 64-year-old female patient with a history of systemic arterial hypertension, prior cholecystectomy, and tobacco use presented to the emergency department with left flank abdominal pain and signs of peritoneal irritation. Contrast-enhanced abdominal computed tomography revealed a splenic abscess associated with pancreatic tail necrosis, with imaging features suggestive of a pancreatic pseudocyst, whose histopathological analysis confirmed a diagnosis of poorly differentiated pancreatic adenocarcinoma. This report describes an atypical presentation of pancreatic tail adenocarcinoma with extensive tissue necrosis and splenic abscess formation. **Conclusion:** The association between pancreatic necrosis and splenic abscess secondary to neoplasia indicates locally advanced or metastatic disease and is associated with a poorer prognosis, including reduced disease-free survival and overall survival. This case highlights the importance of considering differential diagnoses and atypical clinical presentations. Cystic lesions complicated by abscess formation may mimic pseudocysts but may in fact represent tumors with atypical presentation.

Key words: Pancreatic Neoplasms/diagnostic imaging; Carcinoma, Pancreatic Ductal/diagnosis; Risk Factors; Case Reports.

RESUMO

Introdução: O câncer de pâncreas apresenta alta letalidade e ocorre com frequência semelhante entre homens e mulheres, com leve predominância no sexo masculino. No Brasil, representa uma pequena fração dos diagnósticos de câncer, mas responde por uma proporção significativamente maior das mortes por neoplasia. Por seu diagnóstico complexo e majoritariamente tardio, as condutas terapêuticas tornam-se escassas. **Relato do caso:** Paciente feminina, histórico de hipertensão arterial sistêmica, colecistectomia prévia e tabagismo, procura a emergência por dor abdominal em flanco esquerdo e sinais de irritação peritoneal. Na tomografia de abdome com contraste, é descrito abscesso esplênico associado à necrose de cauda de pâncreas, com comportamento radiológico de pseudocisto pancreático, cujo laudo histopatológico confirmou diagnóstico de adenocarcinoma pouco diferenciado de pâncreas. Nesse relato de caso, será descrita a apresentação atípica de um adenocarcinoma de cauda de pâncreas com necrose tecidual e abscesso esplênico. **Conclusão:** A associação entre necrose pancreática e abscesso esplênico secundário à neoplasia indica doença localmente avançada ou metastática e está associada a pior prognóstico, com redução da sobrevida global. Este caso reforça a importância de considerar a diversidade de diagnósticos diferenciais e apresentações clínicas atípicas. Lesões císticas complicadas por abscesso podem mimetizar pseudocistos e, na realidade, corresponder a tumores com apresentação atípica.

Palavras-chave: Neoplasias Pancreáticas/diagnóstico por imagem; Carcinoma Ductal Pancreático/diagnóstico; Fatores de Risco; Relatos de Casos.

RESUMEN

Introducción: El cáncer de páncreas presenta alta letalidad y se observa con frecuencia similar en hombres y mujeres, con un leve predominio en los varones. En el Brasil, representa una pequeña fracción de los diagnósticos de cáncer, pero contribuye en una proporción mayor al total de muertes por neoplasias. Su diagnóstico complejo y, en la mayoría de los casos, tardío, limita de manera importante las opciones terapéuticas disponibles. **Informe del caso:** Paciente femenina con antecedentes de hipertensión arterial sistémica, colecistectomía previa y consumo de tabaco acudió al servicio de emergencia por dolor abdominal en el flanco izquierdo acompañado de signos de irritación peritoneal. La tomografía computarizada de abdomen con contraste evidenció un absceso esplénico asociado a necrosis de la cola pancreática, con características radiológicas compatibles con un pseudoquist pancreático. El examen histopatológico posterior confirmó un adenocarcinoma pancreático poco diferenciado. En este informe de caso se describe una presentación inusual de adenocarcinoma de cola pancreática, manifestado con necrosis tisular y absceso esplénico. **Conclusión:** La coexistencia de necrosis pancreática y absceso esplénico secundario a una neoplasia sugiere enfermedad localmente avanzada o metastásica, y se asocia a un pronóstico desfavorable, con reducción de la supervivencia global. Este caso subraya la relevancia de considerar la diversidad de diagnósticos diferenciales y presentaciones clínicas atípicas. Las lesiones quísticas complicadas por absceso pueden mimetizar pseudoquistes y, en realidad, corresponder a tumores con presentación atípica.

Palabras clave: Neoplasias Pancreáticas/diagnóstico por imagen; Carcinoma Ductal Pancreático/diagnóstico; Factores de Riesgo; Informes de Casos.

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INTRODUCTION

Pancreatic cancer is ranked worldwide as the 12th leading cause of cancer in men and 11th in women, with a slight predilection for males¹. In Brazil, according to the National Cancer Institute (INCA), it is responsible for about 1% of all types of cancer diagnosed and by 5% of total deaths from cancer. Disregarding non-melanoma skin tumors, pancreatic neoplasm ranks 14th among the most frequent cancer types². Its symptoms include abdominal pain, weight loss, and jaundice¹. Due to its complex and predominantly late diagnosis, therapeutic options are often limited. Therefore, the presence of necrotic pancreas lesions in imaging exams is related to an advanced stage, lymphadenopathy, and metastatic disease³. Whereas a splenic abscess is believed to be related to ductal obstruction of the neoplastic tissue that contributes to draining/fistulization of pancreatic liquid to the abdominal cavity, in addition to the anatomical proximity of the sites in question, which enables infection by contiguity⁴. Currently, the only healing treatment is surgery followed by adjuvant chemotherapy, which is viable for a restricted portion of the population due to late diagnosis³⁻⁵.

This study has been approved by the Research Ethics Committee of the Dentistry Faculty of *Universidade Federal do Rio de Janeiro (UFRJ)*, approval report number 7,693,594 (CAAE (submission for ethical review): 87693125.9.0000.0268), in compliance with Resolution 466/2012⁶ of the National Health Council.

CASE REPORT

Female patient, 64 years, with a previous diagnosis of systemic arterial hypertension, prior cholecystectomy, smoking 50 packs a year, 30 kg/m² BMI, and recent herpes-zoster treatment, seeks the emergency ward of the Galeão Air Force Hospital (*Hospital da Força Aérea do Galeão*) with left flank abdominal pain and signs of peritoneal irritation associated with coughing, fever, and influenza symptoms. Symptoms started in November 2024. Upon admission, the patient was treating a respiratory infection, using amoxicillin-clavulanate and azithromycin, on her fourth day of antibiotics. The clinical condition was compatible with a prior episode of abdominal pain that occurred four months before hospitalization. At the time, the patient was submitted to an abdominal computerized tomography scan with contrast, whose verbal report did not show significant alterations. As a course of action, symptomatic treatment was prescribed, and the patient was referred to the gastroenterology clinic.

Upon hospitalization, the patient was lucid, oriented, hemodynamically stable, and eupneic in ambient air. Imaging and laboratory exams were conducted. A new chest and abdomen tomography with contrast showed a small pleural effusion to the left, band-like opacities and dense atelectatic streaks in the lower lobes, a necrotic lesion of the pancreatic tail, spleen with a heterogeneous appearance, bordered by fluid and densification of adjacent fats, and a hypodense nodular image in the liver. (Figure 1A).

Cultures were collected, intravenous antibiotic therapy was initiated, analgesia was optimized with opioids, and oral diet was suspended due to suspicion and characteristics of a pseudocyst in the imaging. The patient was reintroduced to a postpyloric nasoenteric tube inserted under upper digestive endoscopy, which showed a mild enanthematous gastritis. Later, the biopsy showed evidence of *Helicobacter pylori*.

After a week of hospitalization, the patient underwent an upper abdomen MRI, which showed an expansive lesion of poorly-defined limits and infiltrative aspect originating on the pancreatic tail, extending posterolaterally through the splenic parenchyma in its anteroinferior portion, infiltrating it, associated with a heterogeneous fluid collection, with thickened walls, septated and with bloody signal content in the left subphrenic space; in addition, a small adjacent pleural effusion was also detected and the signal heterogeneity of the adjacent retroperitoneal fat was determined, possibly due to infiltration. A hepatic nodule with regular margins was also noted, hypointense on T1 and hyperintense on T2, with a central focus and signal compatible with cystic/necrotic degeneration, with intense diffusion restriction, hypovascular, located in segment VII, measuring approximately 3.6 cm, suggestive of secondary implantation.

There was also other smaller nodules with intense restriction to diffusion, one in segment IVa, measuring 1.1 cm, another in segment VIII, measuring 0.7 cm, another in segment IVa/II, measuring 1.0 cm, another in segment VII/VIII, measuring 0.8 cm, and one sub-capsular in segment VI, measuring 1.2 cm, of indeterminate appearance due to the small size and motion artifacts of the images with possibly suspicious contrast. With increased infectious parameters (leukocytosis 11,500, hemoglobin 9.8, and C-reactive protein 18.3) persisting, and a new radiological image, along with the infectiology ward, antibiotic therapy was escalated to piperacillin/tazobactam despite the absence of bacterial growth in peripheral blood cultures.

Despite the initial suspicion of pancreatic pseudocyst, the patient presented clinical deterioration, with decreased oxygen saturation and severe abdominal pain. New

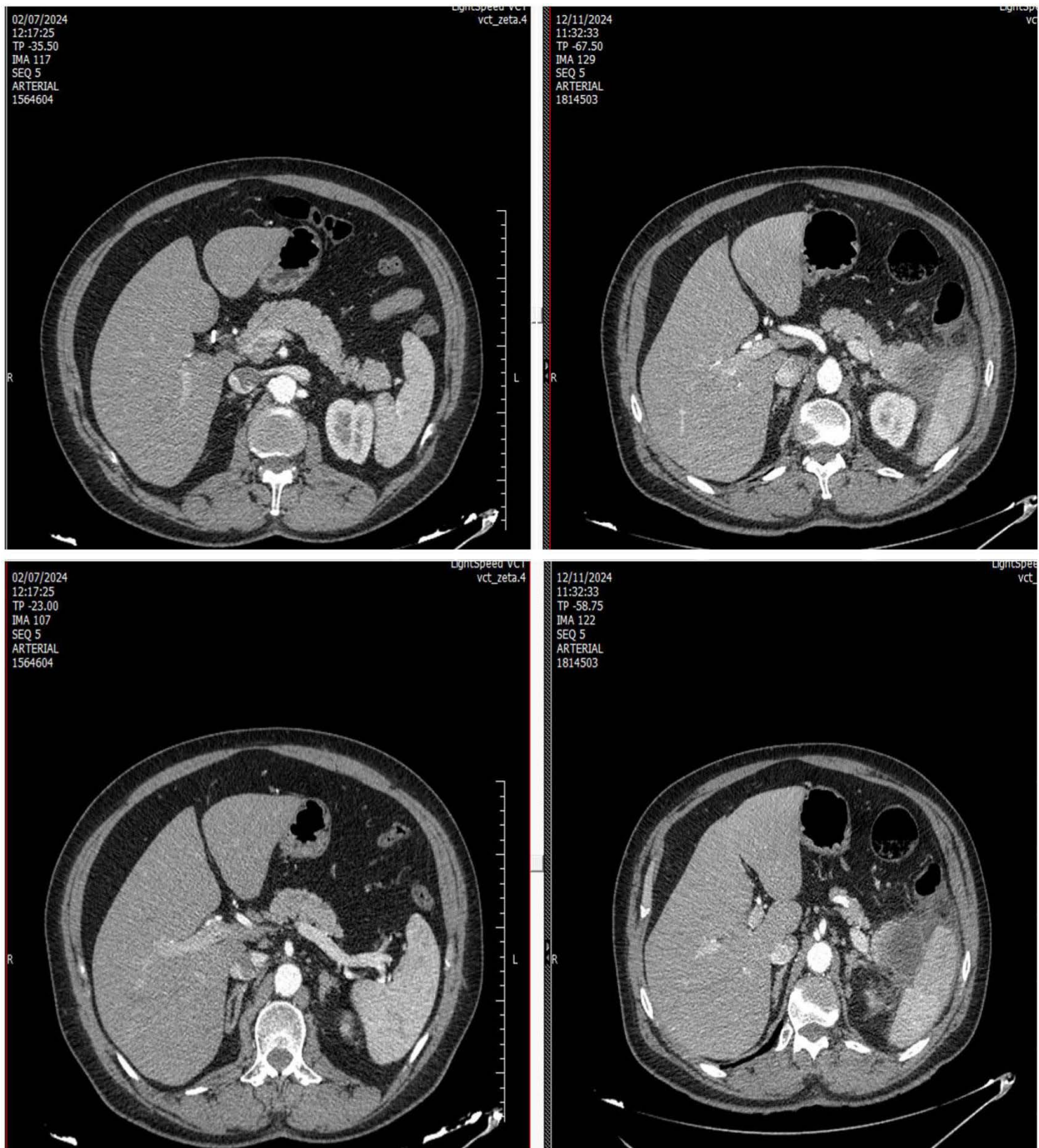


Figure 1A. High-resolution computerized tomography (CT) scans done during hospitalization. To the left, the image from July/24 and to the right, the image from November/24. Images obtained on arterial phase. In November 2024, a necrotic lesion of the pancreatic tail was noted, along with a heterogeneous-appearing spleen bordered by fluid and thickening of adjacent fats not previously observed in an imaging examination performed in July

image and lab tests were requested (Table 1). A new CT scan (Figure 1B) showed expansion of the subphrenic collection and left pleural effusion, indicating the need for percutaneous drainage and relief thoracentesis.

The microbiological result of the drained splenic abscess was negative for bacterial growth in culture medium. However, amylase and lipase dosages in the liquid showed high values, 950 U/L and 20,500 U/L,

respectively. After the surgical approach, there was no need for regular analgesia. However, there was an urticarial reaction attributed to piperacillin-tazobactam, which prompted a change in antibiotic to cefepime.

A hepatic lesion biopsy was conducted on 12/10/24. The patient maintained antibiotic therapy until 12/20/24, with infectious parameters showing an improvement curve. The histopathological released on that date showed a

Table 1. Laboratory evolution dates (from left to right, in ascending order) from the beginning of symptoms to drainage

Parameters	11/12/2024	11/19/2024	11/22/2024	11/30/2024
Leukocytes	13,000	11,900	11,500	9,200
Hemoglobin	13.5	10.3	10.3	8.8
Hematocrit	40.4	31.5	31.5	26.6
Platelets	303,000	353,000	356,000	461,000
C-reactive protein	14.5	18.3	18.5	17.9
Creatinine	0.5	0.6	0.7	0.5
Urea	24	17	19	29
AST	13	25	18	21
ALT	15	36	25	35
Albumin	4.2	3.6	3.1	2.9
Direct bilirubin	0.1	0.2	0.3	0.2
Indirect bilirubin	0.4	0.4	0.3	0.4
Alkaline phosphatase	46	59	54	70
Gamma GT	33	98	109	184
Amylase	30		22	20
Lipase	78		94	83
INR	1.1	1.1	1.1	1.1

Captions: AST = aspartate aminotransferase; ALT = alanine aminotransferase; Gamma GT = gamma-glutamyltransferase; INR = international normalized ratio.

poorly differentiated neoplasm. An immunohistochemical stain was requested to clarify histogenesis.

The immuno-histochemical result, issued in January 2025, confirmed adenocarcinoma of probable primary site in the pancreatobiliary system or gastrointestinal tract, particularly in the stomach, due to evidence of neoplastic cells with immunopositivity for anti-cytokeratin 19 antibodies (diffuse) and CA19.9 antigen (rare cells). The Ki-67 antigen antibody shows a high rate of cell proliferation (greater than 75%) (Figure 2).

DISCUSSION

The patient in question already presented potential risk factors for pancreatic neoplasm, like obesity and smoking. Although the imaging exam before hospitalization showed no evidence of neoplasm, the patient evolved with herpes-zoster in that interval, which could suggest signs of immunosuppression, given that it is twice as common in that population⁷.

Splenic abscess, in general, is the result of neoplasms, contiguous or metastatic infectious processes, trauma, splenic infarction, or immunosuppression. In this case, the presence of high amylase and lipase in the

drained splenic collection suggests pancreatic origin, possibly due to ductal rupture induced by advanced tumor necrosis, similar to the behavior of a pancreatic pseudocyst. The precursor cystic lesion involved, although the pancreatic tail is not the most common location for involvement, would potentially be an intraductal papillary mucinous neoplasm. Its initial manifestation varies from asymptomatic to even causing pancreatitis due to the communication with the main pancreatic duct⁸.

A similar description of this case was done in 2013, in Beijing, China, with an abscess secondary to infection by *Streptococcus gallolyticus pasterianus* as the primary presentation of pancreatic cancer⁹. In the current setting, however, the prolonged antibiotic therapy previously used by the patient may have reduced sensitivity to microbiological methods, justifying the absence of growth in both blood and abscess cultures.

Although fever is the most frequent symptom, the classical triad of fever, abdominal pain, and splenomegaly happens in a few cases⁴⁻⁵. In this situation, fever was associated with intense abdominal pain, followed by signs of peritoneal irritation.

In the literature, treatment is expected to be performed with percutaneous drainage or splenectomy,

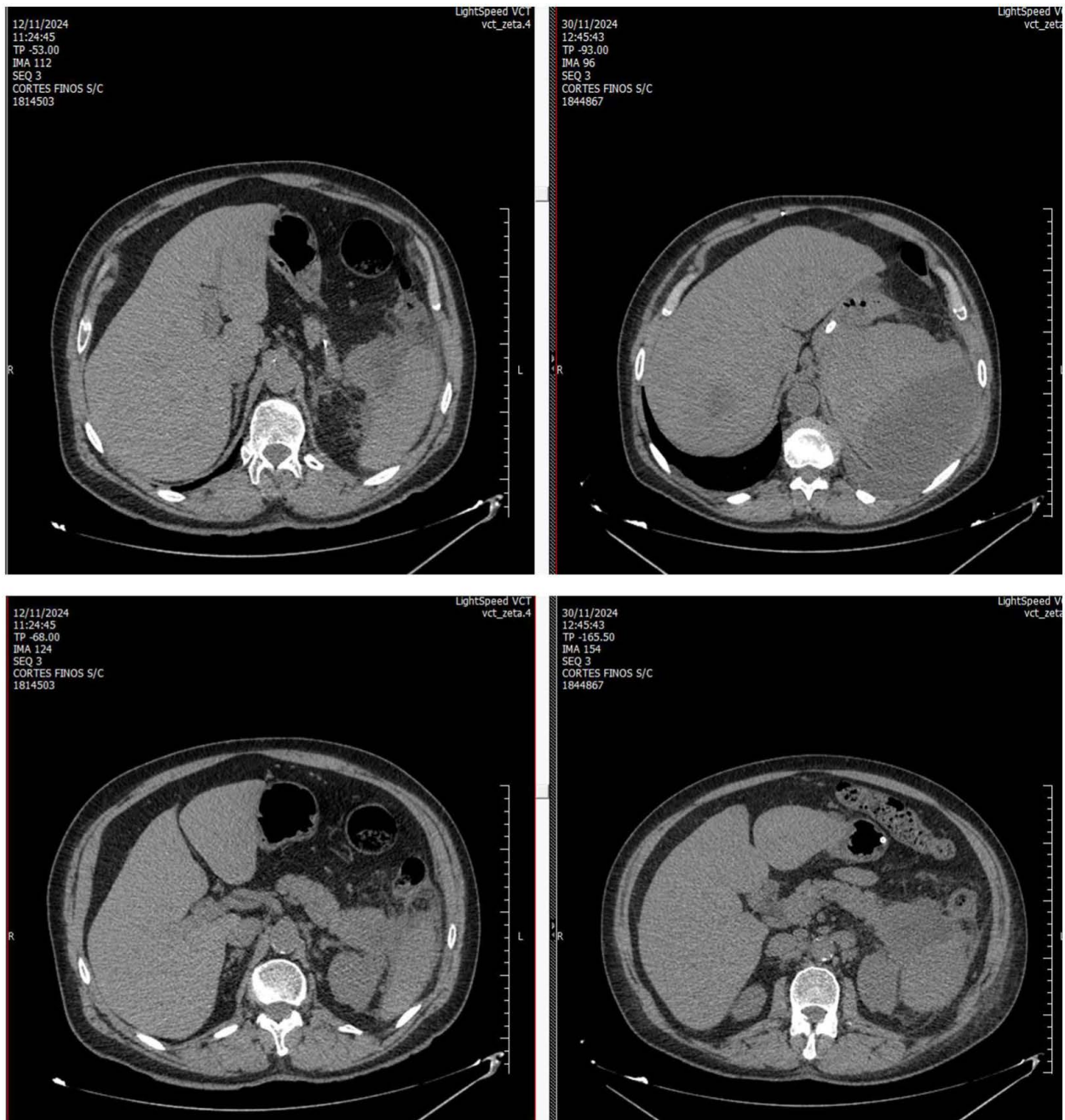


Figure 1B. High-resolution CT scan done after hospitalization: both are arterial phase images from November/2024. There is evidence of progressive growth of a subphrenic fluid collection in the splenic region and moderate left pleural effusion, which prompted drainage of the splenic collection and thoracentesis

with no statistical difference between the modalities, since antibiotic therapy alone is associated with higher mortality, especially in cases of clinical treatment failure or multiple abscesses^{4,9}. After abscess drainage, in the present case, the patient evolved with no pain.

The most involved infectious agents are aerobic, with species of *Staphylococcus*, *Streptococcus spp.*, *Enterococcus spp.*, *Salmonella*, and *E. coli* being the most described in the literature, with a risk of opportunistic infections in immunocompromised people according to the Infectious Diseases Society of America¹⁰. The

microbiological investigation must include splenic aspirate, with cultures for aerobic and anaerobic bacteria, paired with peripheral blood cultures.

Pancreatic cancer has no measures for early population screening. Thus, when the disease is clinically diagnosed, about 50% of patients already present metastases, approximately 30% have a locally advanced disease, and less than 15% are candidates for surgical resection¹¹.

The initial symptoms are nonspecific, like loss of appetite, nausea, weight loss, and fatigue. Abdominal

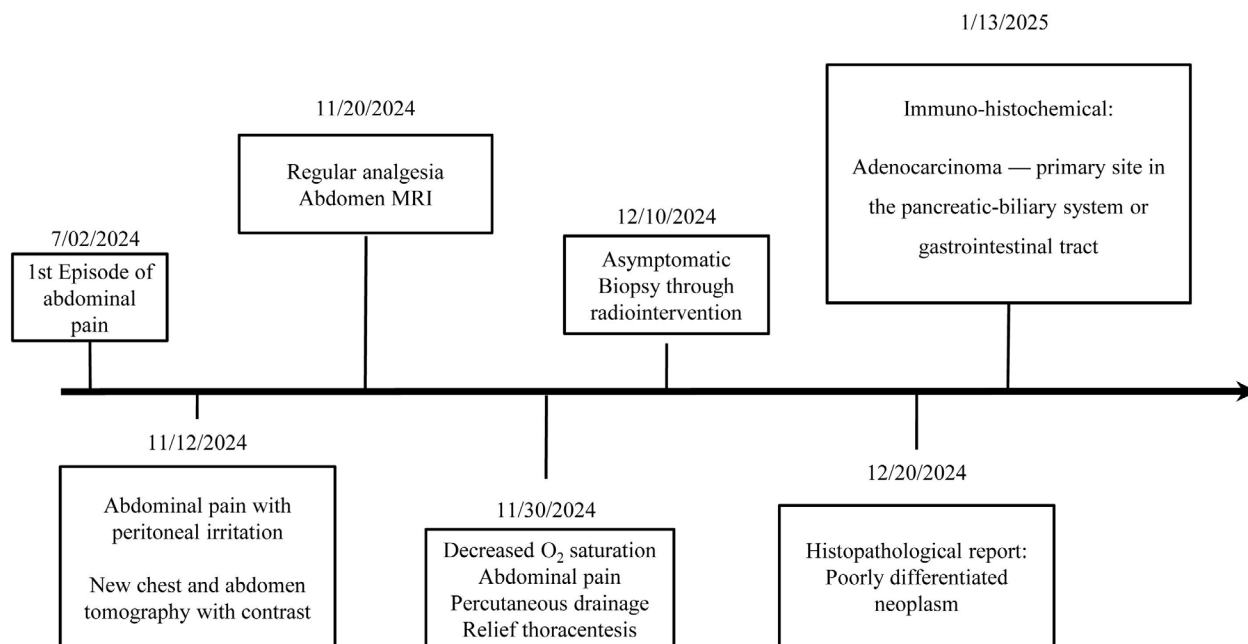


Figure 2. Diagnostic timeline (events are listed from left to right in order from oldest to most recent)

pain, in cancer cases located in the body and tail, may be secondary to invasion or compression of nearby structures, like the vagus nerve and celiac plexus.

Tumoral necrosis is an independent marker of locoregional aggression, since it reflects the destruction of the acinar parenchyma and more aggressive histological behavior, consequently correlating with advanced disease and poorer overall survival³.

CONCLUSION

The association between pancreatic necrosis and splenic abscess secondary to neoplasia indicates locally advanced or metastatic disease, and is associated with a poorer prognosis, with reduced disease-free survival and overall survival.

This case highlights the importance of considering differential diagnoses and atypical clinical presentations. Cystic lesions complicated by abscess formation may mimic pseudocysts but may in fact represent tumors with atypical presentation.

Therefore, an encompassing diagnostic approach contributes to more adequate and effective patient care.

CONTRIBUTIONS

All the authors have substantially contributed to the study design, data acquisition, analysis, and interpretation, wording, and critical review. They approved the final version for publication.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

All the contents associated with the article are included in the manuscript.

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