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Pancreatic squamous cell carcinoma – A rare presentation of neoplasia

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ABSTRACT
Pancreatic cancer (PC) has high morbidity and mortality rates, with a five-year survival rate of less than 10%. Within this spectrum, squamous cell carcinoma (SCC) of the pancreas stands out as a rare and aggressive form, representing between 0.5% and 2% of diagnosed cases. This report describes the case of a patient in whom a lesion in the body of the pancreas was incidentally identified, and he underwent a body and tail pancreatectomy. The diagnosis of pancreatic SCC was confirmed through anatomopathological examination, adjuvant treatment with the FOLFIRINOX regimen was carried out and, after eight months of outpatient follow-up, there was no evidence of recurrence or progression of the disease. The rarity of this neoplasm impacts its management, highlighting the need for more research to improve diagnosis and treatment and, consequently, the prognosis of patients.
Keywords: Carcinoma, Neoplasia, Oncology, Pancreas, Squamous cell, Surgery

1.INTRODUCTION

Pancreatic cancer (PC) is widely recognized as one of the most challenging neoplasms in terms of diagnosis and treatment, with a high mortality rate and a generally unfavorable prognosis. It is estimated to be the fourth leading cause of cancer death worldwide, with a five-year survival rate of up to 10% [1-15]. In this scenario, pancreatic squamous cell carcinoma (SCC) represents a rare and aggressive form of PC, with an incidence ranging from 0.5% to 2% of all PCs [1,2]. Under normal conditions, the pancreas does not have squamous cells; however, squamous metaplasia of columnar cells of the ducts can occur during episodes of inflammation. Among other theories, pancreatic SCCs may develop from ducts that underwent squamous metaplasia due to chronic inflammatory changes [3]. Literature on pancreatic SCC is scarce, highlighting the need for research to provide additional scientific data on pathophysiological behavior, morbidity, and mortality. Although surgical approaches such as pancreatectomy have shown benefits in terms of local disease control, they most often manifest at a locally advanced or metastatic stage, and the efficacy of adjuvant treatments, such as chemotherapy, still lacks robust validation [3]. This case presentation is about a 54-year-old patient who underwent a corpus-caudal pancreatectomy due to the finding of a neoplasm in the body of the pancreas, and the anatomopathological findings were consistent with the final diagnosis of primary SCC.

2. CASE REPORT

A 54-year-old male patient without previous comorbidities was admitted with epigastric pain, bloating, and heartburn for 3 days, and denied weight loss or other symptoms. His physical examination was unremarkable, and routine laboratory determinations only showed leukocytosis and an elevated C-Reactive Protein level. The computed abdominal tomography revealed a duodenal (second portion) diverticulitis and the incidental finding of a lesion in the body of the pancreas. The heterogeneous nodule suggestive of neoplasia, measuring 4 cm x 3 cm in the largest axial diameters, caused obstruction and dilation of the main pancreatic duct and atrophy of the upstream tail, maintaining contact with the splenic vein and artery; a duodenal diverticulum was also incidentally disclosed (Figures 1

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and 2). With the resolution of the acute inflammatory condition, the pancreatic lesion was investigated using tumor markers (CA 19.9: 5.7 and CEA: 4.3) and magnetic resonance imaging of the upper abdomen, which revealed a heterogeneous pancreatic nodular lesion in the body, measuring 3.6 cm x 3.0 cm, showing restricted diffusion and no significant contrast enhancement, highly indicative of a neoplasm. The absence of lymph node enlargement as well as vascular invasion was noteworthy. After a multidisciplinary evaluation, with the possibility of pancreatic adenocarcinoma and the absence of cholestatic or consumptive syndrome, the surgical approach was the chosen option. Due to involvement of the splenic vessels, he was vaccinated against the encapsulated germs prior to the laparoscopic body and tail pancreatectomy and splenectomy (section of the pancreas near the neck, using a 60mm laparoscopic linear stapler with a white load), without complications or carcinomatosis. The anatomopathological study of the surgical specimens showed horny pearls, keratinized cells in nests, and solid formations, without neoplastic glandular components; the interface between the normal parenchyma and SCC had desmoplastic stroma separating the elements (Figures 3 and 4). Molecular testing was not performed for this patient as this test was not routinely used at our institution. The patient developed a postoperative type A pancreatic fistula, self-limited and with a low output, and was discharged home on the 7th postoperative day. On his follow-up, the anatomopathological diagnosis of pancreatic SCC (pT3pN0) was confirmed – Mx P40 positive – with the absence of immune expression of antibodies tested for mucus, and glandular differentiation, corroborating the final definitive diagnosis. The patient was assessed as clinical stage IIA, with a proposal for modified adjuvant therapy with FOLFIRINOX; the patient was not tested for dihydropyrimidine dehydrogenase (DPD) enzyme prior to initiating FOLFIRINOX treatment as DPD screening is not routinely done at our institution as standard work-up. He is in outpatient follow-up with chemotherapy treatment, and without evidence of recurrence or disease progression eight months after surgery.



***Figure 1**. Contrast-enhanced computed tomography of the abdomen, axial section, portal phase. Image of a heterogeneous nodular lesion in the body of the pancreas measuring approximately 4 cm x 3 cm in the largest axial diameters, with obstruction of the main pancreatic duct and upstream dilation, maintaining contact with the splenic vein and artery, suggestive of a neoplastic lesion.*

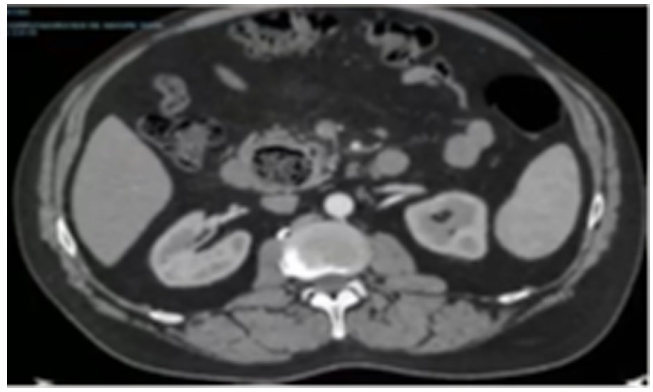


***Figure 2**. Contrast-enhanced computed tomography of the abdomen, axial section, portal phase. Image of a duodenal diverticulum.*

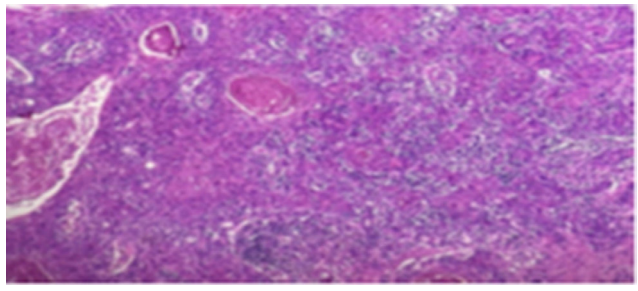


***Figure 3**. Photomicrography of the SCC. Presence of horny pearls and keratinized cells in nests and solid formations; there is no representation of a neoplastic glandular component in the histopathological analysis (HE, 40x).*

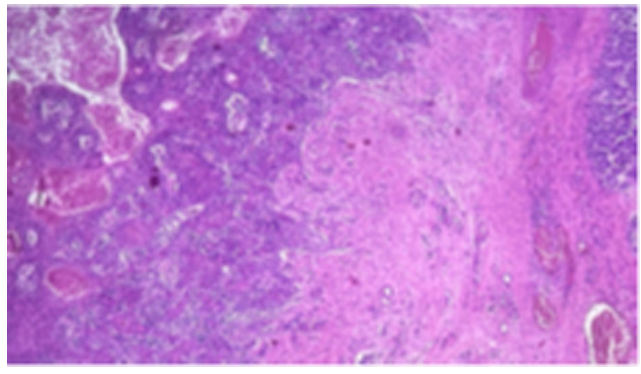


***Figure 4**. Photomicrography of the SCC. The interface between normal pancreatic parenchyma (right) and squamous cell carcinoma (left), with desmoplastic stroma separating the elements (HE, 40x).*

3. DISCUSSION

Pancreatic SCC is an uncommon entity, while adenocarcinoma is predominant, and there are several theories about the etiology and the development of a primary SCC [3,4]. One of these suggests that pancreatic primitive cells can differentiate into squamous or glandular histology after local chronic inflammation; other proposed mechanisms include either

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the differentiation of a preexisting adenocarcinoma or the malignant transformation of normal ductal squamous cells [4-7]. The diagnosis and treatment of pancreatic SCC is challenging in general practice; the clinical presentation and course of the disease are similar to those usually observed in the adenocarcinoma [7]. The definite diagnosis invariably requires surgical removal of the tumor or a needle biopsy [8]. It has been reported that 73% of pancreatic SCC cases are located in the head of the pancreas, while 45% occur in the body, and only 23% are located in the tail of the pancreas, with the latter often presenting tumor necrosis [7]. SCC is an aggressive tumor with an estimated 5-year survival rate of nearly 10%, a median overall survival time between 6 and 12 months, and a tendency to metastasize rapidly [9]. Due to the low efficacy of chemotherapy and radiotherapy, surgical resection is considered the treatment of choice in non-metastatic patients, and pancreatectomy is the most common approach [7]. The video-laparoscopic body and tail pancreatectomy, in particular, has stood out for its advantages over open surgery, such as faster recovery time, less postoperative pain, and reduced hospital stay [10]. However, the literature still lacks robust studies that validate these techniques in rare pancreatic neoplasms, which limits the possibility of generalizing the results obtained. Adjuvant therapy with the modified FOLFIRINOX regimen for resected pancreatic tumors has been shown to provide significantly longer survival compared with gemcitabine, although this comes at a higher incidence of toxicity [11]. In the context of metastatic and unresectable disease, FOLFIRINOX, together with gemcitabine associated with paclitaxel bound to albumin nanoparticles (nab-paclitaxel), has been considered a first-line management option [11]. Although chemotherapy has shown benefits in diverse cases, the effectiveness of adjuvant therapies in rare neoplasms such as SCC remains a topic for further analysis. Recent studies suggest that neoadjuvant chemotherapy may be beneficial for advanced-stage patients, but more research is necessary to establish the effective treatment protocols [12]. The rarity of pancreatic SCC poses significant challenges to treatment; scarcity of data and the heterogeneity of cases make it difficult to develop clear and consistent guidelines. Besides, the absence of multicenter studies and specific clinical trials for this neoplasm limits the understanding of its biology and the effectiveness of the available therapies. Worthy of note in this case was the incidental imaging finding of a duodenal diverticulum, a phenomenon that has been rarely associated with pancreatic carcinomas, as well as the possibility of misdiagnosis with cystic pancreatic tumors [13-16].

Conclusion

The present case illustrates the complexity and challenges associated with the diagnosis and treatment of pancreatic SCC, a rare and aggressive neoplasm; the surgical approach in this case with body and tail pancreatectomy resulted in local control of the neoplasm. The choice of the adjuvant chemotherapy regimen with FOLFIRINOX, which showed promise in terms of survival, highlights the importance of personalized strategies in the management of rare pancreatic tumors. Although the reported patient has demonstrated a favorable clinical evolution to date, the relative scarcity of data in the literature on pancreatic SCC highlights the urgent need for further specific research. Additional research is needed to investigate the molecular characteristics of SCC that may enable the development of new targeted therapies, with a more personalized management. Network collaboration between research centers can facilitate data collection and analysis of results, contributing to a better understanding and treatment of this complex condition.

Compliance with Ethical Standards

This case report was conducted ethically in accordance with the principles of Helsinki World Medical Association Declaration.

Patient consent: The patient gave his consent for clinical information relating to his case to be reported in a medical publication.

Conflict of interest statement: The authors have no conflict of interest to declare.

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Authors contributions: All authors contributed to Research idea, Design of the study, Acquisition of data for the study, Analysis of data for the study and drafting the manuscript, Interpretation of data for the study, Revising the manuscript critically for important intellectual content, Reviewed the results and approved the final version of the article.

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