J Gastrointest Canc (2019) 50:130–133
DOI 10.1007/s12029-017-9982-1

CASE REPORT

Primary Squamous Cell Carcinoma of the Pancreas: a Case Report and Literature Review

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Published online: 29 June 2017

Abbreviations

SCC	squamous cell carcinoma
EGD	upper gastrointestinal endoscopy
EUS-FNA	endoscopic ultrasound-guided fine needle aspiration
CT	computed tomography

Introduction

Primary squamous cell carcinoma (SCC) is a rare nonendocrine pancreatic tumor that carries a poor prognosis. We present a case of SCC of the pancreas with liver metastasis confirmed by endoscopic ultrasound-guided fine needle aspiration (EUS-FNA).

Case Report

The patient is a 79-year-old Caucasian man with a history of T2N0M0 moderately differentiated adenocarcinoma of the gastroesophageal junction, which was diagnosed in October 2014; he was treated with definitive chemoradiation therapy and had evidenced no disease during 24 months of subsequent follow-up. In November 2016, he presented to his primary care physician with an unintentional weight loss of 9 kg and upper abdominal pain. Laboratory evaluation was unrevealing. A computed tomography (CT) of the chest, abdomen, and pelvis demonstrated a large, heterogeneously enhancing, predominately hypoenhancing mass within the pancreatic tail, which was invading both the splenic hilum and the body of the stomach, with involvement of the splenic artery, as well as liver lesions suspicious for metastasis (Fig. 1a, b). In light of the CT findings, the patient underwent upper gastrointestinal endoscopy (EGD) and EUS-FNA for a tissue diagnosis. The EGD with careful attention to GE junction and stomach was inconclusive. The EUS demonstrated an ill-defined hypoechoic mass in the tail of the pancreas, which was invading the muscularis propria layer of the gastric wall (Fig. 2). Cytology revealed poorly differentiated SCC (Fig. 3). Given his age, marginal performance status, and metastasis of the disease, the patient underwent palliative chemotherapy; he passed away after 3 months of treatment.

Discussion

SCC of the pancreas is a rare malignant tumor, representing 0.2–5% of pancreatic neoplasms [1–3]. Normally, the pancreas is totally devoid of squamous cells, and multiple theories have been proposed to explain the development of pancreatic SCC: (a) malignant transformation of a stem cell that has the capability of differentiating into either squamous or glandular carcinoma; (b) squamous change in adenocarcinoma; (c) a squamous metaplasia of the ductal epithelium resulting from chronic inflammation, which undergoes a malignant transformation; or (d) malignant transformation of an aberrant squamous cell [4]. Given its rarity, primary pancreatic SCC should

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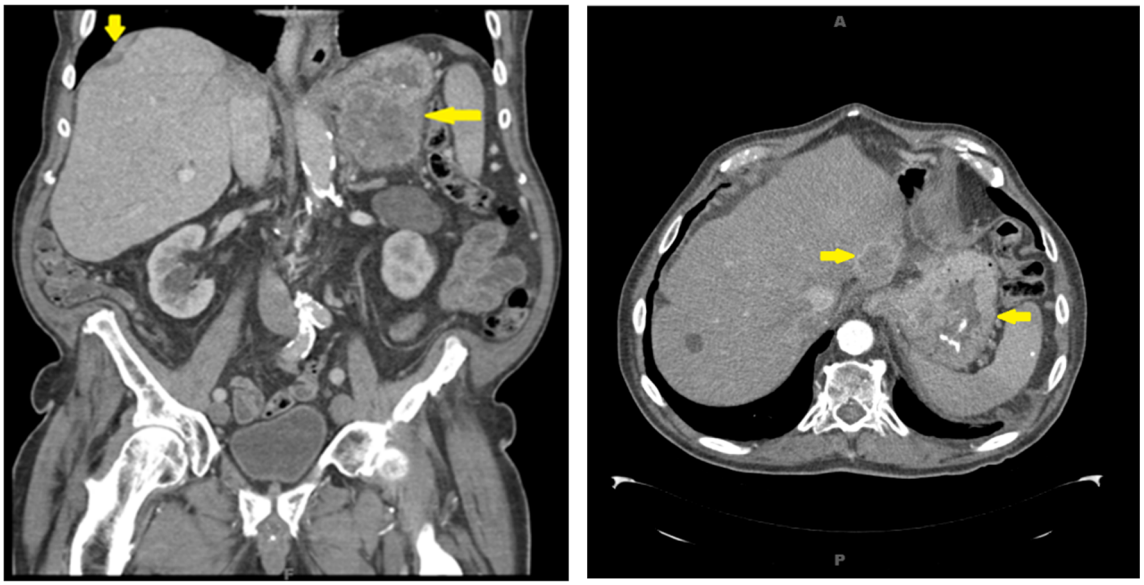

Fig. 1 **a**, **b** Computed tomography of the abdomen series shows a 6 × 8 cm heterogeneously enhancing mass within the pancreatic tail that invades both the splenic hilum and the body of the stomach with involvement of the splenic artery as well as liver lesions suspicious for metastasis

be considered a diagnosis of exclusion when another primary site of SCC cannot be identified.

In our case, several routes or mechanisms of pathogenesis were possible. One might be local recurrence and squamous transformation of the prior gastroesophageal junction cancer; however, that seems less likely given the complete clinical response of that malignancy. Another possibility was a radiation-induced SCC of the pancreas; however, this mechanism of carcinogenesis is improbable, given that the latency period between irradiation and development of solid tumors is typically over 10 years [5]. Thus, we feel that this patient's tumor was most likely a primary pancreatic SCC.

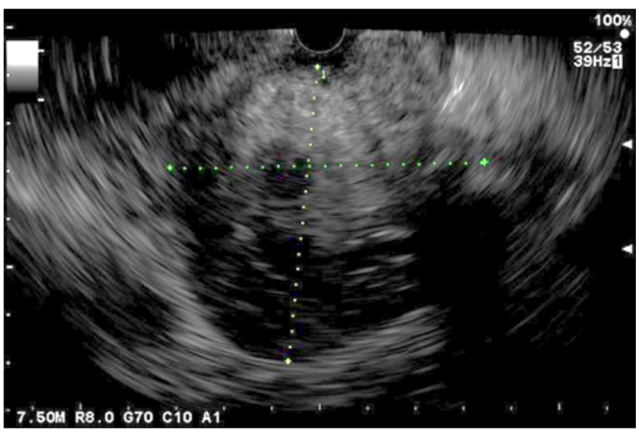

Fig. 2 EUS demonstrates an ill-defined hypoechoic mass in the tail of the pancreas

A MEDLINE search was conducted to identify cases of pure SCC of the pancreas reported in the English literature. A total of 50 cases have been identified. Brown et al. in 2005 and Kodavatigant et al. in 2012 identified 40 cases (1934–2012) that were diagnosed based on surgical histology results, except one case that had been reported by Lai et al. in 2012, who had based the diagnosis on a cytology specimen by EUS-FNA, which was the first case reported in which this diagnosis was determined by this modality [2, 6, 7]. Metha et al. in 2015 identified in his report another eight cases. Six of these eight cases were reported to have a SCC diagnosis using EUS-FNA [8]. Since then, two more cases have been reported, one diagnosing SCC by EUS-FNA and the other diagnosing utilizing EUS-guided core needle biopsy [9, 10]. In November 2016, Makarova-Rusher et al. published the first population-based study reporting on the epidemiology of primary pancreatic SCC, for which they identified data from 214 cases from the Surveillance, Epidemiology, and End Results (SEER) cancer registry from 2000 to 2012 [3].

The literature review revealed that most of the patients who had diagnoses of SCC of the pancreas were above the age of 65 and predominantly male and had similar clinical presentations of pancreatic adenocarcinoma [3]. Most patients went for initial imaging by CT. Noninvasive testing cannot adequately differentiate SCC from other pancreatic neoplasms, but two radiographic features of SCC may help to differentiate it from the typical pancreatic adenocarcinoma: (a) enhancement of the tumor on contrast CT and (b) tumor blush patterns on angiography [11]. Pancreatic SCC has a poor prognosis, with median survival of 3 months in patients who have been

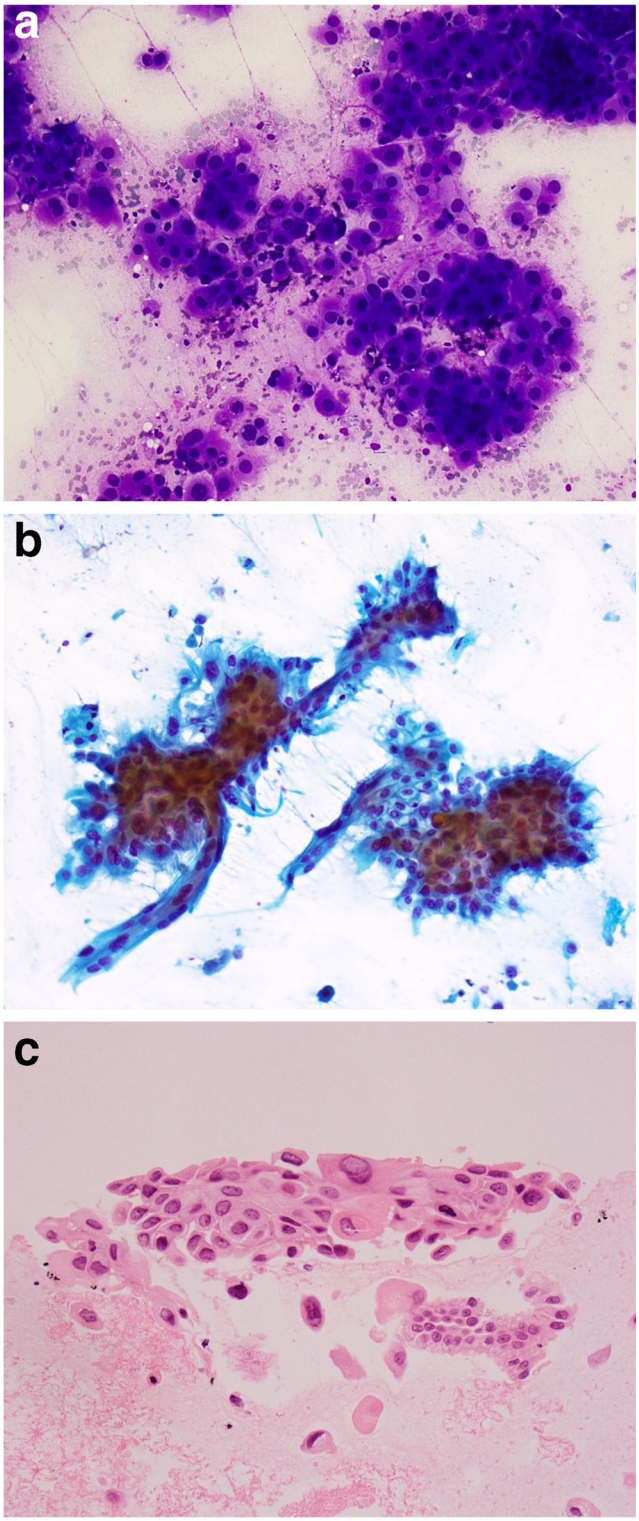

Fig. 3 **a** Diff-Quick stained aspirate smear shows malignant squamous cells (200×). **b** Papanicolaou stained aspirate smear shows malignant squamous cells (200×). **c** H&E stained cell block shows a group of malignant squamous cells (with a group of benign GI contaminant below) (400×)

treated with palliative therapy and 10 months in patients who have been treated with a surgical resection for localized disease [3]. Multiple palliative therapies have been reported with favorable results, including radiation therapy and chemotherapy with platinum-based regimens, gemcitabine, and 5-FU [1–10].

Conclusion

SCC of the pancreas is an aggressive and rare entity. Clinical presentation and diagnostic approaches are similar to those for other pancreatic tumors. EUS-FNA has been useful in guiding further management. The optimal therapy is still unclear, although when possible, surgical resection is recommended.

Authors' Contributions Article guarantor: Alajlan BA
Acquisition of data: Alajlan BA, Kushnir VM, and Bernadt CT
Analysis and interpretation of data: Alajlan BA, Kushnir VM, and Bernadt CT
Drafting of the manuscript: Alajlan BA and Kushnir VM
Critical revision of the manuscript for important intellectual content: Alajlan BA, Kushnir VM, and Bernadt CT
Obtained funding: N/A
Administrative, technical, or material support: Alajlan BA, Kushnir VM, and Bernadt CT
Study supervision: Alajlan BA and Kushnir VM

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Informed Consent Informed consent is obtained and documented from all patients undergoing procedures which includes for the purpose of advancing medical education and training. Reasonable efforts are made to conceal identity and protect patient privacy.

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