Article published online: 2023-03-29

Extramedullary Plasmacytoma: A Rare Entity

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J Digest Endosc 2023;14:56–59.

Abstract

Extramedullary plasmacytoma is an immunoproliferative disease of mature B cell that produces immunoglobulins by clonal expansion. Plasma cell neoplasms are responsible for less than 0.1% of all pancreatic masses, they can be primary or secondary to multiple myeloma (MM). We present the case of a 56-year-old man with extramedullary solitary plasmacytoma located in the pancreas, presented with abdominal pain and jaundice. Imaging characteristics are similar to those of other pancreatic diseases, and the diagnosis is confirmed by immunohistochemistry due to the presence of a homogeneous infiltrate of monoclonal plasma cells, which typically express CD38 and CD 138 markers and the presence of kappa/lambda light chains.

Keywords

- plasmacytoma
- positron emission-tomography computed tomography
- endosonography
- endoscopic ultrasound-guided fine needle aspiration
- immunohistochemistry

Introduction

Extramedullary plasmacytoma (EP) is a monoclonal immunoproliferative disease of the mature B cell lineage, originating in plasma cells.[1] Pancreatic involvement is rare and can be primary, in the case of a solitary EP, or secondary, as an extramedullary manifestation of multiple myeloma (MM).[1,2] The cephalic portion is the most commonly reported local in this organ and can manifest mainly with obstructive jaundice.[2] We present a case of a patient with extramedullary solitary plasmacytoma located in the pancreas, whose diagnosis was confirmed through immunohistochemical examination, with sample collection by endoscopic ultrasound-guided fine needle aspiration/biopsy (EUS-FNA/FNB).

Case Report

A 56-year-old male patient was referred to our hospital because of abdominal pain and progressive jaundice. Laboratory tests were normal (hemoglobin 14.5 g/dL, ionic calcium 5.1 mg/dL, creatinine 0.72 mg/dL), except for increased bilirubins (total bilirubin 8.48 mg/dL, direct bilirubin 7.07 mg/dL) and high levels of immunoglobulin free lambda class (213.4 mg/L).

Abdominal computed tomography (CT) demonstrated intra- and extra-hepatic biliary dilation and a pancreatic solid mass with involvement of celiac and superior mesenteric arteries.

Positron emission tomography/computed tomography (PET/CT) showed an expansive lesion of irregular margins in the retro peritoneum suggestive of pancreatic involvement (SUV max: 3.3) (►**Fig. 1**).

Endoscopic ultrasonography (EUS) revealed a hypoechoic and heterogeneous solid mass, with imprecise limits, measuring ~70 mm × 70 mm, at the head and body of the pancreas (►**Fig. 2**). EUS-FNA and EUS-FNB were performed as part of an institutional research (Clinical Trials - NCT04877340), and histology in both samples identified atypical lymphoid proliferation with immunohistochemical profile positive for CD56, CD79a, and CD138 (►**Fig. 3**).

DOI https://doi.org/10.1055/s-0042-1759511.
ISSN 0976-5042.

Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

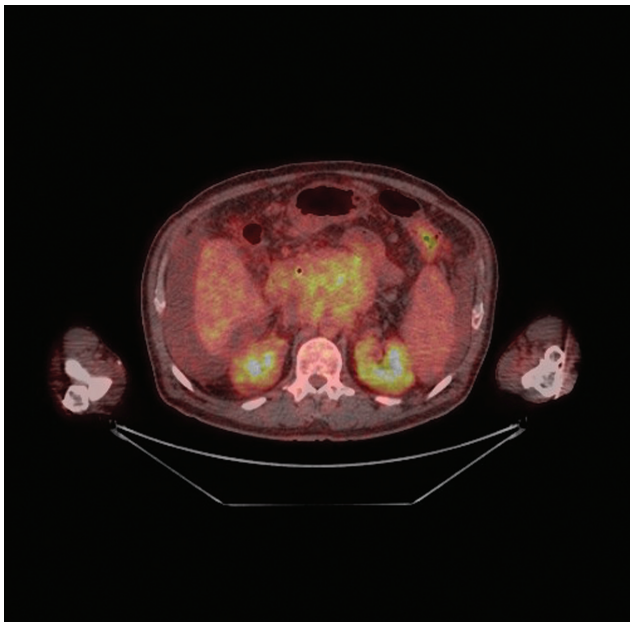

Fig. 1 PET/CT (18FDG): expansive pancreatic lesion, with involvement of celiac and superior mesenteric arteries (SUV max: 3.3).

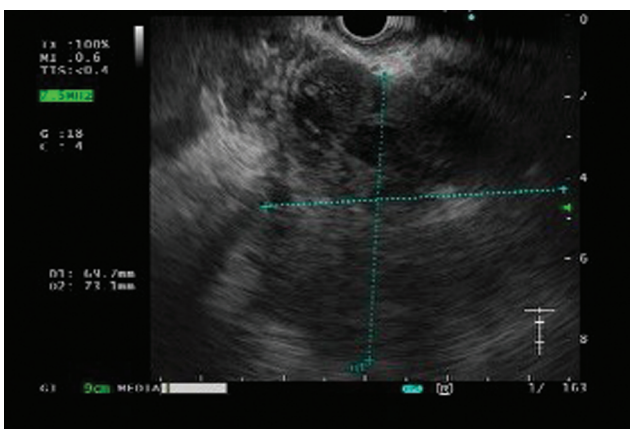

Fig. 2 EUS: hypoechoic and heterogeneous image, of imprecise limits, of ~70 × 70 mm, at the head and body of the pancreas.

Bone marrow (BM) aspirate had only 1.6% typical plasmacytes. Then, the diagnosis of solitary pancreatic plasmacytoma was based on the finding of extramedullary monoclonal plasma cells without significant proliferation of plasmacytes in the bone marrow.

Obstructive jaundice was successfully treated with self-expanding fully covered metal stent in the bile duct by ERCP, considering longer survival with possible late response, and the patient was referred to oncological treatment. Because the lesion was 7 cm (bulky EP > 5 cm), adjuvant chemotherapy after radiotherapy was chosen in multidisciplinary meeting.

Up to the date of submission of this paper, the patient completed 10 months since the diagnosis. Currently, he is being followed up by the clinical oncological team, with no

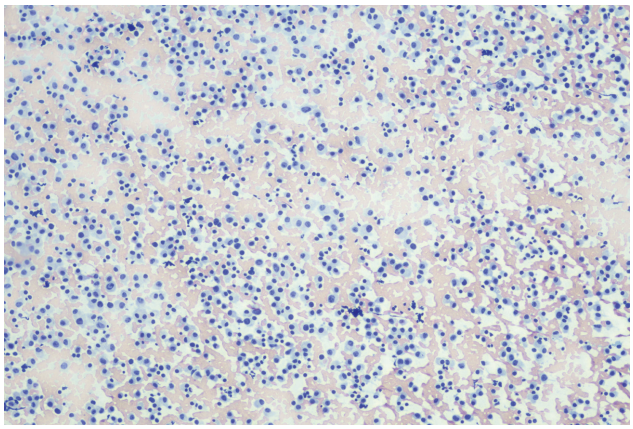

Fig. 3 EUS-FNA: immunohistochemical profile positive for CD56, CD79a, and CD138. Note: scale bar – x10.

response to treatment. However, until now, without biliary obstruction relapses.

Discussion

Plasma cell neoplasms are a result of the dysregulated proliferation of mature B cells, which produces immunoglobulins by clonal expansion. These neoplasms may present as single lesions (solitary plasmacytoma) or more commonly as multiple lesions (multiple myeloma). The vast majority of solitary plasmacytomas occurs in the bone; other locations are exceptional.[2–4]

EP corresponds to 3% to 5% of plasma cell neoplasms,[1,2,5,6] with around 62.4% located in the upper aerodigestive tract (oropharynx, nasopharynx, sinuses, and larynx) and 37.6% in other areas (lymph nodes, bladder, central nervous system, breast, thyroid, testicles, parotids, skin, and gastrointestinal tract).[1,3,6] EPs are characterized by a mass of clonal plasma cells, without or with minimal plasmacytosis in bone marrow and without other symptoms different from those derived from the primary tumor.[4]

Plasma cell neoplasms are quite uncommon in the pancreas, they can be primary or secondary in this organ, as an extramedullary manifestation of multiple myeloma.[6] Pancreatic plasmacytoma is responsible for less than 0.1% of all pancreatic masses and is most commonly seen in middle-aged men (55 years on average) and it is twice as common in African Americans.[2] About 80% of these neoplasms are located at the head region and the remaining 20% can be in the body or tail. Most are single lesions, in some cases two or more concurrent injuries can occur, and more rarely the lesion has its epicenter in another abdominal organ, which is large enough to affect the pancreas as well.[2,6]

The symptoms related to pancreatic plasmacytomas depend on the location, size, and compression of nearby structures. The most reported symptom is jaundice, followed by abdominal pain. Other manifestations described are pancreatitis, gastrointestinal bleeding, and nausea.[2,6] In addition to the most common lesions, such as ductal adenocarcinoma, neuroendocrine tumor, focal chronic

Table 1 Differential diagnosis of pancreatic lesions

Benign tumors	Mesenchymal tumors: malignant	Uncertain malignant potential
• Neurofibroma • Schwannoma • Ganglioneuroma • Desmoid tumor • Leiomyoma • Pancreatic lipoma • Perivascular Epithelioid cell tumor • Mature cystic teratoma • Lymphangioma	• Sarcomas: – Leiomyosarcoma – Liposarcoma – Gastrointestinal stromal tumor (GIST) – Undifferentiated pleomorphic sarcoma (UPS) – Chondrosarcoma – Extraosseous Ewing's sarcoma/primitive neuroectodermal tumor (EES/PNET) • Lymphoma • Extramedullary plasmacytoma–EMP • Metastases	• Extrapleural solitary fibrous tumor (SFT) • Inflammatory myofibroblastic tumor (IMT) • Paraganglioma

pancreatitis, autoimmune pancreatitis, and cystic lesions, other uncommon tumors should also be considered.[2,7] The differential diagnoses are summarized in ►**Table 1**.

The diagnosis of EP should meet the following criteria: existence of one or more extramedullary plasma cell tumors, absence of plasmacytosis in BM, or minimal infiltration by clonal plasma cells (<10%), without radiological evidence of osteolysis, absence of organic terminal lesion (hypercalcemia, anemia, or renal failure) and lack or low concentration of serum M protein.[1,5,6] When there is a detectable level of plasmacytosis in BM, these cases are referred to as solitary plasmacytomas with minimal BM involvement. It is important to perform this differentiation at the time of diagnosis because patients who have solitary plasmacytomas with minimal BM involvement are at greater risk for progression to MM compared with those without detectable plasmacytosis.[4,5] Between 24% and 72% of cases of primary EP, low levels of M protein may be detected in urine or serum, which usually disappear after the beginning of the therapy. The persistence of M protein indicates monoclonal gammopathy of underlying indeterminate significance (MGUS) or the presence of focal lesions, often secondary to evolving MM.[2,5,6]

Its characteristics in imaging tests are similar to those of other pancreatic diseases. On CT scan, a homogeneous, well-defined, lobed masses, which are usually attenuated compared with normal pancreatic tissue are seen. Magnetic resonance imaging (MRI) shows a hypointense image in T1 and hyperintense in T2, compared with normal pancreas. Magnetic resonance cholangiopancreatography frequently demonstrates a smooth stenosis associated with overlying biliary and pancreatic dilation.[2]

Myelomatous lesions show moderate to intense absorption of fluorodeoxyglucose labeled with fluorine-18 (18F-FDG);[2] therefore, cross-sectional images of the whole body with 18F-FDG PET/CT allow a structural and functional evaluation of several disease states. Due to its high sensitivity and specificity, it can detect lytic lesions or plasmacytomas and also has the ability to distinguish between metabolically active and inactive disease, which is useful for monitoring disease activity following treatment.[5]

At EUS, the plasmacytoma is observed as a hypoechoic focal mass. EUS allows obtaining a tissue sample through a minimally invasive method by fine needle aspiration or fine needle biopsy (FNA/FNB) for subsequent histological and immunohistochemical examination.[2] The presence of a homogeneous infiltrate of monoclonal plasma cells, which typically express CD38 and CD 138 markers, is observed. Monoclonality needs to be demonstrated by the presence of kappa/lambda light chains or by a PCR-based approach.[2,4]

Radiotherapy is the main treatment for plasmacytoma because its high radiosensitivity can achieve local control rates in 80 to 90% of cases. Surgical resection is usually mostly reserved for cases where there is a loss of anatomical structural integrity or urgent decompression of other structures becomes necessary.[5] There is usually no indication for chemotherapy; however, in case of large tumors (larger than 5 cm), chemotherapy may be considered after radiation therapy.[1–4]

Close follow-up should be performed through laboratory and imaging tests to evaluate the response to treatment, every 3 months for the first 2 years and then every 6 to 12 months. Even with excellent local control rates, around half of the patients with solitary plasmacytoma will eventually progress to multiple myeloma at 5 years.[5]

Conclusion

Despite being a rare entity, pancreatic plasmacytoma should be considered as a differential diagnosis in the presence of solid pancreatic mass associated with jaundice, and with high avidity at 18F-FDG PET/CT. EUS is an excellent method for obtaining representative samples in a minimally invasive way because it has easy access to the pancreas to confirm the diagnosis.

Funding
None.

Conflict of Interest
None declared.

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[published online ahead of print, 2022 May 16]Cancer Med 2022. Doi: 10.1002/cam4.4816
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