

Umbilical metastatic deposit from recurrent cholangiocarcinoma: F18-FDG PET-CT findings

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ABSTRACT

A 69-year-old woman was diagnosed with stage IIIA advanced Type IV Klatskin cholangiocarcinoma, which was treated with radical choledochectomy, extended right hepatectomy and left hepaticojejunostomy. About six months after surgery, she presented with painless jaundice. A 2-18F-fluoro-2-deoxy-D-glucose positron emission tomography-computed tomography (F18-FDG PET-CT) was performed, which detected an FDG-avid umbilical metastatic nodule. We describe the F18-FDG PET-CT features of umbilical metastatic nodule in recurrent cholangiocarcinoma. It is sometimes difficult to detect the lesions when they present with nonspecific soft tissue thickening on routine CT imaging. F18-FDG PET-CT would probably render these lesions easier to detect and interpret.

Keywords: cholangiocarcinoma, FDG PET, umbilical metastatic nodule

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INTRODUCTION

Umbilical nodules are nonspecific findings on computed tomography (CT), which can lead to diagnostic dilemmas. For anatomical imaging, one often relies on architectural distortion or deformity of the contour to detect a lesion, which can sometimes be difficult. We describe the use of 2-18F-fluoro-2-deoxy-D-glucose positron emission tomography-computed tomography (F18-FDG PET-CT) to detect such lesions in a case of recurrent cholangiocarcinoma.

CASE REPORT

A 69-year-old Chinese woman presented with pruritis and painless jaundice for the last one month, which was associated with a weight loss of 10 kg. She was found to have stage IIIA Type IV Klatskin carcinoma. She was treated by radical choledochectomy, extended

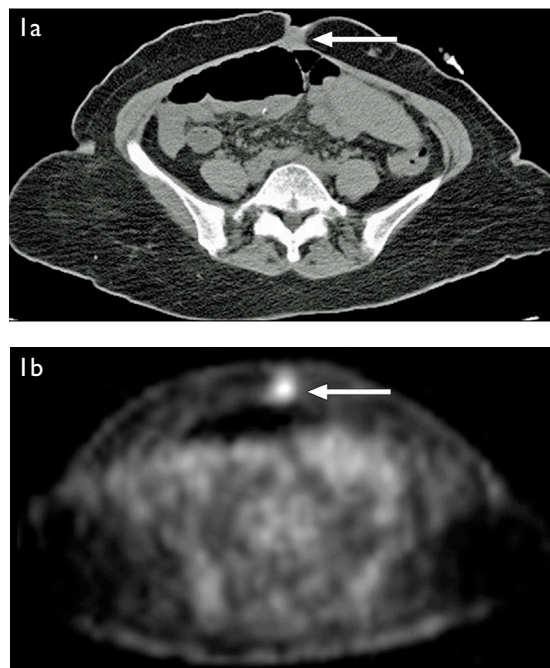


Fig. 1 (a) Non-contrast-enhanced CT image shows a soft tissue nodule at the umbilicus (arrow). (b) F18-FDG PET-CT image shows that the umbilical nodule was markedly metabolic-avid (arrow), indicating an umbilical metastatic deposit.

right hepatectomy and left hepaticojejunostomy. The postoperative period was complicated by intra-abdominal sepsis, and the patient required prolonged intensive care support and therapy. About six months after surgery, the patient presented with painless jaundice and pruritis that was associated with tea-coloured urine. She was investigated with magnetic resonance (MR) imaging cholangiogram, which showed dilatation of the biliary ducts, with narrowing at the resection margins. No definite enhancing mass was detected, and the findings were deemed indeterminate. Hence, she was further evaluated with F18-FDG PET-CT.

The study was performed 70 minutes after intravenous administration of 12.0 millicuries (444 megabecquerel) of F-18 FDG. CT revealed a soft tissue nodule in the region of the umbilicus, which was a nonspecific finding (Fig. 1a). However, the lesion showed markedly increased FDG uptake (SUVmax 5.2), which led to suspicions of an umbilical metastatic deposit

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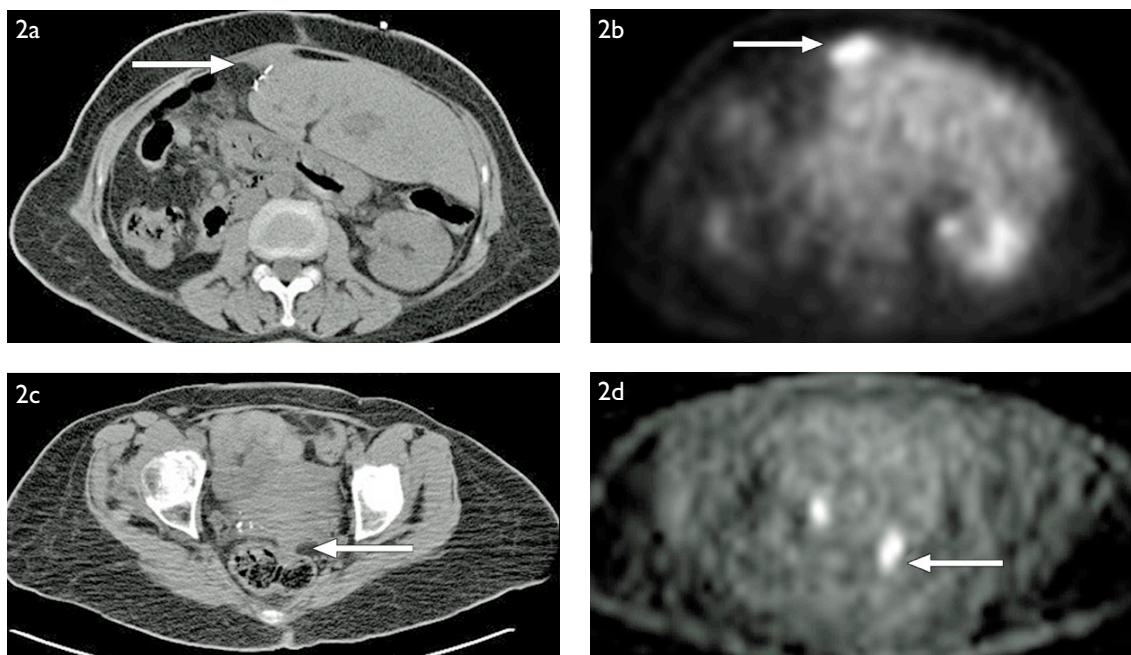


Fig. 2 (a) Non-contrast-enhanced CT image shows soft tissue at the surgical resection margins (arrow), raising suspicion of local tumour recurrence. (b) F18-FDG PET-CT image shows that the soft tissue at the surgical margins (arrow) was markedly FDG-avid, indicating local tumour recurrence. (c) Non-contrast-enhanced CT image shows a soft tissue nodule in the pouch of Douglas (arrow), indicating peritoneal deposit. (d) F18-FDG PET-CT image shows that the soft tissue nodule was markedly metabolic-avid (arrow). All features suggested local tumour recurrence, with peritoneal metastatic deposits.

(Fig. 1b). Elsewhere in the body, the F18-FDG PET-CT study revealed FDG-avid nodules at the surgical margins (Figs. 2a & b). FDG-avid nodules were also observed in the pelvis and the pouch of Douglas, all of which were likely to be peritoneal metastatic nodules (Figs. 2c & d). All the results suggested disease recurrence.

DISCUSSION

In 1928, Sister Mary Joseph, a long-serving head surgical nurse of William James Mayo, first pointed out the umbilical metastatic nodule.⁽¹⁾ However, the lesion or Sister Joseph's nodule was first described only in 1949 when Bailey coined the term in his book.⁽²⁾ The more commonly described patterns of the metastatic spread of cholangiocarcinoma include intrahepatic vascular involvement with numerous local metastasis, regional lymphadenopathy as well as haematogenous spread to the lungs, bones, adrenals and brain.

F18-FDG PET has been shown to be useful in the evaluation of distant metastasis and is significantly more accurate than conventional CT imaging in detecting these metastases.⁽³⁾ Cutaneous metastasis is an unusual form of metastasis, and cholangiocarcinoma is known to present as multiple indurated plaques and papules on the anterior chest wall⁽⁴⁾ and even as scalp tumours.⁽⁵⁾ However, the distinction of local recurrence of cholangiocarcinoma at the resection margins following surgery from benign anastomotic stricture is extremely difficult, both

radiologically and clinically; even F18-FDG PET-CT has been known to miss some of these lesions.⁽⁶⁾

Umbilical nodules have been described in primary tumours of the pancreas, colon, ovary, genitourinary tract and even lymphomas.⁽⁷⁻¹¹⁾ Cases on umbilical metastatic deposits in gallbladder carcinoma⁽¹²⁾ and pancreatic carcinoma⁽¹³⁾ have been described, but none on cholangiocarcinoma has been reported. To the best of our knowledge, this is the first case report describing F18-FDG PET-CT features of umbilical metastatic deposits, although another case report that documents Gallium-67 citrate uptake in a Sister Joseph Nodule exists.⁽¹⁴⁾ There are many possible routes through which the primary malignancy can spread to the umbilicus, namely arterial, venous, lymphatic or direct extension. In our patient, there was evidence of both local disease recurrence at the resection margins and metastatic peritoneal nodules. Hence, the pattern of spread to the umbilical nodule could have been direct peritoneal spread from the site of local recurrence at the resection margin.

Superficial soft tissues can be overlooked when reviewing intravenous contrast-enhanced or non-contrast-enhanced CT, where early involvement relies on distortion of internal architecture or contour deformity.⁽¹⁵⁾ These areas can be overlooked when reporting if one is not careful, as superficial soft tissue involvement presents with nonspecific features like soft tissue thickening, leading to perception difficulties, as seen in our case. The umbilical

metastatic nodule is traditionally a sign of advanced malignancy and poor prognosis.⁽¹⁶⁾ Hence, it is important to pick up and identify these lesions during routine imaging, as they may be the sole site of recurrence. The use of hybrid imaging such as F18-FDG PET-CT would likely enhance the accuracy in detecting such lesions.

In summary, umbilical metastatic nodule may be found in recurrent cholangiocarcinoma, and F18-FDG PET-CT may enable these lesions to be more easily detected and accurately interpreted.

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