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Title

Ovarian metastases of ileal neuroendocrine tumor

Short title: ovarian metastases of ileal-NET

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A 55-year-old menopausal woman with history of breast carcinoma was referred for recurrent abdominal pain, without diarrhea. Physical examination, routine biological investigation and serum CA15-3 were normal. Abdominal contrast-enhanced computed tomography (CT) found a 15-mm ileal hyper vascularized lesion with mild intestinal dilation and a mesenteric mass of about 20-mm. Both ovaries were moderately enlarged without radiological overt signs of malignancy. CT findings were consistent with ileal neuroendocrine tumor (ileal-NET) with mesenteric invasion. Serum value of chromogranin A was normal. ^{18}F -Fluorodihydroxyphenylalanine (^{18}F -FDOPA) PET/CT was added to the preoperative work-up ¹ and distinctly identified the primary ileal-NET with the mesenteric involvement. Moreover, intense and pathological ^{18}F -FDOPA uptake was showed in both ovaries and 1 peritoneal nodule of few millimeters in the Douglas space (Fig 1A), suggesting ovarian metastases with peritoneal carcinomatosis. Surgical exploration found the primary tumor and the mesenteric lesion that were removed by a 20-cm ileal resection and mesenteric lymphadenectomy. Intervention was completed by bilateral salpingo-oophorectomy, omentectomy, and multiple peritoneal biopsies (Fig 1B). Postoperative course was uneventful, and pathology confirmed a 20-mm well-differentiated grade-2 ileal-NET (Ki-67: 4%) with mesenteric invasion, ovarian bilateral spread, and pelvic peritoneal metastases as small as a few millimeters in size (pT4N2M1, UICC 2016).

The rate of neuroendocrine metastasis to the ovary seems significantly higher than previously assumed, and the small intestine is often the primary tumor site ². At the time of diagnosis of ileal-NET, only a low percentage of patients have ovarian metastases that are often associated with peritoneal carcinomatosis ^{2,3}. Neuroendocrine ovarian lesions may not be detected by conventional investigations, and PET/CT imaging with ^{18}F -FDOPA or ^{68}Ga -DOTATOC should be considered in the diagnostic work-up of NET patients ⁴. However, intraoperative examination of the ovaries remains recommended especially in patients with small bowel NETs and peritoneal carcinomatosis.

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Figure 1. (A) Preoperative ^{18}F -FDOPA PET/CT investigation (anterior maximum intensity projection PET image) showing pathologic uptake in both primary ileal tumor and adjacent mesenteric lesion, bilateral ovarian metastases and peritoneal carcinomatosis in Douglas space. (B) Pelvic surgical exploration showing bilateral ovarian metastasis of ileal-NET.

