Isolated PET avid mesenteric lesion following colonic cancer surgery is not always due to metastatic disease - a rare case of desmoid tumour.

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We describe a 74-year-old female who was referred to our tertiary referral centre from a country hospital, for review of a mesenteric lesion discovered on surveillance CT. Three years prior the patient had undergone open right hemicolectomy for a T3N2M0 (8/14 lymph nodes positive) mucinous adenocarcinoma followed by adjuvant chemotherapy. A presumptive diagnosis of metastatic colon cancer had been made by the referring hospital and the patient had subsequently completed 8 cycles of FOLFOX/Bevacizumab. Significant past medical history included bilateral squamous cell carcinoma of the hands treated by surgical excision. At the time of referral, she had symptoms related to her chemotherapy, including lethargy and tiredness. Repeated CT imaging failed to demonstrate any positive response to the chemotherapy.

The initial \(^{18}\)Fluorine-2-fluoro-2-Deoxy-d-glucose (\(^{18}\)F-FDG) positron emission tomography/computerized tomography (PET/CT), performed 4 months prior by the referring hospital (Figure 1), was reviewed at the Colorectal Multidisciplinary Team (MDT) meeting. It showed increased avidity in two locations: at the pylorus as well as a discrete area in the mid-small bowel mesentery. These areas were investigated with gastroscopy, showing mild reactive gastritis, and colonoscopy which showed no abnormalities. A second opinion on the original \(^{18}\)F-FDG PET/CT was sought and it was felt that the avidity in the small bowel mesentery was abnormal, but the gastric pylorus hot spot was physiological. The MDT decision was to proceed to an operative exploration and resection of the small bowel mesenteric lesion. At laparotomy an isolated lesion within the small bowel mesentery was identified with no other evidence of metastatic disease. The lesion was completely resected en-bloc with its associated small bowel.

Histopathology and immunohistochemistry (Figure 2 & 3) showed that the lesion was a benign desmoid. The MDT concluded this to be a sporadic desmoid tumour as the patient had no history of Familial Adenomatous Polyposis or Gardner’s Syndrome and had not reported any antecedent trauma. The patient made a full recovery from surgery and has had no sign of recurrence of either colorectal cancer or desmoid tumour on subsequent surveillance imaging and follow up.

Sporadic desmoid tumours are exceedingly rare; estimated to affect two to five people per million per year (1). Desmoid tumours are benign soft tissue tumours arising from connective tissue, with only 6% classified as being intra-abdominal (2). Solitary intestinal desmoids are extremely uncommon. Mesentery or small bowel tumours can present with a broad range of differential diagnoses including desmoid tumours, GIST, lymphomas, adenocarcinoma or metastatic disease (3). However to the authors knowledge PET avid intestinal desmoid tumours are rarely described, with one case being documented in a patient in which the lesion was initially thought to be a primary colonic cancer and a second case in a patient with known Gardner’s Syndrome (2, 4). Typically desmoid tumours affect younger patients between 20-40 years old but have been described in patients up to 80 years of age (5). Desmoid tumours are locally aggressive but rarely metastasise (6). Conservative management and surgery have been shown to have comparable 10-year progression free survival compared to upfront surgery for intra-abdominal desmoids (7). Conservative therapies include NSAIDs, tamoxifen, imatinib, radiotherapy and cytotoxic chemotherapy (8). Treatment for an isolated intra-abdominal desmoid tumour can include upfront surgical resection depending on symptomatology, relationship to surrounding structures or diagnostic uncertainty as they may cause intestinal obstruction or ischaemia due to constriction of mesenteric vasculature but this should ideally be decided by a MDT (6).
Colorectal adenocarcinoma metastases are generally PET avid whereas desmoid tumours have a heterogeneous low metabolic activity, with higher activity in more cellular areas (6, 9). The lower $F^{18}$-FDG PET avidity associated with desmoid tumours is related to the underlying tissue type. They are formed from an overgrowth of slow growing fibrous tissue. Conversely, the increased avidity seen with colorectal malignancy, be it primary or metastatic, is a result of increased cellular turnover and mitosis resulting in increased metabolic activity and uptake of radionucleotide labelled glucose molecules.

This case highlights that an isolated PET avid lesion in a patient with a history of colorectal cancer may not be due to metastatic disease, in particular when there is no response to adjuvant chemotherapy. Management of complex cancer recurrences should be discussed at a MDT as it will help guide with patient treatment in cases where this is another rare pathology. Exploratory surgery with planned resection of isolated metastatic disease should be considered in these situations.
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