Letter to the Editor

Total regression of a duodenal tubulovillous adenoma after chemotherapy: results of an ^{18}F-fluorodeoxyglucose (FDG) positron emission tomography/computed tomography (PET/CT) scan

Mahaman Mallam Abdoul Rachid[1,2]^, Jian-Nan Li[1], Pan Zhe[1]

[1]Department of Nuclear Medicine, the First Affiliated Hospital of Dalian Medical University, Dalian, China; [2]Department of Medical Imaging, Third Affiliated Hospital of Southern Medical University, Guangzhou, China

Correspondence to: Jian-Nan Li, MM. Department of Nuclear Medicine, the First Affiliated Hospital of Dalian Medical University, Lianhe Road 193, Dalian 116021, China. Email: youlihandcraft@163.com.

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Introduction

Comprising 8% of the small bowel, the duodenum is the site of 10–22% of its tumors, mainly adenomas. These benign growths are sporadic which are rare, or more common as in familial adenomatous polyposis (1). Tubulovillous adenomas encompass only 1% of duodenal tumors (2). Their growing prevalence revealed through endoscopy use, presents unique challenges due to their potential for malignancy. Their usual location in the second portion of the duodenum needs careful and individualized management (1).

Case presentation

A 79-year-old woman diagnosed with right breast cancer underwent an ^{18}F-fluorodeoxyglucose (FDG) positron emission tomography/computed tomography (PET/CT) scan for staging and treatment planning. The scan confirmed the presence of right breast cancer [*Figure 1*, image maximum intensity projection (MIP) T] and axillary lymph node metastasis (*Figure 1*, image MIP, L). Surprisingly, it also revealed a duodenal lesion in the descending duodenum presented as a large (3.4 cm) homogeneous mass (*Figure 1*, image I, A). The PET/CT scan revealed an increased maximum standard uptake value (SUVmax) from 3.5 to 4.5 in the delayed phase; a second lesion located in the hepatic flexure of the colon appeared as a discernible nodule (1.6 cm) (*Figure 1*, image I, B). The SUVmax for this nodule was 5.6 and 6.9, respectively, at the early and delayed phases, indicating a relatively higher metabolic activity compared to the duodenal mass.

Biopsy results and histopathological findings confirmed the presence of the right breast cancer with ipsilateral axillary lymph node metastasis. The biopsy results from the gastroscopy pathology confirmed the presence of a duodenal tubulovillous adenoma (*Figure 1A*). Histopathological examination revealed characteristics consistent with this diagnosis, including architectural complexity with tubular and villous components. During a colonoscopy, the lesion biopsy in the right colic flexure (*Figure 1B*) area revealed a tubular adenoma. Histopathological analysis confirmed the presence of dysplastic changes within the colonic tissue, indicative of an adenomatous growth. The patient underwent treatment with capecitabine 1,500 mg bid as a single agent for six cycles, then capecitabine 1,500 mg bid plus albumin-bound paclitaxel for three cycles. During the treatment, a follow-up CT scan showed that the duodenal lesion had significantly reduced to 1.3 cm, and the colon lesion was approximately the same.

^ ORCID: 0000-0002-3736-2166.

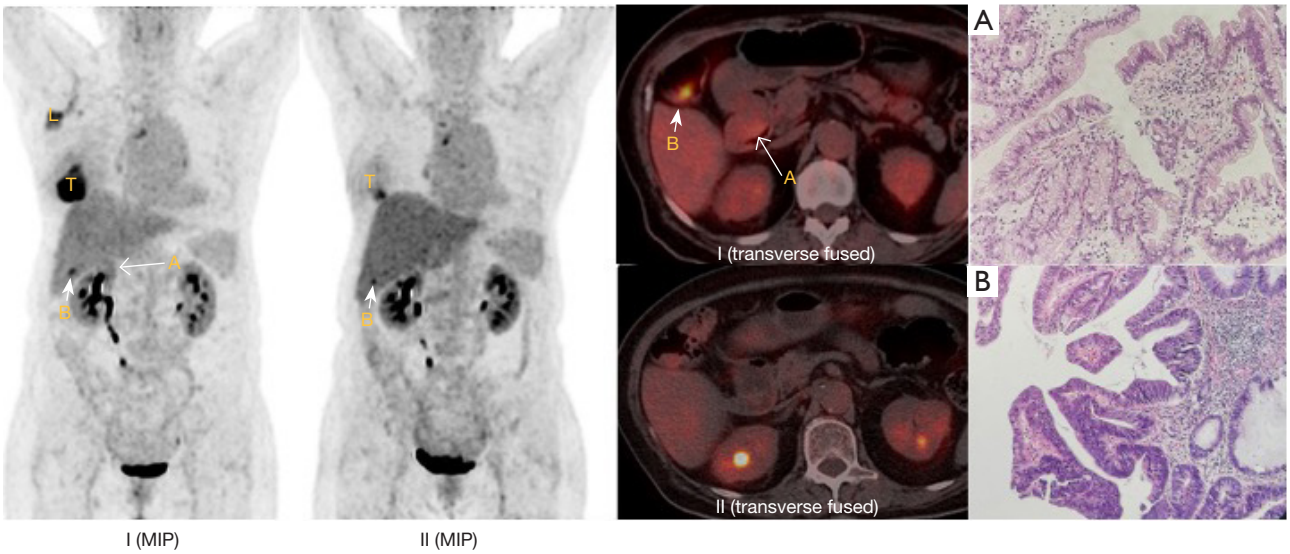

Figure 1 ^{18}F-FDG PET/CT scan: MIP showing right breast cancer (T) and axillary lymph node metastasis (L). On the transversely fused image, a homogeneous mass (3.4 cm) is located in the descending duodenum (I-A) and a nodule in the hepatic flexure of the colon (I-B). The SUVmax for the duodenal mass and colon nodule was 3.5 and 6.9, respectively. Gastro-colonoscopy pathology (hematoxylin and eosin staining, ×200 magnification) indicates a duodenal tubulovillous adenoma (A) and a tubular adenoma in the right colic flexure area (B). MIP, maximum intensity projection; ^{18}F-FDG PET/CT, ^{18}F-fluorodeoxyglucose positron emission tomography/computed tomography; SUVmax, maximum standard uptake value.

Before breast cancer surgery, a second PET/CT scan was performed, which showed that the duodenal adenoma had disappeared but the colon lesion had slightly increased (IIB). The patient did not undergo further endoscopic examination, but abdominal CT follow-up showed no recurrence of the duodenal lesion. The colon lesion gradually increased in size, with the latest CT, showing an increase to a diameter of 2.16 cm.

All procedures performed in this case were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this article and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

Discussion

The utilization of PET/CT imaging as a tool for guiding cancer staging and evaluation has been firmly established and is expected to encompass a broader range of cancer types. The advent of PET/CT technology in oncology is a significant advancement, facilitating the development of personalized treatment protocols. It increases therapy outcomes but also minimizes the adverse effects on vulnerable organs (3).

An unexpected abnormal focal FDG accumulation within the digestive tract on PET imaging necessitates careful evaluation and consideration of other potential malignancies, which may require bio-physiologic examination or surgery due to the underlying risk of malignancy (4,5).

Although all patients presenting colon adenomas of a familial or nonfamilial nature may be at higher risk of synchronous duodenal adenomas, further workup should be undertaken (6-8). Additionally, evidence from previous studies illustrates that duodenal adenomas have similar homology with colorectal adenomas, irrespective of their position (7-9). After identification, all duodenal adenomas must be removed, especially for those with a high probability of harboring invasive lesions (a diameter superior to 20 mm and high-grade dysplasia) (10-12).

After a series of breast cancer chemotherapy, a total regression of the duodenal adenoma was observed, which raises interesting questions.

While chemotherapy mainly focuses on eliminating cancer cells, less attention has been paid to its effects on adenomatous growths in research (13). The potential

underlying mechanisms at play may involve various elements.

The interaction between chemotherapy and cancer is influenced by several factors, including the specific medicines employed, their dosage, and the patient's response (13). The growth and stability characteristics of the adenoma may have changed due to the new microenvironment created by chemotherapy in this case.

To our knowledge, the phenomenon of a significant villous tubular adenoma in the duodenum disappearing after chemotherapy while the colon tubular adenoma remains unaffected has not been documented in existing academic literature.

This case is an atypical scenario regarding oncology and adenoma management. Beyond this specific patient, it indicates that certain adenomas might react differently in the presence of chemotherapy. Comprehensive investigations are needed to clarify the fundamental mechanisms and identify which specific factors may induce a total regression of adenomas in the presence of chemotherapy.

In conclusion, when abnormal FDG accumulation is observed in the gastrointestinal tract, it is important to always perform a careful evaluation and consider all factors that may indicate potential malignancies. Additionally, while highlighting the atypical nature of certain adenomas' responses to chemotherapy it also demonstrates, the importance of interdisciplinary approaches in oncology practice.

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Footnote

Conflicts of Interests: All authors have completed the ICMJE uniform disclosure form (available at https://qims.amegroups.com/article/view/10.21037/qims-23-1767/coif). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this case were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this article and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

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