Case Report

Rare case of isolated splenic metastases from gastric cancer detected with fluorine-18 fluorodeoxyglucose-positron emission tomography/computed tomography

Koramadai Karuppusamy Kamaleshwaran, Balasubramanian Sivanesan[1], Deepu Shibu, Ajit Sugunan Shinto

Departments of Nuclear Medicine and Positron Emission Tomography/Computed Tomography, Kovai Medical Centre and Hospital Limited, [1]Medical Oncology, G Kuppusamy Naidu Memorial Hospital, Coimbatore, India

ABSTRACT

We report a rare case of isolated splenic metastasis from gastric cancer detected with fluorine-18 fluorodeoxyglucose-positron emission tomography/computed tomography (PET/CT). A 55-year-old man with gastric cancer 1 year post surgery, evaluated with PET/CT showed focal, intense uptake in the spleen, with no other abnormal findings. On splenectomy, the lesion was confirmed as metastasis from gastric cancer pathologically.

Keywords: Fluorodeoxyglucose-positron emission tomography/computed tomography, gastric cancer, isolated splenic metastasis, splenectomy

INTRODUCTION

The majority of splenic metastases arise from hematological malignancies such as malignant lymphoma or leukemia. However, they are sometimes found in patients with end-stage cancer as systemic metastases. The incidence of carcinomatous splenic metastasis has been reported to be 3.0% based on autopsy cases of cancer patients. Isolated splenic metastasis from gastric cancer is very rare.[1] Here, we report a case of isolated splenic metastasis from gastric cancer seen in fluorodeoxyglucose-positron emission tomography/computed tomography (FDG PET/CT).

CASE REPORT

A 55-year-old male patient diagnosed as gastric cancer involving fundus and gastroesophageal junction underwent distal esophagogastrectomy a year before. He presented with the left side abdominal pain and was referred for the whole body PET/CT to differentiate it as benign or malignant and to rule out any other sites of metastasis. PET/CT revealed intense uptake in the hypodense lesion in the spleen and no other sites of metastasis [Figure 1]. Splenectomy was performed, which confirmed metastasis from gastric cancer.

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DISCUSSION

Splenic metastases from solid malignancies generally occur within a setting of extensive multiorgan involvement. Over half of all patients with metastatic disease involving five or more organs have lesions in the spleen (often microscopic) and these patients represent 2-7% of those who die from end-stage metastatic disease.[1] It is much less common to find the spleen as the sole site of metastatic spread. Primary cancers of the breast, lung, colon and rectum, ovary and stomach are the ones most likely to metastasize to the spleen.[2] Isolated splenic metastases are very rare. Sileri *et al.*, recently reported a case of a single splenic metastasis from colon cancer that appeared 5 years after surgery.[3]

While direct splenic invasion from gastric carcinoma may occur, discontiguous splenic metastases from gastric cancer are uncommon. Lam and Tang report 16% of metastatic tumors to the spleen to be secondary to gastric cancer.[4] Yamanouchi *et al.*, reviewed all reported cases of isolated metachronous

Address for correspondence:
Dr. Koramadai Karuppusamy Kamaleshwaran, Department of Nuclear Medicine, Positron Emission Tomography/Computed Tomography and Radionuclide Therapy, Comprehensive Cancer Care Centre, Kovai Medical Centre and Hospital Limited, Coimbatore - 641 014, Tamil Nadu, India. E-mail: dr.kamaleshwar@gmail.com

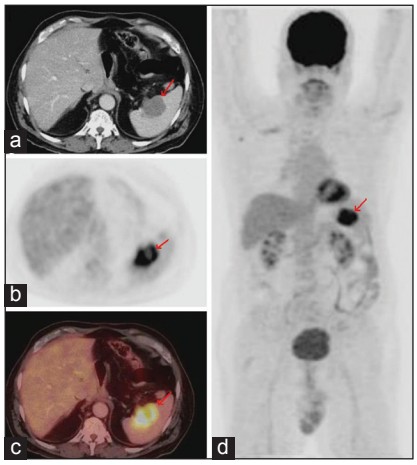

Figure 1: Whole body fluorodeoxyglucose-positron emission tomography/computed tomography (FDG PET/CT) showed a hypodense mass in the spleen (a) and focal, intense 18 fluorine-FDG uptake with a standardized uptake value max of 22.1 in the spleen (arrows point to the lesion; from a to d, computed tomography, PET, fused PET/CT and maximum intensity projection images). There were no other lesions to suggest malignancy in the whole-body PET image (d)

and synchronous splenic metastases from gastric cancer, identifying a total of 11 patients.[5] This review demonstrated that in the majority of cases, the primary tumors are located in the upper to middle third of the stomach. Gastric cancer is thought to metastasize to the spleen through the splenic artery. It is important to remember that the blood flow from the stomach does not reach the spleen directly, but rather through the systemic circulation. Therefore, in most cases there are likely to be undetectable micrometastases in other organs.[5] FDG PET/CT can be used to help discriminate benign from malignant splenic masses. It can also identify additional unsuspected sites of disease, which may be more accessible for biopsy. This may obviate the need to biopsy the spleen itself, a procedure associated with a complication rate of 1.5-13%. The group of patients with splenic mass and known malignant disease, the sensitivity, specificity, positive predictive value and negative predictive value of visual analysis of FDG PET/CT in differentiating benign from malignant solid splenic lesions were 100%, 100%, 100% and 100%, respectively.[6] FDG PET/CT is a non-invasive imaging modality that appears to have a high negative predictive value for malignancy in assessing solid splenic masses discovered on conventional imaging modalities.[7] This is the first case report of splenic metastasis form gastric cancer seen in FDG PET/CT. As with other primary cancers, gastric cancer that metastasizes to the spleen is treated with splenectomy. In general, splenic metastasis has been considered the terminal stage of cancer. However, when the lesion being solitary, surgical treatment should be considered and long-term survival can be achieved with splenectomy, especially with late occurrence of splenic metastasis.[8]

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