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Discordant Metabolic Response on ^{18}F-FDG PET/CT in Synchronous Primary Gastric Lymphoma and Gastric Adenocarcinoma

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Abstract: An 84-year-old man presented with dysphagia for 20 days. The biopsies of the multiple lesions through gastroscopy revealed gastric diffuse large B-cell lymphoma and gastric adenocarcinoma. Staging ^{18}F-FDG PET/CT showed multiple hypermetabolic lesions in the stomach, abdomen, and pelvis. After 4 courses of chemotherapy, except for the lesion of biopsy-proven gastric adenocarcinoma, other hypermetabolic lesions in stomach and other sites returned to normal on posttherapy ^{18}F-FDG PET/CT. This case indicated that ^{18}F-FDG PET/CT can track differential treatment response of synchronous gastric tumors and guide subsequent therapy.

Key Words: synchronous gastric tumors, ^{18}F-FDG, PET/CT, discordant metabolic response

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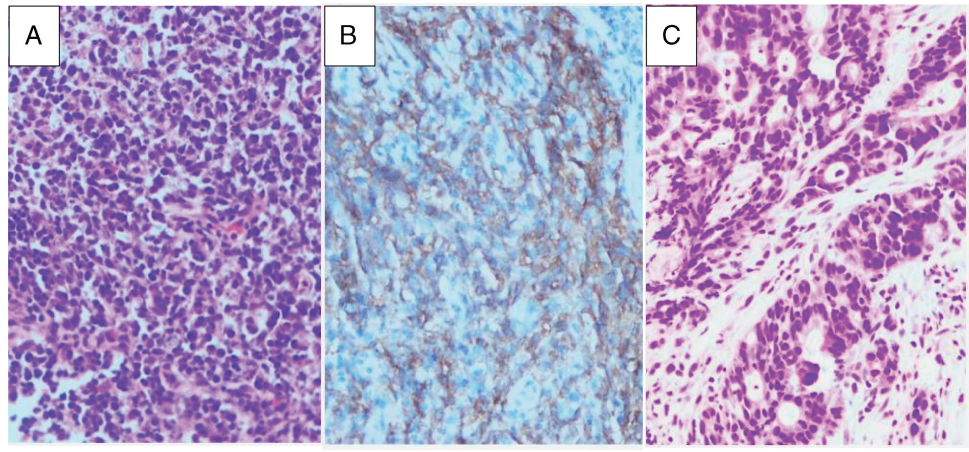

FIGURE 1. An 84-year-old man was admitted to our hospital because of dysphagia in the past 20 days. The pathological biopsy through endoscopic showed large atypical lymphoid cell infiltration with diffuse growth, and the follicular dendritic meshworks were totally diminished. The nuclei were round or ovoid with prominent nucleoli (**A**, hematoxylin-eosin staining, samples from the gastric fundus and the cardia of stomach). Immunohistochemistry staining showed the diffuse strong membranous positive staining of CD20 (**B**, immunohistochemical staining). Biopsies from the antrum near the lesser curvature of stomach showed atypical confluent tubular and glandular structures composed of neoplastic cells with irregular nuclear contours and atypical mitotic figures (**C**, hematoxylin-eosin staining).

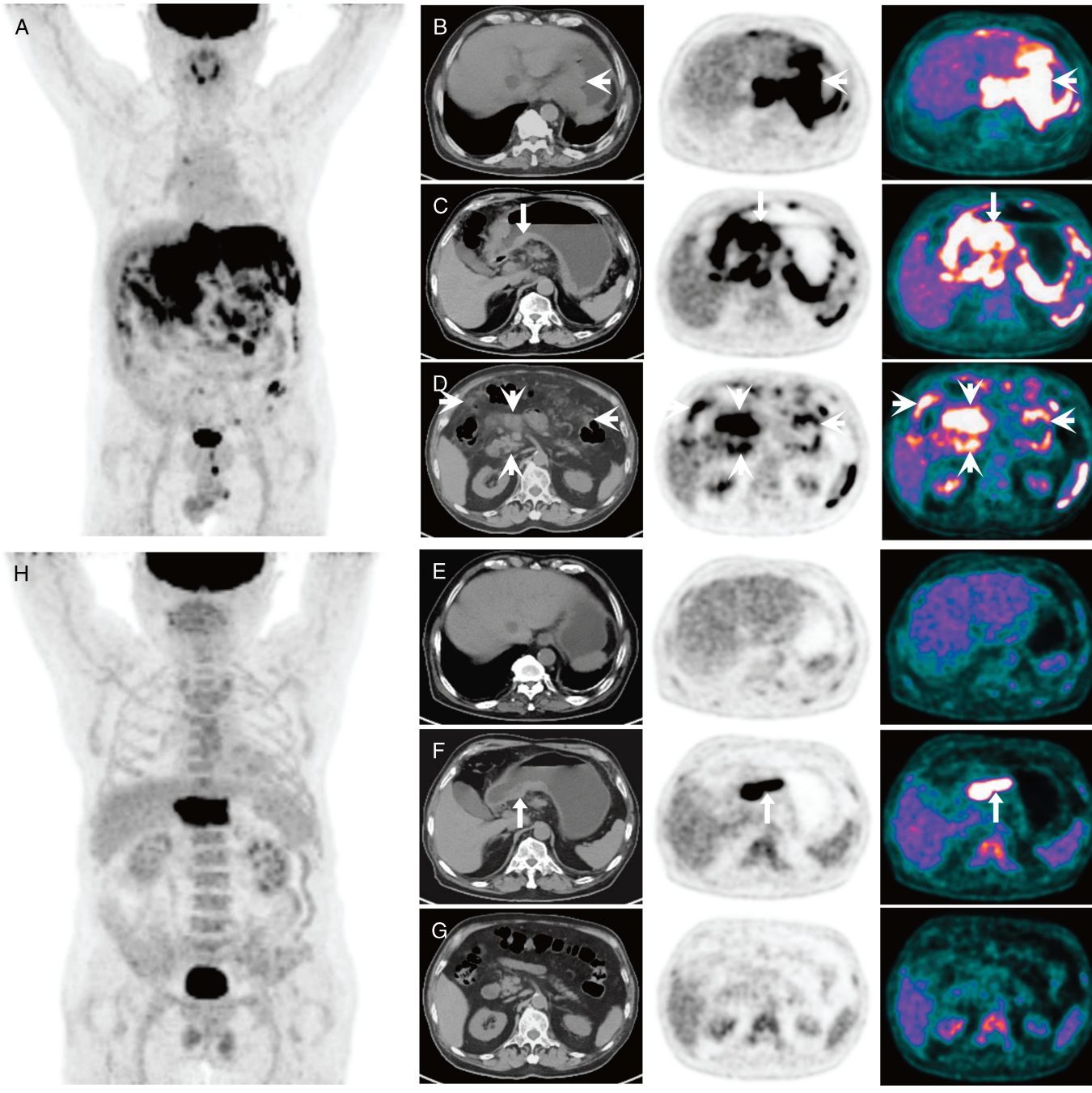

FIGURE 2. ^{18}F-FDG PET/CT was performed. The MIP image (**A**) revealed multiple intense FDG uptake in the region of abdomen and pelvis with an SUV_{max} of 26.5. The axial images of stomach (**B**, CT; PET; PET/CT fusion) demonstrated that lesions of biopsy-proven gastric diffuse large B-cell lymphoma (DLBCL) at the cardia and fundus of stomach presented with elevated FDG uptake, and the gastric wall thickened (~4.20 cm; SUV_{max}, 33.9; short arrow). The axial images of stomach (**C**, CT; PET; PET/CT fusion) showed that lesions of biopsy-proven gastric adenocarcinoma at the gastric antrum near the lesser curvature of stomach had intense FDG uptake, and the gastric wall thickened (~1.20 cm; SUV_{max}, 26.5; long arrows). In addition, the axial images of abdomen (**D**, CT; PET; PET/CT fusion) showed multiple abnormal FDG uptake (short arrow). The patient started on a chemotherapy regimen with R-miniCHOP in combination with ultra-low-dose cisplatin (10 mg every 3 days), and posttherapy ^{18}F-FDG PET/CT was performed after 4 courses. Comparing to the baseline imaging, metabolic activity and range of lesions were significantly reduced (**H**, MIP). There were no aberrant hypermetabolic lesions of biopsy-proven gastric DLBCL at the fundus and cardia of stomach in the posttherapy ^{18}F-FDG PET/CT scan (**E**, CT; PET; PET/CT fusion), and reduced FDG uptake was found in the area of biopsy-proven gastric adenocarcinoma at the antrum near the lesser curvature of stomach (**F**, CT; PET; PET/CT fusion) from SUV_{max} 26.5 to 20.6 (long arrow). In addition, multiple areas of intense metabolism in abdomen converted to normal radioactivity (**G**, CT; PET; PET/CT fusion). Synchronous primary gastric DLBCL and gastric adenocarcinoma is uncommon with unclear prognosis[1,2]; precise treatment determines the prognosis. As a metabolic imaging tool, ^{18}F-FDG PET can detect the individual treatment response earlier than anatomical imaging.[3,4] In this case, the 2 ^{18}F-FDG PET/CT scans indicated all FDG-avid lesions of gastric DLBCL returned to normal after 4 courses of chemotherapy, and the patient in this case gained completed response of DLBCL according to Lugano classification.[5–7] In addition, ^{18}F-FDG PET/CT showed that the gastric adenocarcinoma located at the gastric antrum near the lesser curvature was left with elevated FDG uptake, which provided valuable information for adjusting further treatment strategy to gastric adenocarcinoma.[8] Accordingly, discordant metabolic response after treatment on ^{18}F-FDG PET/CT should be encouraged in synchronous primary carcinoma to guide therapeutic strategy.