CASE REPORT

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False-Positive Lymph Node Involvement by PET-CT in an Early Gastric Cancer: Kikuchi Fujimoto Disease

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ABSTRACT Early gastric cancer diagnosis rate has increased due to the use of advanced technology and the development of screening methods. Endoscopic mucosal resection or endoscopic submucosal dissection methods can be used in the treatment of early stage gastric cancer after exclusion of metastatic disease. Invasive cancer in the gastric submucosa is considered to be an early stage without lymph node metastasis. In this article, we present our patient with early gastric cancer, who even with an early stage of cancer had a high uptake of 18 fluorodeoxyglucose (FDG) positron emission tomography activity associated with metastasis in local lymph nodes. However, histopathological evaluation revealed that the concurrent diagnosis was Kikuchi Fujimoto's disease. Increased 18 FDG can be misleading with positron emission tomography activity and may subject the patient to radical therapy in some cases, such as Kikuchi Fujimoto's disease associated with gastric cancer.

Keywords: Histiocytic necrotizing lymphadenitis; gastric cancer; endoscopic surgical procedures

Invasive cancer in the gastric submucosa is considered to be an early stage without lymph node metastasis. Lymph node metastases are not found in most patients with early gastric cancer. Therefore, endoscopic mucosal resection (EMR) or endoscopic submucosal dissection (ESD) methods are applied in selected cases. Endoscopic treatment indications were identified by the Japanese Gastric Cancer Society in 2018. According to that treatment guideline; while both ESD or EMR could be useful for a differentiated-type adenocarcinoma without ulcerative findings, in which the depth of invasion was clinically diagnosed as T1a and the diameter is ≤2 cm, only ESD was indicated if the diameter was >2cm. In addition to that ESD was suggested in a differentiated-type adenocarcinoma with ulcerative findings diagnosed as T1a and with a diameter of ≤3 cm.[1] We also found early gastric cancer in our patient. Computerized tomography (CT) imaging detected lymph nodes regionally that retained fluorodeoxyglucose (FDG) in positron emission computerized tomography (PET/CT) imaging and this directed the surgical treatment.

Kikuchi Fujimato's disease (KFD) is a self-limiting, benign disorder, causing pain in the area with fever and enlarged regional lymph nodes. 18 FDG PET-CT is a noninvasive imaging method useful in the diagnosis of unknown fever, adult type Still disease, inflammatory bowel disease, and systemic involvement of malignant diseases. In our patient, early gastric carcinoma with KFD, showed pathologic FDG uptake which led us to think that the disease was a local advanced stage and surgical treatment was required.

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An informed consent was obtained from the patient for this case report.

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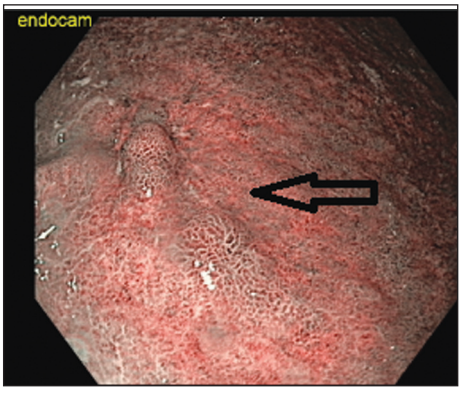

FIGURE 1: The black arrow shows the irregular mucosal fluffy area where the biopsy was performed.

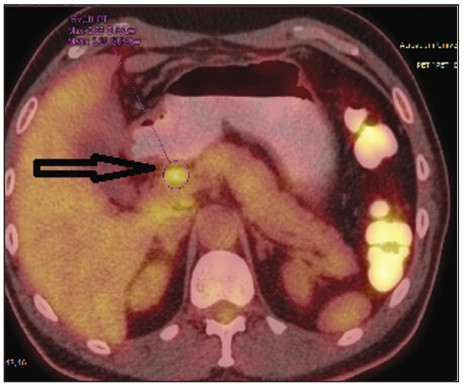

FIGURE 2: The black arrow shows the increased fluorodeoxyglucose activity in the small curvature which was considered as a metastasis.

A 51-year-old male patient presented with abdominal pain, weight loss and night sweats. Physical examination revealed sensitivity in the epigastric region. Erythrocyte sedimentation rate was 30 mm/s, twice as high as the upper limit. The patient underwent CT imaging to evaluate treatment-resistant and long-term abdominal pain. CT showed a large number of lymph nodes in the right retrocrural area, left gastric region, celiac axis, portal hilar, paraaortic, bilateral external iliac artery region, and multiple lymph nodes with a small diameter under one cm. After all of these findings, gastroduodenoscopy was performed. In the narrow-band examination, an irregular mucosal fluffy area was selected and biopsy was performed in the antrum mucosa (Figure 1). The biopsy showed a tubular type and a one mm diameter early stage gastric invasive adenocarcinoma. The tumor was limited to the mucosa and the adjacent mucosa contained severe dysplasia. Chronic atrophic gastritis including complete type intestinal metaplasia was also reported. Therefore, advanced imaging was performed with 18 FDG PET-CT to exclude systemic dissemination. In the small curvature (Figure 2), in the aortocaval field, increased FDG activity in the periportal and portocaval lymph nodes was considered to be metastatic disease (Figure 3). Surgical treatment was planned. Carcinoembryonic antigen was normal (1.1 ng/mL). Lymphadenectomy for lymph nodes in the portal vein and aortocaval region was performed with radical subtotal gastrectomy. Pathological examination was reported as adenocarcinoma of eight mm in size, well-differentiated, grade one, with lamina propria invasion. Surgical margins

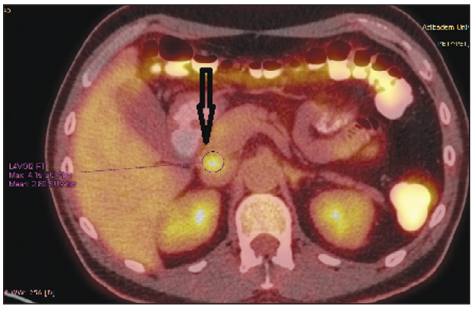

FIGURE 3: The black arrow shows the increased fluorodeoxyglucose activity in the periportal and portocaval lymph nodes which were was considered as metastasis.

were negative and metastasis was not present in 39 lymph nodes. The patient was staged as pT1a N0 M0. As a result of the pathology, there was no metastasis in the lymph nodes which are high FDG activity. Histopathological examination of the lymph nodes determined histiocytic lymphadenitis consistent with KFD.

DISCUSSION

Radical gastrectomy is traditionally applied in the treatment of early stage gastric cancer. Thus, effective dissection removes possible spread of lymph nodes and the primary tumor. Long-term survival can be achieved with a curative resection.[2] Even though this surgery has advantages, it also causes serious morbidity and poor quality of life.[3] At this stage, the effectiveness of minimally invasive interventions have been questioned. Nowadays treatments include EMR and ESD methods.[4] It is attractive because of improved quality of life and low cost but the long-term survival rates are not clear compared with the

risks and benefits of traditional gastrectomy.[5] If pathological lymph node presence is considered during staging, D2 dissection is recommended. The detectability and diagnostic accuracy of FDG uptake in gastric cancer can be affected by the histological type, localization, and physiological characteristics of the stomach. In some cases, it is not possible to make a differential diagnosis of gastric lymphoma and gastric adenocarcinoma. The sensitivity of PET CT in detecting the primary tumor is between 21-100%, the specificity is between 78-100%.[6] The reason for the wide range is the histopathological features of the tumor and technical reasons. There may be a significant amount of physiological FDG uptake imitating pathological involvement in the stomach. When the tumor size is small, there may not be enough FDG uptake. FDG uptake is low in signet ring cell gastric carcinoma and mucinous gastric cancer. As in our case, in some diseases such as KFD, pathological FDG uptake can be seen and may lead to mis-staging of the patient.

KFD generally affects women of Asian origin, who are between the ages of 20 and 35. The male:female ratio is 1:2 .[7] Acute or subacute lymphadenopathy with presence of systemic symptoms should be considered in the differential diagnosis with lymphoma.[8] FDG uptake may be similar to lymphoma in KFD. High FDG uptake in KFD is thought to be due to increased phagocytic properties of histiocytes. FDG uptake occurs not in necrotic areas but in histiocytes with increased phagocytic activity around necrotic areas. In addition, increased FDG uptake in lymph nodes, spleen and bone is not specific for KFD. A KFD treatment algorithm has not been established yet. Treatment is based on expert opinions and recommendations in published case reports. Because of being a self-limiting disease, the most common approach is observation. In cases of extranodal diseases such as fever, central nervous system findings, skin lesions, short-term steroid treatment can be prescribed and also nonsteroidal anti-inflammatory and antipyretic drugs can be given. In the complex type of KFD, hydroxychloroquine or glucocorticoids may be useful.[9] Recurrence occurs in about 15%.[7] The disease prognosis is good in most patients, systemic symptoms and symptoms of lymphadenopathy spontaneously decline within one-four months.[10] Coexistence of KFD and systemic lupus erythematosus (SLE) varies between 3-28% and is more common in Asians. The mortality rate in KFD varies between 0.5-2.1%. The causes of death are myocarditis, cerebral hemorrhage due to thrombocytopenia and SLE. In our patient, PET CT imaging, which had a false positive result, underwent radical subtotal gastrectomy instead of ESD. No additional treatment was required for detected KFD.

Endoscopic resection or dissection methods may be good treatment options for patients with early stage gastric cancer. It protects the patient from an unnecessary morbidity. The disease should be limited to the stomach for this procedure. CT is used as the primary imaging method for staging of gastric cancer. PET CT is preferred for systemic screening in cases with signs of locoregional disease. However, it should be kept in mind that in many cases it will give false positive results. One of these conditions is KFD. The patient may be referred for radical treatment because of the false positive PET CT images. As a result, FDG uptake level should be evaluated more carefully. Endoscopic ultrasonographic biopsy should be used more effectively in suspected cases.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

This study is entirely author's own work and no other author contribution.

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