Retropertoneal Fibrosis in a Patient with Gastric Cancer Manifested by Lower Extremity Edema and Hydrocele

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Abstract

Herein we report a 57-year-old man with lower extremity edema and swelling in the scrotum who was found to have a periaortic soft tissue mass and hydronephrosis by computed tomography. With the most plausible diagnosis of retropertoneal fibrosis, corticosteroid therapy was initiated; however, it did not improve his symptoms. Upper gastroscopy performed on day 20 post admission showed ulcerative regions with an irregular border and fusion of thickened rugae at the gastric angle; the diagnosis of gastric adenocarcinoma was confirmed histologically. It is important to always be aware of unrecognized malignancies that are accompanied by retropertoneal fibrosis.

Key words: retropertoneal fibrosis, different diagnosis, gastric cancer, immunoglobulin G4

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Introduction

Idiopathic retropertoneal fibrosis, which is a relatively uncommon condition, is characterized by a fibroinflammatory soft tissue mass surrounding the aorta and/or adjacent tissues (1), with an estimated incidence of 1.38 per 100,000 inhabitants (2). About two-thirds of retropertoneal fibrosis is idiopathic in nature and retropertoneal fibrosis may be caused by certain drugs, infections, radiotherapy, surgery, and malignancies (1). In addition, several studies have suggested that a certain genetic background may be associated with retropertoneal fibrosis (3, 4). In recent years the diagnosis of this disease has come to rely primarily on imaging studies (5), and most frequently by computed tomography, because of the potential risks of biopsy of the retropertoneal tissue. The prognosis of idiopathic retropertoneal fibrosis may be relatively benign, when properly treated (6). However, it is important to avoid delay in diagnosis, misdiagnosis, or other unsuspected life-threatening conditions, such as malignancy (7, 8) and infection (9). Herein, we describe a patient with retropertoneum-infiltrating gastric cancer that caused left ureteric stricture who was initially diagnosed to have idiopathic retropertoneal fibrosis.

Case Report

A 57-year-old man with lower extremity edema and swelling in the scrotum was referred to our department due to findings of fibrosis around the abdominal aorta and hydronephrosis, suggestive of idiopathic retropertoneal fibrosis, demonstrated by computed tomography (CT) without contrast enhancement (Fig. 1A). The patient complained of general malaise. His medical history was unremarkable from the cardiologic point of view. Initial vital signs showed blood pressure of 155/98 mmHg, heart rate of 75 beats/min. Electrocardiogram was unremarkable, but chest X-ray revealed mild cardiomegaly with the cardiothoracic ratio of 53%. Cardiac ultrasonography showed preserved systolic left ventricular function with an ejection fraction of 64% and hemodynamically insignificant aortic valve sclerosis. Laboratory studies showed a white blood cell (WBC) count of...
7,820/μL; hemoglobin level of 11.6 g/dL, platelet count of 31.7×10⁴/μL, erythrocyte sedimentation rate of 66 mm/hr, serum C-reactive protein concentration of 1.75 mg/dL, and serum creatinine level of 1.49 mg/dL. Antinuclear antibody was positive, and the serum IgG4 level was 28.5 mg/dL (within normal range) and soluble interleukin 2 receptor level was 448 mg/dL (within normal range). The serum N-terminal pro-B-type natriuretic peptide level was 86 pg/mL. Serum levels of carcinoembryonic antigen, CA19-9, and alpha-fetoprotein were all within the normal range. Blood bacterial culture was negative. Images of CT (Fig. 1A) and magnetic resonance imaging (MRI) (Fig. 1B, C) showed soft tissue mass surrounding the abdominal aorta, hydronephrosis caused by cleft ureteral stricture, and mild calcification of the aortic wall that did not show apparent aneurysmal dilatation, findings that were compatible with retroperitoneal fibrosis. Under the most probable diagnosis of idiopathic retroperitoneal fibrosis, prednisolone treatment (40 mg/day, per os) was initiated on day 4 post admission, which, however, did not improve the symptoms or abnormal CT findings. Upper gastroscopy performed on day 20 post admission showed ulcerative regions with irregular border and fusion of thickened rugae at the gastric angle (Fig. 2A). The diagnosis of moderately differentiated tubular adenocarcinoma and poorly differentiated adenocarcinoma was made histologically (Fig. 2B). A gallium citrate (67Ga) scintigraphy performed on day 20 post admission showed the left kidney with hydronephrosis and abnormal 67Ga accumulation at the gastric angle suggestive of gastric malignancy (Fig. 3A). 67Ga accumulation was not accumulated in the soft tissue mass around the abdominal aorta (Fig. 3B). Further investigation revealed pleural dissemination, lymph node metastasis (paratracheal, axillary, and retroperitoneal), and bone sclerosis suggestive of bone metastasis. Under the diagnosis of advanced gastric cancer, the patient was transferred to the Chemotherapy Section of our Hospital.

Discussion

We herein report a patient with lower extremity edema and hydrocele who was diagnosed have retroperitoneal fibrosis and ureteral stricture. Corticosteroid therapy (prednisolone, 40 mg/day, per os) was initiated; however, it did not improve the symptoms or abnormal CT findings. Upper gastroscopy performed on day 20 post admission showed ulcerative regions with an irregular border and fusion of thickened rugae at the gastric angle, and diagnosis of gastric ade-
The pathological cause of retroperitoneal fibrosis has not been clarified yet. It has been suggested that idiopathic retroperitoneal fibrosis is an autoimmune disorder that targets components of aortic atherosclerosis leading to an exaggerated local reaction to atherosclerosis. The present case also had a mild degree of aortic sclerosis. By contrast, considering that patients with idiopathic retroperitoneal fibrosis often have elevated concentrations of acute phase reactants, positive autoantibodies, and associated autoimmune diseases involving other organs, Vaglio et al. speculated that idiopathic retroperitoneal fibrosis may be a systemic autoimmune disease (1). On the other hand, about one-third of retroperitoneal fibrosis is considered to arise secondary to other intrinsic and extrinsic causes including malignancies (1), and the association of retroperitoneal fibrosis with gastric cancer has been demonstrated by several previous reports (10). Thomas and Chisholm reported that, in 35 patients with retroperitoneal fibrosis, 19 were found to have certain malignancy, among which colorectal cancer was found in 6 patients (32%) and gastric cancer in one patient (5%) (11). Dohmen et al. showed a case with scirrhous gastric cancer who demonstrated retroperitoneal fibrosis that causes hydronephrosis leading to renal dysfunction (12). In the case of Dohmen et al., histologic analysis of a retroperitoneal specimen showed prominent fibrosis with sparse malignant cells, consistent with the secondary retroperitoneal fibrosis. The similarities between retroperitoneal fibrosis-related and idiopathic retroperitoneal fibrosis has been pointed out (10). Of note, Yashiro et al. demonstrated the possibility that scirrhous gastric cancer cells may induce proliferation of peritoneal fibroblast cells and facilitate fibrotic lesion formation (13). We speculate that the present patient had retroperitoneal fibrosis secondary to gastric cancer. However, the possibility remains that both idiopathic retroperitoneal fibrosis and gastric cancer were coincidently
coexistant in this patient. It has been reported that the sensitivity of positron emission tomography (PET) is very high for retroperitoneal fibrosis; however, it may not allow the distinction between retroperitoneal neoplastic tissue, eventually associated with retroperitoneal fibrosis, and metabolically active fibrotic tissue (14). The uptake of 67Ga, which is also known to accumulate malignant lesions, was found to be negative in the periaortic tissue in the present case. Whether the absence of radionuclide uptake would increase the possibility of idiopathic retroperitoneal fibrosis warrants further investigation.

In the present case, the retroperitoneal pathologies did not respond to steroid therapy. It should be noted, however, responsiveness to immunosuppressive therapy may not be proof of the idiopathic nature of retroperitoneal fibrosis, because certain malignant diseases, such as lymphoma (15), may demonstrate similar imaging appearance and responsiveness to such therapy. Thus, physicians should avoid delay in diagnosing malignant disorders concomitantly present or underlying retroperitoneal fibrosis even when corticosteroid therapy improves the symptoms and abnormal imaging findings (16).

It has recently been recognized that infiltration of immunoglobulin G4 (IgG4)-positive plasma cells and an increase in serum IgG4 levels can be observed in idiopathic retroperitoneal fibrosis. Measurement of serum IgG4 levels may thus be thought to facilitate the diagnosis of idiopathic retroperitoneal fibrosis. In fact, serum IgG4 levels were within the normal range in the present patient. On the other hand, however, it has been reported that IgG4-related pathologies may be present in less than 60% in idiopathic retroperitoneal fibrosis (17, 18). In addition, IgG4-positivity may not influence the clinical pictures and therapeutic responsiveness in idiopathic retroperitoneal fibrosis (19). Furthermore, a possible relationship between IgG4-related disease and carcinogenesis has been reported (20). Therefore, the elevation or non-elevation of serum IgG4 levels may not be helpful in distinguishing idiopathic and secondary retroperitoneal fibrosis, especially when it is within the normal range.

In summary, we have documented a patient who presented lower extremity edema and hydrocele who was found to have retroperitoneal fibrosis and hydronephrosis by imaging examination. Corticosteroid therapy did not improve the symptoms or the abnormal abdominal CT findings, and the patient was diagnosed to have a gastric adenocarcinoma on 20 days post admission. When diagnosing and treating retroperitoneal fibrosis, in order to avoid delay in proper management, we should always be aware that the observed pathologies may be accompanied by or misdiagnosed due to other life-threatening comorbidities, such as infection and malignancy (21).

The authors state that they have no Conflict of Interest (COI).

References

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