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CASE REPORT

Immunoglobulin G4-related disease: Multiple organ occupation on CT

Luyao Ma,* Qian Zhang,* Mengyao Zhang,* Junjie Hao† and Zhenjing Jin*

*Department of Hepatopancreatobiliary Medicine, The Second Hospital of Jilin University, Changchun and †Disease Control and Prevention Center in the Saihan District, Inner Mongolia Autonomous Region People's Government, Hohhot, China

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Correspondence
Zhenjing Jin, Department of Hepatopancreatobiliary Medicine, The Second Hospital of Jilin University, Changchun, China.
Email: jinzj@jlu.edu.cn

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Abstract

One case involved a 61-year-old woman who was admitted to hospital with liver occupation, subsequently found multiple organ occupation, and was eventually pathologically identified as having immunoglobulin G4-related disease.

Introduction

Immunoglobulin G4-related disease (IgG4-RD) is a systemic immune-mediated fibro-inflammatory disease without specific clinical signs and symptoms, which can affect almost any organ in the body (e.g. central nervous system, orbit, salivary gland, thyroid gland, lung, breast, pancreas, bile duct, liver, gastrointestinal tract, prostate, retroperitoneum, lymph nodes, and skin).[1] This paper describes a case of IgG4-RD, which was significantly improved by glucocorticoid therapy. Through this case report, we aim to improve the diagnostic thoughts of clinicians and provide new inspiration for the diagnosis and treatment of IgG4-RD.

Case report

A 61-year-old woman presented to the Department of Hepatopancreatobiliary Medicine with fever for 1 month and 15 days of focal liver lesions. She was given an insulin prescription after receiving her diabetes diagnosis a month ago. She was hemodynamically stable but febrile upon physical examination. Her white cell count, C-reactive protein, interleukin-6, and fungal D-glucan levels were all within normal limits (4.1 × 109/L, 0.68 mg/L, 2.73 pg/mL, and <10 pg/mL, respectively), and no bacterial growth was observed in blood culture for 5 days. Other tests (full blood count basic biochemistry test, especially liver function, pancreatic function and urinary amylase, thyroid function test, etc.) were all normal. Tumor markers in patients' serum were all negative. ANA screening was 1:320, and immune globulin suggested the IgG was increased (18.40 g/L). However, IgG4 was normal (0.171 g/L). A computed tomography (CT) scan of the abdomen revealed pancreatic head occupying with hepatic metastasis (Fig. 1a,b). A CT scan of the chest showed multiple nodules in both lungs and a nodule in the right lobe of thyroid, not excluding metastasis (Fig. 1c,d). Histological examination of right liver biopsy (Fig. 1g) revealed the puncture tissue included a large number of lymphoplasmic cells and fibrosis, which was arranged in matted stripes in some regions. The results of the immunohistochemical analysis were as follows: MUM-1(+), IgG4(scatter+), CK(+), hepatocyte(−), and vimentin(+), and IgG(+).

A diagnosis of IgG4-RD was made, IgG4-related hepatobiliary and pancreatic disease was the main one. Up to now, the diagnosis of IgG4-RD depends on both clinical and histopathological evidence. The majority of cases of IgG4-RD that were diagnosed early on were found as a result of rapid increases in serum IgG4 level. However, serum IgG4 level is neither a specific marker nor a sensitive marker for IgG4-RD.[2] It is no longer believed that a high serum IgG4 level is necessary to establish the diagnosis of IgG4-RD.[3] There was no obvious abnormality in

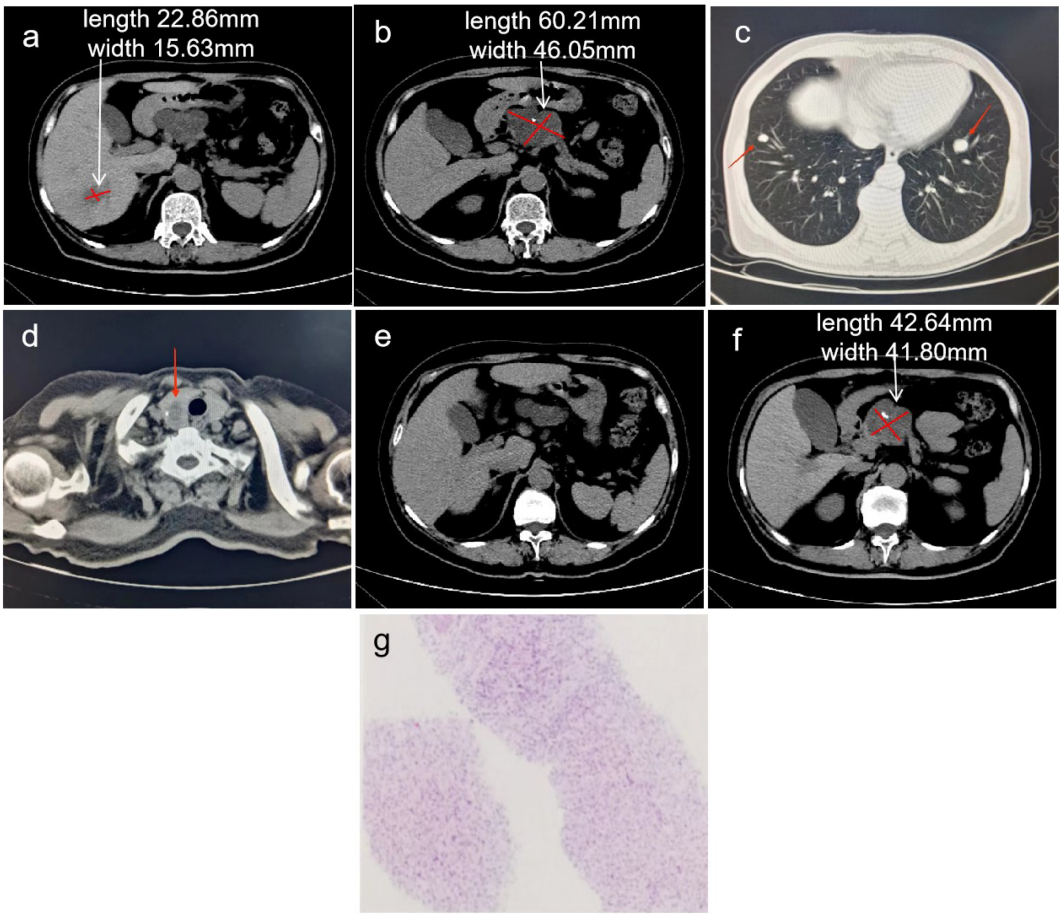

Figure 1 Abdominal computed tomography (CT) scan showed a space occupying lesion (length 22.86 mm, width 15.63 mm) in the right lobe of the liver (a). Abdominal CT scan showed a space occupying lesion (length 60.21 mm and width 46.05 mm) in the head of the pancreas (b). Chest CT scan showed multiple nodules in both lungs (c). Chest CT scan showed a nodule in the right lobe of thyroid (d). Abdominal CT scan showed a reduction or absence of space occupying lesion in the right lobe of the liver (e). Abdominal CT scan showed a reduction of space occupying lesion (length 42.64 mm and width 41.80 mm) in the head of the pancreas (f). Histological examination revealed the puncture tissue included a large number of lymphoplasmic cells and fibrosis, which was arranged in matted stripes in some regions (g).

IgG4 in our patient. IgG4-RD has a propensity to promote the growth of soft tissue in or around organs, resulting in mass lesions that are frequently misinterpreted for cancer, as in our case. In addition, IgG4-related autoimmune pancreatitis can cause endocrine pancreatic insufficiency,[4] so the patient's diabetes may be associated with IgG4-induced pancreatic endocrine insufficiency.

Glucocorticoids are the first line of treatment for IgG4-RD. The patient was given methylprednisolone 40 mg intravenously once a day and no longer had a fever. After 3 days of intravenous administration, the patient was given oral methylprednisolone tablet 40 mg instead. The dose was reduced by one tablet (4 mg) per week. Eventually, methylprednisolone tablet was maintained at a dose of 2 mg. At the same time, acid suppression and calcium supplementation were given. In addition, in order to adjust the dosage of insulin, patient often went to the endocrinology department to see a doctor. After 1 year follow-up, a CT scan (Fig. 1e,f) of the abdomen showed that pancreatic head and hepatic occupying reduced (hepatic occupying from 22.86 mm × 15.63 mm to almost invisible; pancreatic head occupying from 60.21 mm × 46.05 mm to 42.64 mm × 41.80 mm). The above situation proves that the treatment is effective.

Discussion

IgG4-RD is a chronic, fibro-inflammatory disease characterized by enlargement of the affected organs and significantly elevated serum IgG4 level. The main pathological manifestations are dense infiltration of lymphocytes/plasma cells, a large number of IgG4-positive plasma cells in affected organs, fibrosis, and obliterative phlebitis.[5] Currently, the most commonly used diagnostic criteria for IgG4-RD are the 2020 revised comprehensive diagnostic criteria by Japan and the 2019 American College of Rheumatology/European League Against Rheumatism classification criteria. The 2011 comprehensive diagnostic criteria is the earliest classification and diagnosis criteria for IgG4-RD. Because of

some problems in clinical practice, the Japanese IgG4 team proposed the 2020 revised comprehensive diagnostic criteria, which mainly included clinical and radiological manifestations, serum IgG4 level and histopathologic features.[6] The 2019 American College of Rheumatology/European League Against Rheumatism classification criteria emphasized the characteristic clinical or imaging manifestations of typical organs and introduced exclusion criteria to improve the specificity of diagnosis.[3] Its advantage is that patients can be classified as IgG4-RD in the absence of pathological diagnosis or when serum IgG4 is normal.

As a systemic disease involving multiple organs, IgG4-RD has been paid more and more attention by clinicians and researchers. The clinical manifestations of IgG4-RD are non-specific and diverse, so the symptoms and manifestations of many diseases are similar to IgG4-RD. The treatment regimen and clinical prognosis of different diseases are significantly different. Therefore, the diagnosis and treatment for IgG4-RD are still difficult problems to be solved. On the one hand, patients often seek treatment in different specialties due to different initial symptoms, but the diagnosis and treatment of a single department are one-sided, which is easy to cause missed diagnosis and misdiagnosis. On the other hand, IgG4-RD is often misdiagnosed as tumor due to space-occupying lesions, resulting in some patients receiving unnecessary surgical treatment or chemotherapy. Therefore, it is very important to master the diagnosis and differential diagnosis of IgG4-RD. There are currently limited therapeutic options for IgG4-RD. Glucocorticoids are the cornerstone of treatment for this disease and can be used for both active phase-induced remission and remission phase maintenance therapy.[5] In addition, the combination of traditional immunosuppressive agents and glucocorticoids can improve the curative effect and reduce recurrence.[7] Biologics can be used for the treatment of patients who have failed traditional therapy, have glucocorticoid resistance or intolerance, have relapse during glucocorticoid reduction, and are refractory or severely ill. If complications occur, surgery or interventional treatment may be required.[8]

At present, IgG4-RD cannot be cured and is prone to relapse. Therefore, regular follow-up and monitoring of IgG4-RD under the guidance of rheumatologist is particularly important to improve prognosis. At the same time, the monitoring of adverse drug reactions during treatment is also a key factor to improve the quality of life and prognosis.

In conclusion, we should be alert to the possibility of IgG4-RD in patients with IgG-negative liver and pancreas space occupation and make a clear diagnosis as soon as possible by some examinations, especially imaging and histological examinations, timely treatment, and regular follow-up, so as to avoid unnecessary treatment, improve the treatment effect and the quality of life of patients. Besides, the discovery of novel biological markers and autoantigens may help to improve the diagnostic rate. Targeted therapy has gradually received clinical attention, but more evidence is needed to verify it.

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Ethics statement

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and the national research committee of Habib Bourguiba and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Patient consent

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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