A rare case:IgG4-related gastrointestinal disease disguised as a solitary gastric mass.

Leimin Sun[1], Mengjie Wu[2], and Yechun Wang[2]

[1]Zhejiang University School of Medicine Sir Run Run Shaw Hospital
[2]The Fourth Affiliated Hospital Zhejiang University School of Medicine

May 02, 2024

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Authors: Leimin Sun[1],Mengjie Wu[2],Yechun Wang[2]

Departmental and institutional affiliations:

[1]Department of Gastroenterology, Sir Run Run Shaw Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang, P. R. China

[2]Department of Gastroenterology, The Fourth Affiliated Hospital, International Institutes of Medicine,Zhejiang University School of Medicine,Yiwu, Zhejiang, P. R. China

Correspondence to:

Professor Leimin Sun

Department of Gastroenterology, Sir Run Run Shaw Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang 310000, China.

Tel: +86-18867961095 , E-mail: sunlm@zju.edu.cn

Authorship:Leimin Sun: Data curation,Supervision and Project administration. **Mengjie Wu:** Writing the original draft,Data curation and editing. **Yechun Wang:** Data curation and Supervision.

Conflicts of interest: The authors disclose no conflicts of interest.

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

Ethic statement: This is a case report that was exempted pending review by the ethics committee. In addition, written informed consent from the patient including his clinical photographs was obtained for this article.

Keywords: IgG4-related disease;gastric mass;muscularis propria;inflammation

Key Clinical Message

IgG4-related diseases rarely affect the gastrointestinal tract. We reported a 44-year-old man who presented with a solitary gastric mass and was ultimately diagnosed with food-specific IgG4-related gastrointestinal disease. Following surgery and dietary intervention, no recurrence was observed within six months.

1 Introduction

IgG4-related disease (IgG4-RD) is a condition in which the immune system causes inflammation and the formation of masses in various organs, including the pancreas and bile duct[1]. Nonetheless, encountering IgG4-RD involving the digestive system (identified as IgG4-related gastrointestinal disease; IgG4-GID) is rare. To date, a mere 19 instances of IgG4-GID manifesting as an isolated mass in the stomach have been recorded in medical studies. This article details the experience of a 44-year-old Asian male who received a diagnosis of IgG4-GID that appeared as an solitary gastric mass. The patient underwent surgery and showed no signs of recurrence six months post-operation.

2 Case history / examination

A 44-year-old Asian man was admitted to the hospital with chest tightness, abdominal distension, and belching. The C13 breath test yielded positive results, and a follow-up examination after 2 weeks of quadruple anti-Helicobacter pylori treatment showed negative results. Gastroscopy revealed a gastric mass(Figure 1).Endoscopic Ultrasonography(EUS) identified a hypoechoic submucosal mass measuring 2.3x1.6cm in the gastric body, originating from the fourth layer, with insufficient blood flow signal(Figure 2). Enhanced gastric Computer scan confirmed the presence of the mass tumor growing both inside and outside the gastric body,and other organs weren't be involved. Gastric stromal tumor was firstly considered as diagnosis and ectopic pancreas or gastric lipoma was considered in the differential diagnosis.The patient underwent endoscopic submucosal dissection (ESD), which revealed that the tumor was adherent, unencapsulated, highly vascularized, and difficult to remove so converted to laparoscopic surgery. Pathological examination of the resected tissue showed submucosal nodular lesions primarily located in the gastric submucosa and muscularis. The lesions exhibited infiltration of IgG4-positive plasma cells (up to 80/HPF, Figure 3) and more than 40% of IgG4+/IgG+ plasma cells (Figure 4). Additionally, regional proliferation of vascular endothelium and inflammatory cell infiltration of nerves was observed (Figure 5).These pathological evidences pointed to IgG4-RD.

Other laboratory test results showed an elevated creatinine level of 107umol/L(normal is less than 97umol/l). However, the blood routine, coagulation function, liver function, serum IgG4 level, tumor markers, high-sensitivity C-reactive protein level, antinuclear antibodies, antineutrophils Cytoplasmic antibodies, and immunoglobulin G,immunoglobulin M and immunoglobulin A were all within normal ranges.Additional laboratory test results indicated a raised creatinine concentration, registering at 107umol/L(normal is less than 97umol/L). Yet, other tests encompassing serum IgG4 were all within acceptable limits. The food-intolerance IgG4 test showed that the serum IgG4 level of eggs was higher than 1000 U/ml.

3 Differential diagnosis,investigations,and treatment

A retrospective analysis of this case indicated that the gastric mass was larger than 2 cm, accompanied by gastrointestinal symptoms, and did not involve other organs, making resection a reasonable approach. Additionally, IgG4+ cells can also be found in calcifying fibrous tumour, gastric stromal tumor as well as other inflammatory and tumor diseases[2]. Immunostaining did not detect vimentin or CD117, and diagnostic scans revealed the absence of disease in additional organs. With the high serum IgG4 level of eggs, a diagnosis of food-specific IgG4-GID is finally being considered. The mechanism of Food-specific IgG4-RD remains unclear, and diet therapy is usually the first treatment option, with hormone therapy even biological agents considered if symptoms persist or show improvement[3, 4].Considering food-specific IgG4-GID, dietary control therapy was performed.

4 Outcome and follow-up

Six months after the initial treatment, the serum IgG4 level of eggs was reexamined below 500 U/mL.Gastroscopy revealed that the scar had healed and no obvious eosinophils or IgG4+ cells were found in the tissue.

5 Discussion

IgG4-RD manifests as an autoimmune condition that prompts the growth of masses, frequently involving multiple bodily organs including the pancreas and the bile duct. Notably, an increase in blood serum IgG4 levels is detected in 55% to 97% of instances[1]. However, its occurrence within the gastric region is notably rare. Based on the 2019 American College of Rheumatology/European League Against Rheumatism guidelines for IgG4-RD classification, a diagnosis requires the affected organ to be characteristic of the disease, yet the gastrointestinal system is not encompassed within this criterion, rendering the diagnosis of IgG4-GID challenging[5]. Conversely, if we consider the Japanese criteria from 2011, they point towards a probable diagnosis of IgG4-RD in our patient[6]. It was called IgG4+ isolated or solitary lesions when patients were without top 5 of typical performance or other IgG4 associated diseases[7].

IgG4-GID is a rare condition that has been found in published case reports. The clinical presentations of IgG4-GID have been extensively studied and include gastric mass, ulcer, wall thickening, obstruction, and other symptoms. However, it is rare to find solitary gastric masses associated with IgG4-RD. To date, only 19 cases have been documented in scientific literature and most of them were discovered during physical examination. EUS is a popular method to further detect the mass and a multicenter survey revealed that inflammation primarily occurs in the muscularis propria in all cases[8]. IgG4-RID should be considered when a solitary gastric mass is detected and is found to originate from the muscularis propria.

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Solitary IgG4-GID cases are uncommon and typically arise from the muscularis propria. Diagnosis is often post-surgery, with the underlying mechanism still unclear. Most patients do not experience recurrence within one year of follow-up without hormone therapy. This case emphasizes the importance of considering preoperative biopsy for lesions originating from the muscularis propria to confirm the diagnosis and avoid invasive procedures. The decision to initiate hormone therapy should be made following the exclusion of non-IgG4-related diseases and a comprehensive evaluation of symptoms, involvement of multiple organs, and elevated serum IgG4 levels.The food-intolerance IgG4 test can be used for further evaluation, with dietary treatment as an initial option for asymptomatic patients.

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