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**Crohn’s disease with gastroduodenal involvement: Diagnostic approach**

Ingle SB *et al*. Gastroduodenal Crohn’s disease

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**Abstract**

Crohn’s disease (CD) is a chronic idiopathic inflammatory disease of gastrointestinal tract characterized by segmental and transmural involvement of gastrointestinal tract. Ileocolonic and colonic/anorectal is a most common and account for 40% of cases and involvement of small intestine is about 30%. Isolated involvement of stomach is an extremely unusual presentation of the disease accounting for less than 0.07% of all gastrointestinal CD. To date there are only a few documented case reports of adults with isolated gastric CD and no reports in the pediatric population. The diagnosis is difficult to establish in such cases with atypical presentation. In the absence of any other source of disease and in the presence of nonspecific upper gastrointestinal endoscopy and histological findings, serological testing can play a vital role in the diagnosis of atypical CD. Recent studies have suggested that perinuclear anti-neutrophil cytoplasmic antibodyand anti-Saccharomycescervisia antibody may be used as additional diagnostic tools. The effectiveness of infliximab in isolated gastric CD is limited to only a few case reports of adult patients and the long-term outcome is unknown.

**Key words:** Gastrointestinal tract; Crohn’s disease; Isolated gastric involvement; Perinuclear anti-neutrophil cytoplasmic antibody; Anti-Saccharomycescervisia antibody

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**Core tip:** The stomach is rarely the sole or predominant site of Crohn’s disease (CD) accounting for less than 0.07% of all gastrointestinal CD. Serological testing and meticulous histopathological examination by excluding other causes of granulomatous gastritis can play a vital role to arrive at the correct diagnosis.

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**INTRODUCTION**

Crohn’s disease (CD) can affect any region from mouth to the anus. Isolated Gastroduodenal involvement is an extremely unusual event. The CD is diagnosed usually on the basis of clinical, laboratory, upper gastrointestinal (GI) scopy and histopathology. The anti-Saccharomycescervisia antibody (ASCA) is relatively good specific marker with minimal sensitivity. However, it is difficult to diagnose it in patients with isolated involvement of stomach and duodenum. In such circumstances other granulomatous conditions must be excluded with careful evaluation of the patient to hit the accurate pathological cause[1,2].

The famous criteria to diagnose this rare condition are: (1) Evidence of noncaseating granulomas on histopathology; and (2) Confirmation of changes of Crohn’s disease on endoscopy or radiography[3-10].

**EPIDEMIOLOGY**

***Incidence***

It occurs in 0.5% to 4% patients of CD[3-6]. Isolated stomach and duodenum involvement accounts for less than 0.07% of all cases of CD[1].

***Pattern of involvement***

Most patients show involvement of terminal ileum and distal segment of large intestine[4,5,7]. Contiguous involvement of stomach and duodenal involvement is most common (60%)[6,10-12].

**PATHOPHYSIOLOGY**

For pathogenesis of isolated gastric CD multiple hypothesis were postulated: (1) The hygiene hypothesis relatively less trained and weak immunological system leading to ineffective immune response to newer antigens; (2) The environmental factors *i.e.*, geography, smoking, drugs, diet are also main contributing factors[13,14]; (3)Immune mechanism - It is being postulated that the immune reactivity in this disease is due to “loss of immune tolerance” to self antigens of intestinal flora, resulting into an inappropriate granulomatous immune response of Chron’s disease[15,16]; and (4)Role of chemical mediators -interferon-γ, interleukin (IL)-12, IL18 and increased expression of T-bet[17-19]. T-cells are not undergoing apoptosis [20-25].

**CLINICAL PRESENTATIONS**

***Age***

The disease mainly seen in the age group 30-40 years[6].

***Sex predilection***

Male to female ratio is 1.2:1[6,12].

***Symptoms and signs***

Majority of the patients are usually symptomless[9]. Most of the patients are presenting with pain in epigastric region, relieved by antacids and food intake[4,9,11]. In cases with stricture formation persistent pain, nausea and vomiting are common[4]. Many times,it may simulates acid peptic disease clinically[4]. Acute blood loss may rarely occur [4,9,11,26,27].

***Uncommon presentations***

Uncommon presentations of CD may manifest as a single symptom or sign, such as impairment of linear growth, delayed puberty, perianal disease, mouth ulcers, clubbing, chronic iron deficiency anemia or extra-intestinal manifestations preceding the gastrointestinal symptoms, mainly arthritis or arthralgia and rarely osteoporosis[2]. In such cases, the diagnosis is challenging and can remain elusive for some time.

**DIAGNOSTIC EVALUATION**

***Radiological signs***

Aphthous ulcer is the early feature on radiography[28]. The characteristic features are presence of nodularity in the mucosa giving classic appearance of “cobblestone,”[4]*.* Radiography examination using double-contrast medium is useful in cases with stenoses or strictures which are mainly seen in advanced disease[6,12,27,29,30]. A barium enema should be done in suspected cases of gastro colic fistula[4].

***Endoscopy***

Endoscopy with biopsy is an effective diagnostic modality[6,9,27,30]. Endoscopic findings include patchy erythema, gastric outlet narrowing (Figure 1) mucosa is friable, thickening of mucosa and ulcerations linear as well as aphthous[4,7,9,12]*.* The ulcers of CD are typically linear or serpiginous in contrast to the peptic ulcers[27]. In cases with diffuse stomach involvement a linitis plastica appearance,is seen[31,32]. Sophisticated endoscopic features such as, bamboo-joint-like appearance and notched sign can be seen[33].

***Biopsy findings***

The biopsy findings are often nonspecific. Exclusion of other causes of granulomatous lesions is important. Granulomas without caeseation are notedin 5% to 83% of cases (Figure 2)[9,12]. The differential diagnosis of granulomatous gastritis are *H. pylori* infection, gastric sarcoidosis, tuberculosis*,* syphilis, *etc*[7,9,32]. So presence of granuloma is not a definitive criterion to arrive at the diagnosis. *H. pylori* negative chronic gastritis is common feature.

Additional histological features are mucosal edema, crypt abscesses, lymphoid aggregates and fibrosis[32-34].

***Serological markers***

Currently, it has been stated that perinuclear anti-neutrophil cytoplasmic antibody (pANCA) and ASCA can be used as supportive diagnostic tools. Indeed, ASCA is detected in 55%-60% of children and adults with CD and only 5%-10% of controls with other gastrointestinal disorders. This finding pANCA highlights the relatively good specificity but poor sensitivity of ASCA as a marker for CD. pANCA on the other hand is more specific to ulcerative colitis.

***Genetic studies***

In addition, some *NOD2/* *CARD15* gene polymorphisms were found to be associated with Chron’s disease with gastroduodenal involvement. It is possible that these genes might also help to support the diagnosis in the atypical presentation of CD in the future[2].

**DIFFERENTIAL DIAGNOSIS**

The differential diagnosis includes corrosive gastritis due to ingestion of lye, gastric scirrhous carcinoma, Ménétrier's disease. Pseudolymphoma, amyloidosis can also mimic CD[29]. Although Ménétrier's disease can involve the entire stomach and produce ulcérations, it does not cause transmural disease[29]. Malignant and infiltrative processes are to be ruled out by the histological findings.

**TREATMENT**

***Medical treatment***

Proton pump inhibitors in combination with steroids are the first line of treatment in active CD. Some of the studies proved steroid-induced remission in active disease[10,11,35-39]. But, 6-Mercaptopurine and azathioprine are proved to be helpful to maintain steroid induced remission.

***Balloon dialation***

Strictures are treated successfully with balloon dialation[4,5,40-43].

***Surgical intervention***

Some of the patients requires surgical intervention, where patients are not responding to medical treatment[44]. Other situations are massive and persistent upper gastrointestinal hemorrhage, gastric outlet obstruction, and fistula or abscess formation[4,5,7,10,12,45]. The important indication is duodenal obstruction[6]. The surgical modalities of treatment include bypass surgery with gastrojejunostomy[6,7,9]. Gastrojejunostomy with highly selective vagotomy is an ideal line of management[44]. Delayed gastric emptying is a postoperative complication seen in 24% of cases, but this may be seen in stricturoplasty also[6,46,47]. Additional post operative complications are anastomotic leak, enterocutaneous fistula, intraabdominal abscess, and stomal ulceration[48] .

**CONCLUSION**

To conclude, Crohn’s disease with isolated gastric involvement is an extremely unusual event in clinical practice. Endoscopic biopsy along with battery of laboratory tests is an effective tool to hit the correct diagnosis by exclusion of various causes of granulomatous gastritis. This prevents untoward mortality and /morbidity related to disease and treatment.

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**Figure 1 Endoscopic findings include patchy erythematic, gastric outlet narrowing.**

  

 A B

**Figure 2 Biopsy showing non-caseating granulomas and oedema in the submucosa (hematoxylin and eosin stain; 10× × 10×).** A: Non-caseating granulomas; B: Oedema alongwith granulation tissue.