Introduction

Eosinophilic ascites (EA) is a rare feature of eosinophilic gastroenteritis (EGE) characterized by eosinophilic infiltration of the gastrointestinal (GI) tract with serosal involvement. The aetiology of EGE/EA is not well recognised. It often presents as a case of unexplained ascites on top of a group of nonspecific symptoms. Peripheral eosinophilia is a commonly associated feature. Its presentation can mimic many GI and systemic disorders and can be easily misdiagnosed.

Case Description

A 25-years-old Caucasian woman presented 8-week postpartum, with abdominal pain, nausea, vomiting, diarrhoea and progressive generalized abdominal swelling. Her symptoms were primarily aggravated by eating, and she had also noticed postprandial itching and self-limiting generalized rash.

The patient had history of asthma, Hay fever and allergic rhinitis. There was no history of liver disease. The patient was a non-smoker and denied alcohol ingestion. She had strong family history of food allergies.

Abdominal examination revealed distended, lax, and generally tender abdomen with rebound tenderness. The patient had positive shifting dullness. No palpable organs or masses were detected. No jaundice or any stigmata of chronic liver disease were found. Urticarial skin rash was noted on the face, neck, chest and abdomen (Figure 1).

Blood investigations showed high eosinophilic count at 2.67x10^9/L (30%) in an otherwise normal full blood count. Serum electrolytes, liver function tests, coagulation screen and inflammatory markers were within normal ranges. Full immunological, vasculitic, viral and coeliac screen were all negative. Immunoglobulin electrophoresis including IgE level was normal. Thyroid Function, Serum amylase and serum Angiotensin converting enzyme (ACE) levels were normal. Urinary metanephrines and Hydroxy-indol acetic acid (HIAA) were also normal. Parasitic infestation was ruled out. Urine and stool cultures were negative.

Ultrasonography showed normal liver echotexture with ascites around the upper border. The portal and hepatic venous flow was normal.

Case Description

Diagnostic paracentesis revealed cloudy straw coloured fluid. Chemical analysis showed exudative ascites with serum-ascites albumin gradient (SAAG) ratio of 8. Ascitic fluid amylase, triglycerides, glucose and lactate dehydrogenase were normal. Ascitic fluid bacterial and tuberculous cultures did not grow any organisms. The white blood cell count in the ascitic fluid was 2558 x10^3/L. Cytological examination revealed numerous eosinophils, scattered histiocytes, neutrophils and lymphocytes. No evidence of malignant cells was noted (Figure 3).

Figure 3: Ascitic fluid showing numerous eosinophils.

Oesophageo-gastro-duodenoscopy demonstrated erythema and micro-abscesses in the antrum and body of the stomach (Figure 4).

Figure 4: Gastroscopic appearance demonstrating erythema and micro-abscesses (arrows) in the body and antrum.

Mucosal biopsies were consistent with eosinophilic gastroenteritis (Figure 5 A, B, C).

Histopathology revealed infiltration of the upper GI tract mucosa with eosinophils predominantly in mid oesophagus, gastric antrum and duodenum (up to 30 per HPF).

Colonic Biopsies were consistent with eosinophilic colitis. High power field microscopy showed predominant stromal eosinophils (up to 25 per HPF) with degranulation of eosinophilic cytoplasm.

Figure 5 A, B, C: They demonstrate eosinophilic mucosal infiltration of the oesophagus, stomach and colon respectively.

Treatment and Outcome

The patient was started on combination therapy of oral steroids and six-food elimination diet which led to a dramatic improvement. Her symptoms had resolved within 3 days. The peripheral eosinophilic count had fallen down to normal level on day 2 (Figure 6). Ascites had markedly improved with only a trace amount of 6mm in the pelvis on day 7. Eight weeks later, the patient was found to be clinically, biochemically and radiologically stable.

Discussion

EGE is an uncommon condition characterized by patchy or diffuse eosinophilic infiltration of the GI tract, firstly described in 1907. It typically involves the stomach and proximal small bowel, but may involve any area of the GI tract. It is generally classified according to the depth of involvement of tissue into mucosal, muscular or serosal types. Mucosal involvement, the most common form of presentation, may result in abdominal pain, nausea, vomiting, or diarrhoea, whilst muscular layer disease commonly presents as GI obstruction. Serosal eosinophilic infiltration, the rarest form of presentation, may result in EA. The aetiology and pathogenesis of EGE is still uncertain. However, it is often associated with atopic condition and may be precipitated by pregnancy or childbirth.

Unlike the majority of other GI conditions, EGE does not have a clear confirmatory test and lacks unified criteria for diagnosis. Cytological evaluation is a corner stone in the diagnosis of EA. Endoscopic evaluation may show a wide range of non-specific changes depending on the distribution and depth of tissue involvement. Histology often demonstrates heavy eosinophilic infiltration of the GI mucosa with degranulation.

Corticosteroids and elimination diets are the mainstay of therapy. Steroids play an important role in the induction of remission. Nevertheless, a low maintenance dose of oral steroids is usually required to maintain remission. Alternatively, anti-allergic agents or immunosuppressant may act as steroid sparing drugs.

Take Home Messages

- Eosinophilic ascites is a rare condition, which should be considered in all cases of unexplained ascites.
- Eosinophilic ascites is not uncommon in atopic individuals in the postpartum period.
- Peripheral eosinophilia is good marker for the disease activity in eosinophilic ascites.