Eosinophilic Colitis Presenting with Chronic Diarrhea

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ABSTRACT

Eosinophilic colitis (EC) is a rare disease which characterized by infiltration of eosinophil in colon and peripheral eosinophilia. Other causes of peripheral eosinophilia need to be excluded before assumed EC such as food allergy, inflammatory bowel disease, or parasites. It has bimodal distribution, peaked at neonates and young adult.

A 24-year-old man was admitted with abdominal pain and chronic diarrhea. He has no any disease, food, pollen, or drug allergy in his medical history. Leukocyte: 29,000/mm^3 (neutrophil: 43.4%, eosinophil: 44.4%, lymphocyte: 8.2%), platelet: 453,000/mm^3, total eosinophil: 17,582.1/µL (normal range: 50-300), immunoglobulin E: 1000 IU/mL (normal range < 100 IU/mL) was counted in his blood examination. The colon biopsy was reported as eosinophilic colitis. We applied methylprednisolone 24 mg/day. With this treatment, the patient's symptoms regressed.

EC may involve any part of the gastrointestinal tract. An intense inflammatory infiltrate, consisting predominantly of eosinophils penetrates into one or more layers of the gastrointestinal tract. In 1937, Kaijser described this disorder. EC is classified into mucosal, submucosal or muscular, and serosal types. The endoscopic findings may vary from normal mucosa to frank ulceration. Our patient had chronic diarrhea and peripheral eosinophilia which are typical features of the mucosal types. It should be put in differential diagnosis in patients with chronic diarrhea.

Keywords: *chronic diarrhea, endoscopic examination, eosinophilic colitis*

ABSTRAK

Kolitis eosinofilik merupakan kelainan yang jarang dijumpai dengan ciri adanya infiltrasi eosinophil di kolon dan eosinophilia perifer. Penyebab lain eosinophilia perifer perlu dieksklusi sebelum diduga colitis eosinofilik seperti alergi makanan, radang usus non-infeksi, atau parasit. Kondisi ini memiliki distribusi usia bimodal, dengan puncak pada neonates dan dewasa muda.

Seorang pria berusia 24 tahun dirawat dengan keluhan nyeri perut dan diare kronis. Pasien ini tidak didapatkan riwayat penyakit sebelumnya, alergi makanan, debu, maupun obat pada catatan medisnya. Leukosit: 29,000/mm^3 (neutrofil: 43.4%, eosinofil: 44.4%, limfosit: 8.2%), trombosit: 453,000/mm^3, eosinophil total: 17,582.1/µL (kisaran normal: 50-300), immunoglobulin E: 1000 IU/mL (kisaran normal < 100 IU/mL) dijumpai pada pemeriksaan darahnya. Biopsi kolon memperlihatkan adanya infiltrasi eosinofil di mukosa kolon. Metilprednisolon 24 mg/hari diberikan kepada pasien. Dengan terapi ini, gejala pasien membaik.

Kolitis eosinofilik dapat melibatkan berbagai bagian dari saluran cerna. Infiltrat inflamasi yang berat, terutama terdiri dari eosinofil masuk ke dalam salah satu atau lebih lapisan dari saluran cerna. Kaijser menggambarkan kelainan ini pada tahun 1937. Kolitis eosinofilik diklasifikasikan menjadi tipe mukosal,

submukosal atau muskularis, dan serosal. Penemuan endoskopik bervariasi dari mukosa normal hingga ulserasi yang berat. Pasien pada kasus ini didapatkan diare kronis dan eosinofilia perifer yang merupakan ciri khas pada tipe mukosal. Diagnosis ini perlu dimasukkan sebagai diagnosis banding pada pasien yang mengalami diare kronis.

Kata kunci: *diare kronis, pemeriksaan endoskopik, kolitis eosinofilik*

INTRODUCTION

Eosinophilic colitis (EC) is a rare disease which are part of primary eosinophilic gastrointestinal disorders (EGIDs).[1] Besides EC, EGIDs also consisted of eosinophilic esophagitis (EE) and eosinophilic gastroenteritis (EG).[2] EC is the rarest EGIDs entity with most of the cases being reported in the last three decades. However, there has been an exponential rise in EC yielding 196 cases reported over the past decade.[3] The standardized estimated prevalences of EC were 3.3/100,000.[4] It is characterized by eosinophilic-rich infiltration and peripheral eosinophilia. The pathogenesis is not fully understood but hypersensitivity is a major factor. Three different forms are defined: mucosal involvement, muscle involvement, and serosal involvement.[5]

EC was first identified by Kaijser et al in 1937. It is defined by three criteria: (1) Occurrence of gastrointestinal symptoms; (2) Biopsies showing eosinophilic infiltration of one or more areas of the gastrointestinal tract from oesophagus to colon, or characteristic radiological findings with peripheral eosinophilia; (3) No evidence of parasitic or extraintestinal disease.[6] Approximately 40% of cases were reported to have an underlying allergic basis. EC is diagnosed in the biopsies taken during endoscopic examination to the patients with abdominal pain and chronic diarrhea.[7] In this article we want to present a case of young man with complaints of chronic diarrhea, which led to the diagnosis of EC. Wide differential diagnosis of chronic diarrhea need to be made besides traditional diagnosis such as inflammatory bowel disease or colon malignancy.

CASE ILLUSTRATION

A 24-year-old man was admitted to the hospital with the complaints of abdominal pain and chronic diarrhea. He had diarrhea for 3 months. There was no fever, weight loss, or rash. He had never got any severe disease, food, pollen, or drug allergy in his medical history. There was no remarkable feature in his physical examination. Laboratory results showed hematocrit: 48%, leukocyte: 29,000/mm^3 (neutrophil: 43.4%, eosinophil: 44.4%, lymphocyte: 8.2%), platelet: 453,000/mm^3, total eosinophil: 17,582.1/µL (normal range: 50-300), immunoglobulin E: 1000 IU/mL (normal range < 100 IU/mL) was counted in his blood examination. Liver and renal functions were in normal range. Parasitologic examination of stool were normal.

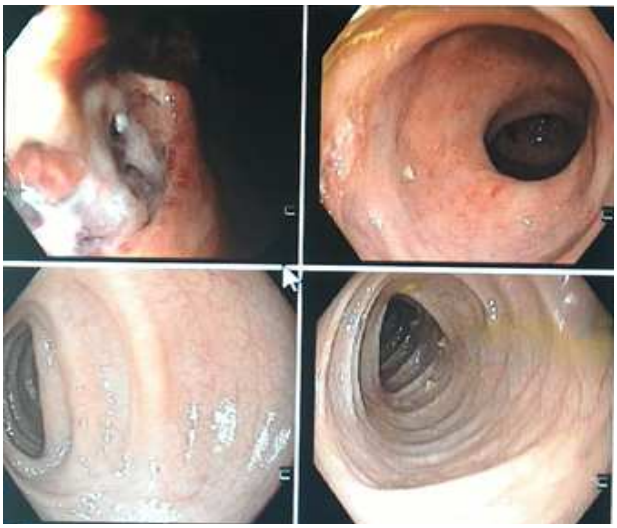

Figure 1. Mucosal appearance of colonoscopy showed edematous hyperemic with multiple aphtous lesion and one active deep ulcer

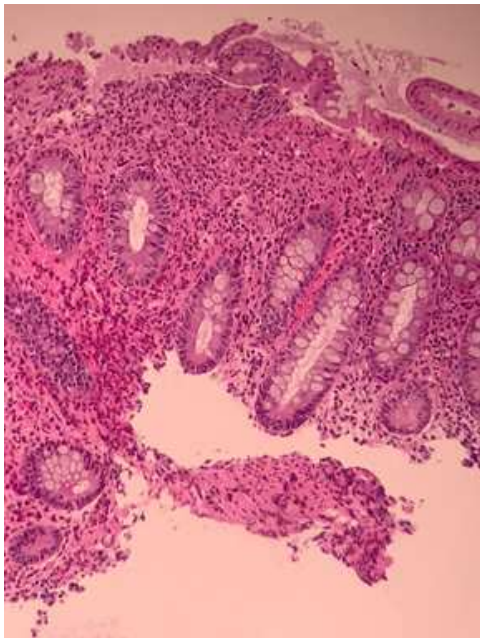

Figure 2. Microscopic appearance of colon biopsy (Hematoxylin and Eosin, x 100): common eosinophilic infiltrations in the colon mucosa.

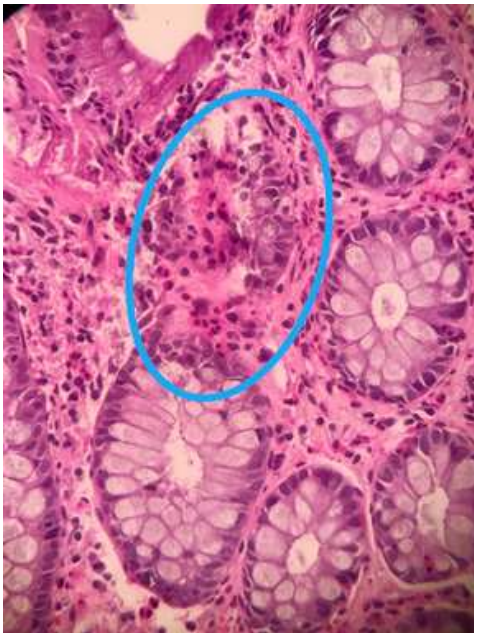

Figure 3. Microscopic appearance of duodenal biopsy (Hematoxylin and Eosin, x 400): common eosinophilic infiltrations in the colon mucosa

There was abnormality found in her abdominal ultrasonography and posterior-anterior lung radiography. Endoscopic examination was performed and showed edematous hyperemic with multiple aphthous lesion and one active deep ulcer. Multiple colon biopsies were then taken (Figure 1). The colon biopsy was reported as EC (Figure 2 and 3). We applied methylprednisolone 24 mg/day. With this treatment, the patient had reduced episodes of diarrhea and had his symptoms improved.

DISCUSSION

EC is a rare disease which have two peak prevalence. It affects neonates and young adults with no gender preference. It is characterized by eosinophilic infiltration and peripheral eosinophilia. Prominent tissue eosinophilia in the colon may result from numerous conditions. Parasitic infection of the colon with pinworms, roundworms, or whipworms may lead to marked eosinophilic infiltration, and repeated stool or serological testing may be needed to reveal this specific etiology. Our case is the patient with young adult, matched the age prevalence of this disease.[1,2,5]

In EC, endoscopy may show edematous mucosa with a loss of the normal vascular pattern, patchy erythematous changes, and even superficial ulcerations. Eosinophilic infiltrations in the mucosal biopsy anywhere in the gastrointestinal tract is diagnostic if the other reasons (parasites, drug use, malignancy) are excluded. Abscesses of crypts and lymphonodular hyperplasia also may be evident.[3] Eosinophil count in the colon is increased in various disorders such as food allergy, parasitic infections, and inflammatory bowel disease.[1,8] Eosinophils location in the intestines allows ready access for these white blood cells to combat multicellular parasites, likely an evolutionary survival tool.[8] Because of diffuse involvement, multiple biopsy should be taken from different places.

Under normal conditions, the gastrointestinal tract is the only non-hematopoetic organ to contain eosinophils, range from 5 up to 35 per high-powered field. Caecal and appendiceal region have the highest concentrations.[9] Eosinophils are easily seen in routine haematoxylin- and –eosin- stained paraffin-embedded sections. After stained with eosin, eosinophills stain brick red. No consensus determine eosinophil count for EC, although most authors have used a diagnostic threshold of 20 eosinophils per high-power field.[8]

Classification suggested by Klein et al was made based on the histology of the lesion: mucosal, muscularis, and subserosal disease. Clinical features depend on layer involved. Mucosal involvement leads to protein-losing enteropathy, fecal blood loss, and mal-absorption. Muscularis disease often manifests as gastric outlet or small bowel obstruction. Subserosal involvement often causes eosinophilic ascites. The disease often waxes and wanes. This case represented mucosal involvement type which showed symptoms of chronic diarrhea.[1,7]

The pathogenesis of EC appears based on genetic factors but is elicited by environmental exposure, acting through adaptive T-cell immunity that involves IL expression and promote the production of eosinophils as well as IgE.[9] Some theory stated that gut eosinophilic disorders are IgE-mediated through the high-affinity receptor FcepsilonRI.[8,10] Some experts stated that EC should be included within the spectrum of atopic diseases, Eosinophils, as one of cellular component of the intestine, play a primary role in allergic responses and parasitic infection.[2,9]

The treatment consists of dietary elimination, systemic and topical corticosteroids, leukotriene receptor antagonists, and biologic therapies.[2] Dietary restriction is the first armamentarium in management of EC as it is postulated that EC are triggered by food antigen exposure.[9] Restrictions include elimination, oligoantigenic or elemental diets.[3,7] Diets strategy eliminate certain food allergens that precipitate flares of EC or use a purely elemental diet containing simplified ingredients that are readily assimilated without

further digestion (amino acids, hydrolyzed fats and carbohydrates). The steroids are the main drug in the treatment. Corticosteroids works by inhibit eosinophil growth factors: interleukin-3 (IL-3), interleukin-5 (IL-5), and granulocyte-macrophage colony-stimulating factor (GM-CSF).[1,3] Antihistamines, mast cell stabilizer, and leukotriene antagonists are other drugs than can be used in the treatment of EC. In this case, corticosteroids were used to inhibit inflammatory responses caused by eosinophils.

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