Eosinophilic enteritis – a rare cause of abdominal pains and diarrhoea

Eozynofilowe zapalenie jelit – rzadka przyczyna bólów brzucha i biegunki

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Abstract

Eosinophilic enteritis is a rare disease of unknown aetiology, characterized by eosinophilic infiltration of the bowel wall which can affect any segment of the gastrointestinal tract. The stomach and small intestine are the most frequent sites of inflammation. We report on a 20-year-old patient presenting with acute abdominal pain, vomiting and diarrhoea associated with peripheral eosinophilia and small bowel strictures. The diagnosis was established on the basis of clinical examination, radiological studies as well as endoscopic and histological criteria. Steroid treatment resulted in complete clinical recovery and in the reduction of eosinophilic infiltration. The case is reported owing to this rarity and relevant literature is summarized.

Streszczenie

Eozynofilowe zapalenie jelit jest rzadką jednostką chorobową o nieznanej etiologii, charakteryzującą się naciekiem kwasochłonnym w obrębie ściany jelit. Dotyczyć może każdego odcinka przewodu pokarmowego. Najczęstszą lokalizację zapalenia stanowi jednak jelito cienkie oraz żołądek. W niniejszej pracy przedstawiono przypadek 20-letniego pacjenta z silnymi dolegliwościami bólowymi brzucha, wymiotami i biegunką, powiązanymi z obwodową eozynofilią oraz przewężeniami w obrębie jelita cienkiego. Rozpoznanie ustalono na podstawie wywiadu klinicznego, badania fizykalnego, radiologicznych badań obrazowych, a także obrazu endoskopowego i histologicznego. W wyniku zastosowanej steroidoterapii uzyskano całkowite ustąpienie objawów choroby oraz zmniejszenie nacieku kwasochłonnego. Przypadek prezentowany jest ze względu na rzadkie występowanie, jednocześnie dokonano przeglądu piśmiennictwa.

Introduction

Eosinophilic gastroenteritis (EE) is a rare primary gastroenteropathy, characterized by eosinophilic infiltration of the bowel wall of various parts of the gastrointestinal tract in the absence of known causes of eosinophilia such as allergy, parasitic infections, drug reactions and malignancy. Aetiology of the disorder is unclear and symptoms depend on the intestinal segment affected by the disease [1].

Eosinophilic infiltration usually involves the stomach and the small intestine. The oesophagus and colon may be affected alone or in combination with the stomach and small intestine [2]. Although precise epidemiological data are lacking, a growing tendency of the incidence of the disease is observed, probably as a result of an interaction of genetic and environmental factors [3]. As the symptoms, signs and laboratory tests are often analogous to findings in patients with sensitivity (allergy) to ingested antigens there is a high probability that these disorders share a similar pathophysiology. It is assumed that EE results from allergic disturbances of both IgE dependent and delayed type Th2-dependent immunological response [4, 5]. Although results of challenge tests with food antigens to which patients believe they are intolerant are sometimes positive, elimination diets do not resolve intestinal disorders in

most patients [1]. Signs and symptoms depend on the depth of bowel wall involvement and the part of the gastrointestinal tract affected by the disease. Eosinophilic oesophagitis, gastritis, enteritis or colitis may be present. Clinical manifestations may consist of nausea, vomiting, crampy abdominal pain and diarrhoea [1, 2]. Diagnosis is made by biopsy, taken during endoscopy of the involved area of gastrointestinal mucosa or surgical specimens when the operation is sometimes undertaken as a diagnostic procedure [6, 7].

We present a 20-year-old man presented to our Department of Gastroenterology with abdominal pains and vomiting, diarrhoea and intermittent signs suggestive of intestinal obstruction.

Case report

A 20-year-old man was admitted to the Department of Gastroenterology in November 2006 with a 2-week history of abdominal pains of the periumbilical region and the left lower quadrant and diarrhoea with about 4-5 bowel movements per day. Stools were loose without blood and mucus. Body temperature was normal. The patient complained of nausea and vomiting, lasting for a few days before admission. He reported that symptoms had begun a month after returning from a 2-month stay in the USA. There was no history of any other diseases including allergy, previous hospitalizations and surgery. The patient denied taking any drugs and familial history was unremarkable.

On examination, the patient was slightly dehydrated; vital parameters were normal. Midepigastric tenderness was observed and there was no palpable mass or tumour in the abdomen. Bowel sounds were normal and rectal examination revealed no abnormalities. Blood count was remarkable for leukocytosis (white cell count of 24.2 G/l) with considerable eosinophilia (60%). Haemoglobin level, erythrocyte and platelet count, and biochemistry including erythrocyte sedimentation rate and C-reactive protein were all within normal range limits. Thyroid tests (TSH, ft3, ft4) were also normal and antibodies to anti-HIV were not detected in the plasma. Skin tuberculin test was normal and no bacterial pathogens or parasites were found in the stool. Nevertheless the serologic tests for *Yersinia enterocolitica* and *Yersinia pseudotuberculosis* were positive.

On admission plain abdominal X-ray revealed horizontal fluid levels suggestive of ileus. Ultrasonography showed thickened bowel wall of the jejunum and a little ascites in the peritoneum. Abdominal computed tomography confirmed considerable segmental thickening of the jejunum and the terminal ileum and the suggestion of inflammatory infiltration of these parts of the intestines was made (Fig. 1). Results of small bowel enema revealed narrowing of the descending part of the duodenum and multiple segments of the jejunum and ileum with hypertrophic mucosa (Fig. 2, 3). Upper gastrointestinal endoscopy showed erythematous and edematous mucosa of the stomach and duodenum with hyperaemia and numerous erosions in the descending part of the duodenum. Urease test for *Helicobacter pylori* was negative. Colonoscopic appearances of the mucosa of the entire colon and terminal ileum was slightly hyperaemic, but grossly normal. Biopsy samples taken from hyperaemic mucosa of the duodenum, colonic mucosa and ileum disclosed intensive eosinophilic infiltration in the lamina propria (Fig. 4). Bone marrow examination revealed 40% of eosinophils in variable stages of maturation. Diagnosis of chronic eosinophilic leukaemia (CEL) was excluded on the basis of negative genetic testing of FIP-PDGFRα.

Based on the clinical, radiological, endoscopic and histopathological findings, and the lack of any evidence of parasitic infections, allergic reactions or neoplastic proliferation, a diagnosis of eosinophilic enteritis was made with the involvement of the small intestine and the colon.

The patient responded rapidly to steroid therapy (methylprednisolone 40 mg/d for 2 weeks with subsequent tapering in 4 weeks). *Yersinia enterocolitica* was treated with antibiotics (ciprofloxacin 500 mg bd for 6 weeks). The patient's general condition improved; diarrhoea, abdominal pains and vomiting resolved and completely disappeared in a few days of the therapy. Eosinophil count in the blood returned to normal values (total white cell count – 11.5 G/l, eosinophils – 3.3%) within a week of starting the treatment. Histopathological

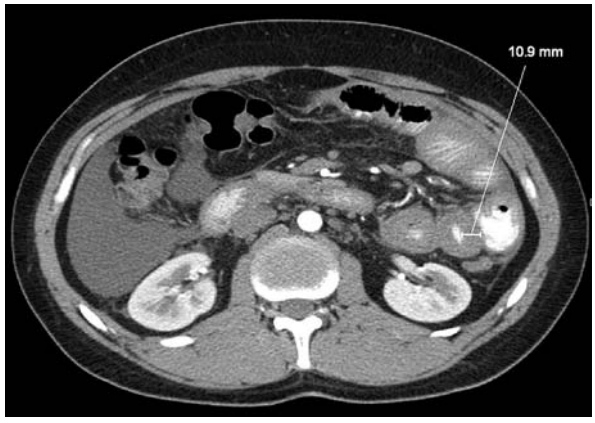

Fig. 1. Computed tomography showing segmental thickening of the jejunal wall
Ryc. 1. *Obraz odcinkowego pogrubienia ściany jelita cienkiego w tomografii komputerowej*

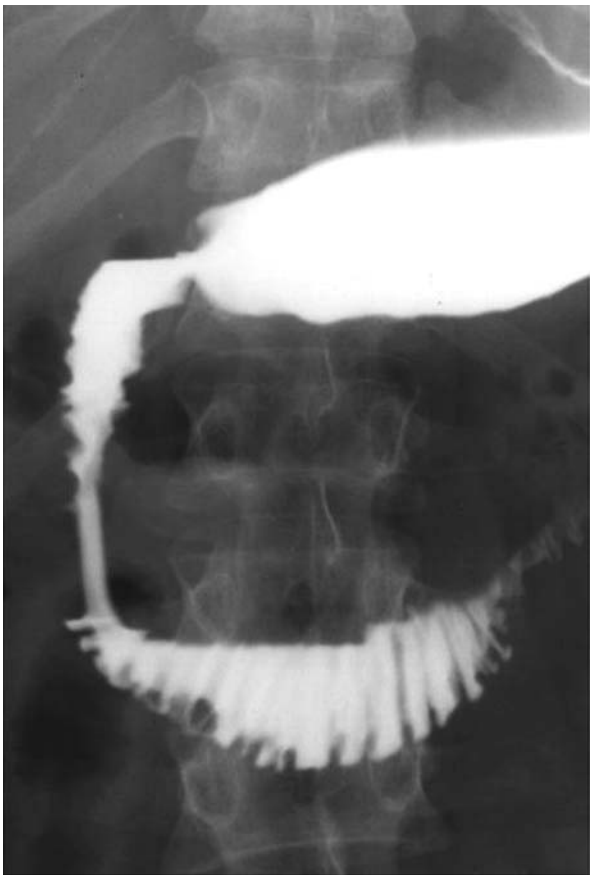

Fig. 2. Small bowel enema – narrowed lumen of the duodenum
Ryc. 2. *Pasaż jelita cienkiego – przewężone światło dwunastnicy*

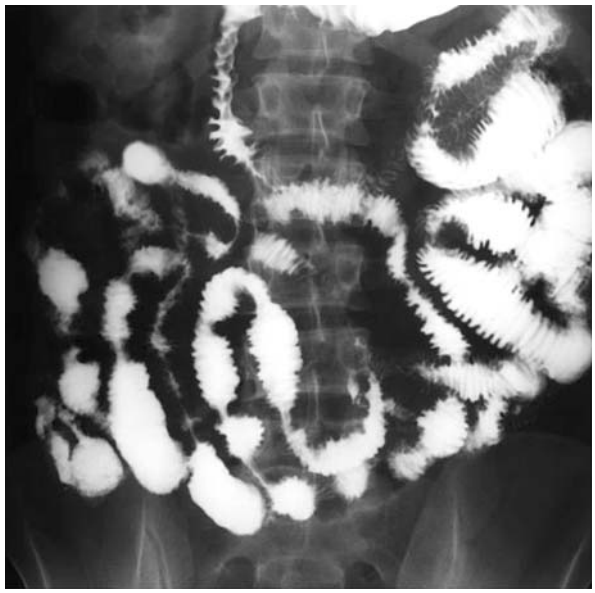

Fig. 3. Small bowel enema – multiple narrowed segments of the jejunum and ileum
Ryc. 3. *Pasaż przewodu pokarmowego – liczne odcinkowe przewężenia jelita czczego i krętego*

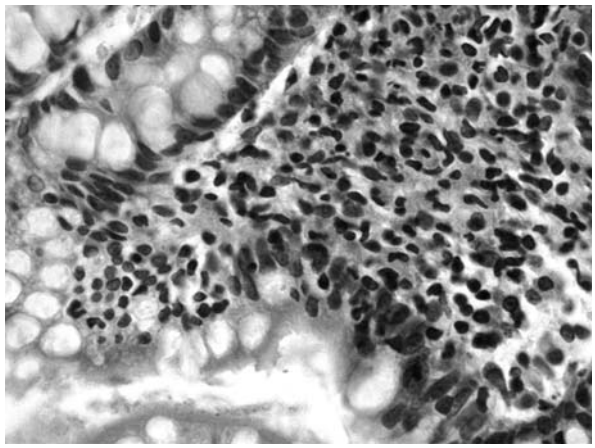

Fig. 4. Photomicrograph of the biopsy specimen from the ileum showing marked eosinophil infiltration (H&E, orig. mag 400×)
Ryc. 4. *Obraz histopatologiczny z intensywnym naciekiem kwasochłonnym w obrębie ściany jelita krętego (H&E, powiększenie 400×)*

examination of biopsy samples taken during upper gastrointestinal endoscopy performed after 2 months showed a marked reduction of eosinophilic infiltrates in the mucosa. The fall in antibody titres to *Yersinia enterocolitica* and *Yersinia pseudotuberculosis* was observed after 6 weeks of therapy with ciprofloxacin. No recurrence of the disease was observed during 6 months of follow-up observation.

Discussion

Eosinophilic enteritis is a very uncommon disorder of unknown aetiology. It usually affects patients in their 3rd or 4th decade of life. It is relatively rare in children. Four criteria should be fulfilled to make a diagnosis of EE: a) presence of gastrointestinal symptoms; b) eosinophilic infiltrates in one or more parts of the GI tract; c) absence of eosinophilic involvement in other organs; d) no parasitic infections should be present [2, 6]. Radiological findings are variable, non-specific and occasionally may mimic the lymphoma of the small bowel [8, 9]. Anamnesis of food intolerance is unremarkable, and dietary manipulation alone is usually unsuccessful in alleviating signs and symptoms [10]. It is assumed that EE does not represent a simple, reversible response to particular alimentary

factors, but it is rather a chronic condition which may be aggravated by certain sorts of food. However, clinical and diagnostic indices of allergic disturbances are impossible to define in most patients with EE [11].

When only the small bowel is affected with EE, a biopsy is usually not possible. In such circumstances a diagnosis can be made during explorative laparotomy, especially when signs of "acute abdomen" and obstruction of the GI tract are present [7]. Capsule endoscopy does not allow biopsy, although it may be used to evaluate intestinal complications of EE [12]. Push enteroscopy allows biopsy samples to be taken from the proximal jejunum, but double-balloon enteroscopy offers the best diagnostic yield in such a location of EE [9, 13]. The involvement of duodenum, colon and terminal ileum in our patient made it possible to reach the affected parts of the bowel and take diagnostic biopsies. Histology examination usually reveals intensive inflammatory infiltration with predominant eosinophil representation involving lamina propria of the mucosa and the submucosal layer [1, 14]. The stomach and small intestine are the most frequent sites of EE, but any part of the alimentary tract may be affected [1, 2]. The most common group of patients has primarily mucosal involvement, less frequently patients have eosinophilic infiltration of the muscle layer, and the rarest group has predominant involvement of the serosal surface [2]. Mucosal disease may lead to malabsorption. Muscle infiltration causes thickening and rigidity of the intestine and sometimes pyloric or intestinal obstruction, while serosal type EE may present with eosinophilic ascites and peritonitis. Differential diagnosis includes malabsorptive disorders such as celiac sprue, Whipple's disease, intestinal lymphangiectasia, amyloidosis, ischaemic enteritis, radiation enteritis and Crohn's disease and also neoplastic diseases such as lymphoma and small bowel adenocarcinoma [8, 9]. The association with a Yersinia infection in our patient is intriguing. The fall in antibody titres after treatment with ciprofloxacin implies that the initial raised titres represented active infection rather than previous asymptomatic exposure. We assume that it was a coincidental event, as Yersinia infection does not cause eosinophilic infiltration in the intestinal tissue [15].

Glucocorticosteroids are the main therapeutic tool in the treatment of EE, and the beneficial effect is usually observed after 7-10 days of treatment. Treatment is initiated at a dose of 20-40 mg of prednisone daily. Some require maintenance prednisone therapy on low dose daily (5-10 mg/d). Immunosuppressants (azathioprine) or cromoglycates are also used in some cases.

The prognosis generally is favourable although the condition may become chronic. Mortality is rare and results from complications of the disease. Cases with chronic malnutrition leading to severe cachexia not responding to treatment have been described. Patients with EG appear to have no increased risk of gastrointestinal malignancies [7, 10, 14].

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