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A previously diagnosed mitochondrial neurogastrointestinal encephalomyopathy patient presenting with perforated ileal diverticulitis

Perfore ileal divertikülit ile başvuran daha önce tanı almış mitokondrial nörogastrointestinal ensefalomiyopatili hasta

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Mitochondrial neurogastrointestinal encephalomyopathy is an autosomal recessive multisystem disorder characterized clinically by severe gastrointestinal dysmotility; cachexia; ptosis, opthalmoparesis or both; peripheral neuropathy; leukoencephalopathy and mitochondrial abnormalities in muscle. Gastrointestinal dysmotility causes intestinal pseudo-obstruction and small intestinal diverticula. In this case report, we present a previously diagnosed 32-year-old female mitochondrial neurogastrointestinal encephalomyopathy syndrome patient who was hospitalized and operated due to ileal diverticulitis perforation and died due to postoperative respiratory complications, and we discuss the characteristic manifestations of the disease.

Key words: MNGIE syndrome, ileal diverticulitis perforation, gastrointestinal dysmotility

Mitokondrial nörogastrointestinal ensefalomiyopati klinik olarak ciddi gastrointestinal dismotilite; kaşeksi; pitosis, oftalmoparesis veya her ikisi; periferal nöropati; lökoensefalopati ve kas dokuda mitokondrial bozukluklarla seyreden otozomal resesif geçiş gösteren multisistem tutulum gösteren bir hastalıktır. Gastrointestinal dismotiliteye bağlı olarak barsaklarda psödo obstrüksiyon ve ince barsak tutulumlu divertiküller görülür. Bu olgu sunumunda daha evvel mitokondrial nörogastrointestinal ensefalomiyopati tanısı konulmuş ve ileal divertikülit perforasyonu ile başvuran ameliyat sonrası ortaya çıkan solunum sistemi komplikasyonları ile kaybettiğimiz 32 yaşında bayan hastayı ve hastalığın karakteristik özelliklerini sunuyoruz.

Anahtar kelimeler: MNGİE sendromu, ileal divertikülit perforasyonu, gastrointestinal dismotilite

INTRODUCTION

Gastointestinal dysmotility with dilatation and slow emptying of the stomach and duodenum is the most prominent manifestation in mitochondrial neurogastrointestinal encephalomyopathy (MNGIE) syndrome with recurrent diarrhea, borborygmi and intestinal pseudo-obstruction (1, 2). Other gastrointestinal manifestations are abdominal pain, early satiety, abdominal cramps, nausea-vomiting, diverticulosis, gastroparesis, dysphagia and hepatopathy (1). Jejunal and ileal diverticula are acquired lesions that are usually associated with gastrointestinal motility disorders, as seen in this syndrome. Ocular involvement with external ophthalmoparesis, ptosis, and pigmentary retinopathy; peripheral neuropathy; limb weakness; hearing loss; areflexia; ataxia; thin body habitus; short stature; and early death are other manifestations (1, 2). These patients may be hospitalized in the course of their disease with the progression of neurological symptoms or acute abdominal symptoms, as in our case.

CASE REPORT

A 32-year-old female MNGIE patient with a history of laparotomy due to ileal diverticulitis one year ago was hospitalized with the complaints of gradually worsening diffuse abdominal pain, nausea and vomiting of a few hours' duration. Her physical examination revealed blood pressure 90/60 mmHg and pulse 96/minute, and she appeared cachectic with obvious muscle wasting and diminished turgor tonus. She had ptosis, obvious

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facial atrophy and limitation of lateral gaze. Muscle strength was mildly diminished in all extremities and reflexes were absent. The abdomen was severely tender in all quadrants, rebound-defense positive. All biochemical and hematological investigations were within normal limits. Supine radiograph of abdomen showed no signs of perforation and no other pathology was noticed. Exploratory laparotomy took place under the presumption of perforated small intestinal diverticulitis. Intraoperatively multiple diverticula were found nearly 1 cm in diameter in stomach and entire small intestine (Figure 1). One of the diverticula in the ileal segment was found to be perforated nearly 110 cm distal to the Treitz ligament. The surrounding tissue and local peritoneum were changed by inflammation. The perforated diverticulum was repaired primarily. The postoperative period was without complications until the 4th day when signs of respiratory insufficiency appeared with pneumonic infiltration. Nine days after the operation the patient died from hospital-acquired pneumonia.

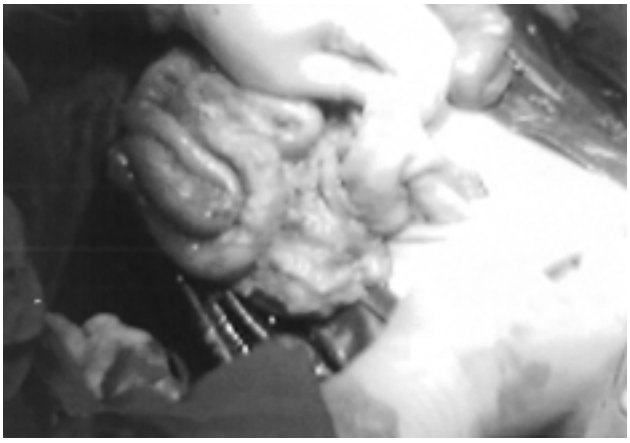

Figure 1. Multiple diverticula in the small intestine

DISCUSSION

Pseudo-obstruction is functional intestinal obstruction in the absence of anatomical luminal occlusion and results from defective intestinal motility. It can be categorized as neurogenic or myopathic forms (3, 4). The most widely recognized neurogenic type of pseudo-obstruction is aganglionosis or Hirschsprung's disease. Other neurogenic types include hypo-hyperganglionosis and abnormal or absent neuritic connections between intestinal ganglia, all known as intestinal neuronal dysplasias (5, 6). MNGIE is the most common myopathic form of pseudo-obstruction (7, 8). The myopathic forms of chronic intestinal pseudo-obstruction are rare and often familial diseases of unknown pathogenesis that are characterized by degeneration, thinning and fibrous replacement of the intestinal smooth muscle of the muscularis propria. The lesions primarily affect the small intestine but the esophagus, stomach and colon may be involved (9).

The most prominent and debilitating symptom in MNGIE syndrome is gastrointestinal dysmotility (100%) because of the neuromuscular dysfunction, and it can affect any portion of the enteric system from the oropharynx through the small intestine (10). The most common forms of dysmotility are decreased small intestine motility and delayed gastric emptying (2). The gastrointestinal dysmotility often progresses to intestinal pseudo-obstruction. Furthermore, small intestinal dysmotility most probably leads to diverticula in the jejunum and ileum. Gastrointestinal diverticulosis has been reported with an incidence of 60-70% in different reviews and specifically localized to the small intestine (1, 2). Gastrointestinal symptoms, particularly diarrhea and abdominal pain, are the most common initial manifestations followed by ptosis and ophthalmoparesis. When the syndrome begins in childhood the course tends to be more severe (2). In most patients, symptoms begin before the age of 20. Peripheral neuropathy (100%), ophthalmoparesis (85%), ptosis (65%), hearing loss (61%), thin body habitus (100%), limb weakness - muscle wasting (95%), areflexia (40%), and lactic acidosis (64%) are other characteristic clinical features (2). Weight loss generally coincides with the onset or worsening of gastrointestinal symptoms (1). All patients have gastrointestinal manifestations related to dysmotility: borborygmi, diarrhea, early satiety, abdominal cramps, nausea, vomiting, intestinal pseudo-obstruction and gastroparesis.

In contrast to the gastrointestinal problems, the neurological features are mild. Ptosis and opthalmoparesis are evident to examiners but may be asymptomatic. The peripheral neuropathy causes stocking-glove sensory loss and tendon reflexes are lost. Also, due to reduced mitochondrial respiratory chain enzyme activity, lactic acidosis is seen (1). MNGIE patients may present with neurological signs or acute abdominal symptoms. There is a report of a clinical study in the literature which indicates that 16/24 patients died at an average age of 35 (18-53 years) and two of them (8-9%) di-

ed due to ruptured diverticula which resulted in fatal peritonitis (1). Small intestinal dysmotility presumably leads to the diverticula; etiology of the small intestinal dysmotility in MNGIE is unclear. Two reports suggested a visceral myopathy, one suggested a visceral neuropathy and another found gastrointestinal scleroderma (10-13). Therefore, the nature of the dysmotility is uncertain.

In our case, the 32-year-old patient presented as acute abdomen and was diagnosed as perforated ileal diverticulitis after diagnostic laparotomy. Because of the high mortality rates of perforated small intestinal diverticula (14), when a MNGIE patient presents with abdominal pain, investigations should be made for diverticulitis. In the normal population, no pathognomonic features or clinical symptoms indicating small intestinal diverticulitis have been reported. The spectrum of complaints varies from intermittent abdominal pain to an acute abdomen with leukocytosis and fever (15). In cases of ileal diverticulitis, clinical presentation most often mimics acute appendicitis (16). Jejunal diverticulitis perforation is difficult to diagnose clinically because it is uncommon, has no specific symptoms and often simulates peptic ulcers or cholecystitis and other more familiar abdominal diseases (17). Routinely performed plain abdominal radiographs usually are not sufficient for diagnosis, as in our patient. The most significant finding is an air or contrast-filled diverticular sac juxtaposed to the mesenteric side. Free intraperitoneal air may also be a frequent finding.

On barium studies, displacement of adjacent organs, mucosal or wall thickening, extraluminal tracking of barium, and obstruction of the bowel lumen may be found. There are only isolated reports in the literature in which barium studies suggested the diagnosis. The computed tomography (CT) technique has been found to be superior to barium studies in demonstrating the extent of mural, serosal and mesenteric involvement in cases of perforation (18). Laparotomy was performed in our patient because of the signs of acute abdomen.

In our case postoperatively, there were no signs or symptoms of complication and it was uneventfull clinically. But on the 4th day after laparotomy, respiratory symptoms and signs of pneumonic infiltration, probably due to aspiration, began, and the patient died on the 9th postoperative day despite the appropriate antibiogram and antibiotherapy. In MNGIE syndrome, the causes of death in the literature are peritonitis due to intestinal rupture, aspiration pneumonia, cardiac arrest, malignant melanoma, suicide, postcolostomy complications, and esophageal variceal bleeding related to cirrhosis (1). Although afflicted with many disabilities of the disease, our patient showed no tendencies to suicide but rather was planning her life postoperatively.

In conclusion, when a patient with MNGIE presents with abdominal pain, diverticulitis of the small bowel with its possible complications must be taken into consideration, and such modalities as plain abdominal radiographs, barium studies or CT should be performed.

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