

# Enteroliths in Crohn's disease

## Kamienie jelitowe w chorobie Leśniowskiego-Crohna

Tomasz Miłek<sup>1</sup>, Piotr Ciostek<sup>1</sup>, Witold Woźniak<sup>1</sup>, Wioletta Respondek<sup>2</sup>, Mirosław Jarosz<sup>2</sup>

<sup>1</sup>First Chair and Department of General and Vascular Surgery, Medical University of Warsaw, Poland

<sup>2</sup>Gastrology Department, Food and Nutrition Institute, Warsaw, Poland

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**Address for correspondence:** Tomasz Miłek MD, PhD, First Chair and Department of General and Vascular Surgery, Medical University of Warsaw, 8 Kondratowicza St, 03-242 Warsaw, Poland, phone: +48 22 326 55 00, fax: +48 22 326 58 99, e-mail tomasz\_milek@wp.pl

### Abstract

A 50-year-old woman was admitted to the Gastroenterology Department for macrocytic anaemia. The patient had attacks of strong abdominal pain. On ultrasonography an approximately 15 cm long intestinal loop with loss of haustrations was visualised medially to the ascending colon. An abdominal X-ray was obtained and visualised oval opacifications with calcium saturated halos within the small pelvis. These opacifications were located within the lumen of the small bowel. The X-ray demonstrated the presence of isolated fluid levels within the small bowel. A colonoscopic examination was performed, where the image of the ascending colon and caecum mucosa suggested Crohn's disease. Gastroscopy revealed two healing ulcers within the duodenal ampulla, with signs of unspecific inflammations on the histopathological examination of the biopsy specimens. During the hospitalisation severe pain and features of gastrointestinal subobstruction occurred. The surgery revealed two intestinal loops adhering side to side 30 cm from the caecum. Their close adherence caused intestinal obstruction. Numerous stones were palpable. Segmental resection of the ileum along with the intestinal conglomerate was performed. Continuity of the gastrointestinal tract was recreated by stapling the intestinal endings side to side. A developing fistula was found between intestinal loops. Histopathological examination revealed changes characteristic of Crohn's disease.

### Introduction

The small bowel can be a place of stone (enterolith) formation. The stones formed in the proximal part of the small bowel consist of bile acids and are usually radiologically silent. In further parts of the small bowel, min-

### Streszczenie

Kobieta 50-letnia została przyjęta do Kliniki Gastroenterologii z powodu niedokrwistości. Pacjentka od lat cierpiąca na nawracające silne ataki bólów brzucha. W badaniu ultrasonograficznym jamy brzusznej przyśrodkowo od wstępnicy uwidoczniła się pętla jelita o pogrubiałych ścianach o długości około 15 cm. Wykonano badanie rentgenograficzne przeglądowe jamy brzusznej, w którym w obrębie miednicy małej stwierdzono owalne zaciemnienia z otoczkami o wysyceniu wapniowym. Lokalizowały się one w świetle jelita cienkiego. W badaniu wykazano także obecność pojedynczych poziomów płynu w obrębie jelita cienkiego. Wykonano badanie kolonoskopowe, w którym obraz śluzówki wstępnicy i kątnicy nasuwał podejrzenia choroby Leśniowskiego-Crohna. W gastroskopii uwidoczniła się dwa owrzodzenia w opuszcce dwunastnicy. W czasie hospitalizacji pojawiły się silne bóle brzucha oraz wymioty i cechy podnieżności przewodu pokarmowego. W trakcie operacji stwierdzono dwie pętle jelita cienkiego zrosnięte bok do boku w odległości 30 cm od kątnicy. Ich ścisłe połączenie powodowało niedrożność. Powyżej konglomeratu wyczuwalne były liczne kamienie. Wykonano odcinkową resekcję jelita krętego wraz z konglomeratem jelitowym. Ciągłość przewodu pokarmowego odtworzono, zespalając końce jelita bok do boku staplerowo. Między pętlami jelitowymi stwierdzono tworzącą się przetokę. W badaniu histopatologicznym usuniętego fragmentu jelita cienkiego uwidoczniła się charakterystyczne zmiany dla choroby Leśniowskiego-Crohna.

eral salts are incorporated into the stones, which makes them visible on X-ray examination. In the course of Crohn's disease, stasis of intestinal contents occurs as a result of inflammatory small bowel strictures. The resulting slowing down of intestinal passage may cause the formation of stones within the intestinal lumen.

This is rare – so far only a small number of such cases have been described throughout the world.

This paper describes a case of a female patient in whom enteroliths suspected on the basis of imaging tests were confirmed as a result of the conducted operation due to gastrointestinal subobstruction.

## Case report

A 50-year-old woman was admitted to the Gastroenterology Department for macrocytic anaemia (HGB – 7.6 g%) found on routine outpatient examinations. On admission she was in good general condition, without pain symptoms. On the physical examination, the abdomen was soft, painless, with a well palpable but tender oval resistance in the right mesogastrium descending to the right iliac fossa. The anamnesis revealed attacks of strong abdominal pain, mainly of the right mesogastrium, relapsing for 10 years (the last pain attack – ca. 5 months before hospitalisation), of variable duration (several hours to several days), with normal rhythm of bowel movements and normal stool consistency. As evidenced by the anamnesis, the described abdominal pain resolved after analgesic and spasmolytic drugs.

On laboratory tests, hypoproteinaemia (5.1 g/dl) with hypoalbuminaemia (2.0 g/dl) and slight C-reactive protein (CRP) elevation (6.5 mg/l, normal range: 0–3 mg/l) were found in addition to anaemia.

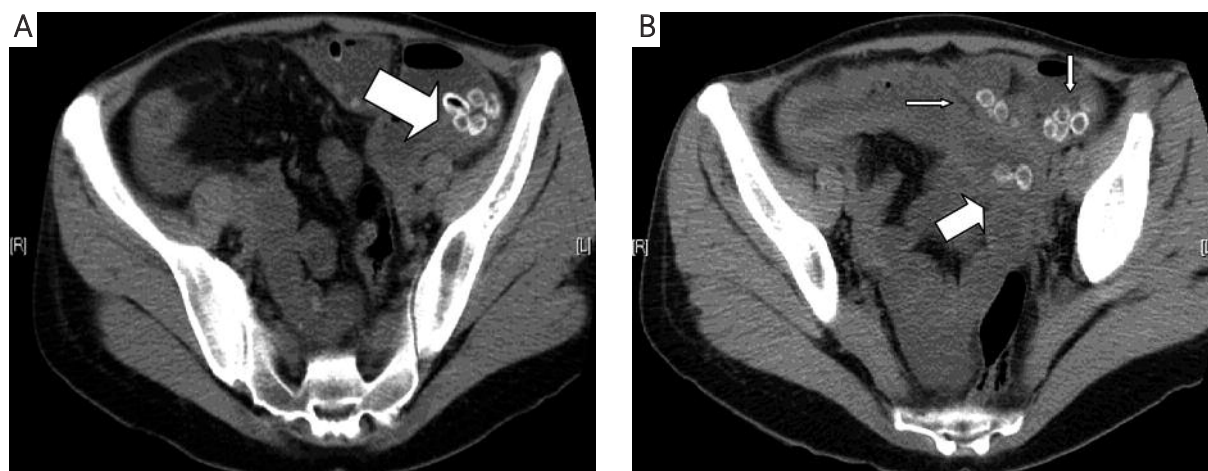
In the subsequent weeks of hospitalisation, during diagnostic tests, the patient was asymptomatic. On abdominal ultrasonography (USG), an approximately 15 cm long intestinal loop with rigid walls thickened up to 16 mm, with loss of haustrations, was visualised medially to the ascending colon. It was difficult to establish whether it

was an additional large bowel loop or a section of a changed small bowel loop. The computed tomography (CT) scan confirmed the presence of an abnormal intestinal loop, additionally revealing numerous small hyperdense foci within this lesion (Figures 1 A and B).

A plain abdominal X-ray was obtained and visualised oval opacifications with calcium saturated halos within the small pelvis (Figures 2 A and B). As assessed by the radiologist, these opacifications were located within the lumen of the small bowel on the CT scan. Additionally, the X-ray demonstrated the presence of isolated fluid levels within the small bowel.

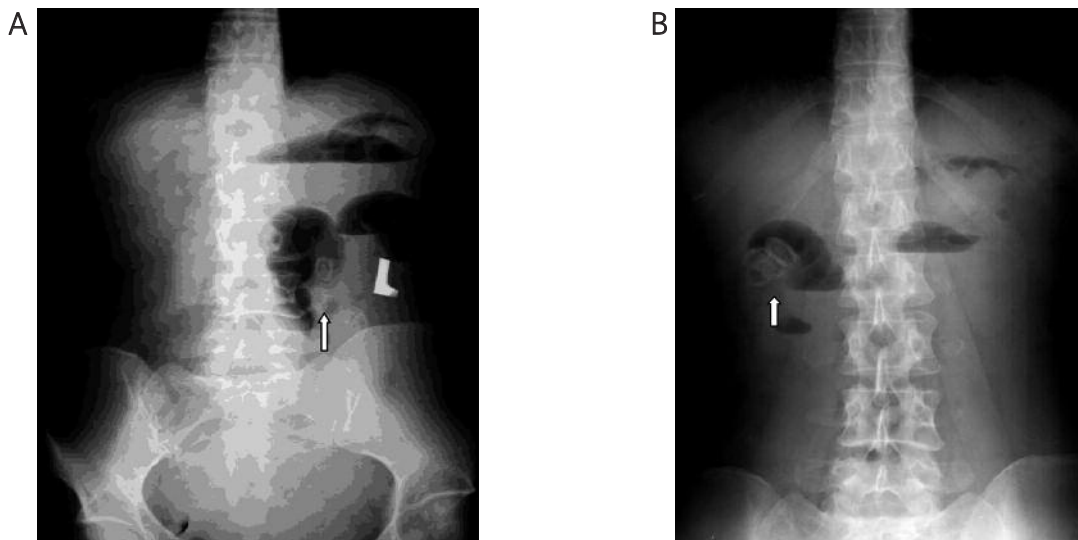
Initially, a suspicion was formed of a cysto-intestinal fistula with dislocation of stones from the gallbladder into the small bowel, but thorough analysis of the imaging examinations ruled out this suspicion, indicating that the location of the described lesion formation was the intestine. A colonoscopic examination was performed, where the image of the ascending colon and caecum mucosa suggested Crohn's disease. On the other hand, signs of lymphocytic coloproctitis were found on a macroscopic examination of biopsy specimens collected during the diagnostic procedure. Gastroscopy revealed two healing ulcers within the duodenal ampulla, with signs of unspecific inflammations on the histopathological examination of the biopsy specimens of these ulcers.

As has already been mentioned, within the first four weeks of hospitalisation the patient was in a good clinical condition, without pain symptoms, with an observed improvement of haematological parameters (the iron absorption curve was normal, and thus the patient received oral iron supplementation). In this period, due to the described changes revealed in imaging examina-



**Fig. 1.** Stones in CT scan

**Ryc. 1.** Kamienie jelitowe w tomografii komputerowej



**Fig. 2.** Stones in X-ray

**Ryc. 2.** Kamienie jelitowe w obrazie RTG

tions, the patient was referred to a surgeon who recommended potential surgical treatment upon relapse of pain symptoms. In the fifth week of hospitalisation a strong abdominal pain with associated vomiting and features of gastrointestinal subobstruction occurred. Pain resolved after spasmolytic drugs but soon relapsed. After surgical consultation for gastrointestinal subobstruction and a palpable tumour in the right mesogastrium, a decision was made to perform the surgical procedure. The surgery revealed two intestinal loops adhering side to side 30 cm from the caecum. Their close adherence caused intestinal obstruction. Above the conglomerate, numerous stones were palpable, of ca. 0.5 cm in diameter. Segmental resection of the ileum along with the intestinal conglomerate was performed. Continuity of the gastrointestinal tract was recreated by stapling the intestinal endings side to side. The peritoneal cavity was drained for 2 days. The postoperative course was without complications. After the operation, the excised specimen was cut, revealing numerous stones the formation cores of which were fruit pips/stones. A developing fistula was found between intestinal loops.

Histopathological examination of the excised small bowel fragment found changes characteristic of Crohn's disease. The patient was discharged home in a good general condition, with a recommendation of continuous gastrological follow-up. Treatment with mesalazine was initiated.

## Discussion

The described case indicates that in the case of Crohn's disease of the small bowel causing small bowel

strictures, the possibility of formation of stones within the intestinal lumen also has to be taken into account, especially when the disease is associated with the symptoms of subobstruction/obstruction of the gastrointestinal tract [1, 2]. On the other hand, the presence of stones in the small intestine makes it necessary to conduct diagnostics for Crohn's disease.

In the case described, conservative procedures were insufficient to determine the cause of formation of enteroliths – there were no data indicating Crohn's disease. The course of the disorder was rather unusual – its only symptoms were paroxysmal abdominal pain attacks responding well to spasmolytic and analgesic drugs, without abnormal bowel movement rhythm and changed stool consistency. It can be concluded that small bowel strictures and secondary formation of enteroliths in its lumen, with secondary gastrointestinal subobstruction, led to the necessity of surgery, which allowed Crohn's disease diagnosis after histopathological examination of the excised small bowel specimen.

In the case described here, the crystallisation nuclei for the enteroliths were fruit pips/stones. In the literature, isolated cases of obstruction caused by a fruit stone stuck near to the ileocaecal valve have been reported [3–5]. For example, Kaufman *et al.* described a case of a male patient in whom the cause of intestinal obstruction was a plum stone stuck in the area of the ileocaecal valve. Similarly as in our case, the histopathological examination of the resected section of the small bowel allowed diagnosis of Crohn's disease. The case described seems to be exceptional due to the multitude of enteroliths formed on the basis of fruit stones as well

as due to the 10-year course of the disease with relapsing abdominal pain, without clear gastrointestinal obstruction.

In patients with Crohn's disease, also cholelithiasis is more common than in the general population. This probably results from excessive loss of bile acids in the terminal section of the small bowel, if it is affected by the inflammatory process [6]. In these cases, the presence of calcified stones within the lumen of the narrowed small bowel usually results from a fistula between the gallbladder and the small bowel (usually duodenum), which enables the passage of stones from the gallbladder to the small bowel. They may be expelled from the gastrointestinal tract or be stuck within the intestine, usually in the area of the ileocaecal valve. An important symptom which leads to a suspicion that the stones present in the small bowel originate from the gallbladder is the presence of gas within the bile ducts.

Another clinical situation where enteroliths may develop is the presence of a Meckel's diverticulum [7]. About 50 cases of a stone visualised in the Meckel's diverticulum have been described. Most often, the intestinal stone forms in a diverticulum without ectopic gastric mucosa, because the alkaline environment favours precipitation of calcium and other minerals.

Furthermore, there have been cases of stone formation in small bowel diverticula, a rare phenomenon, usually affecting elderly persons [8, 9]. They are most often detected when the patient is admitted to a hospital due to intestinal obstruction symptoms caused by a stone formed in the small bowel diverticulum.

In conclusion, all the situations where small bowel strictures and delayed passage through the small bowel occur (inflammatory disorders, chronic infection, postoperative scarring) may contribute to formation of stones within the small bowel (enteroliths).

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