—Experimental & Laboratory Notes—

Enterovesical fistula caused by inflammatory bowel diseases

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Summary

Enterovesical fistula caused by inflammatory bowel diseases is a rare disorder. Two male patients with recurrent cystitis had sigmoid colon diverticulitis causing enterovesical fistula. One female patient with Crohn's disease developed enterovesical fistula with abdominal and urinary symptoms. In each patient, a barium enema revealed causative bowel diseases. The precise diagnosis of enterovesical fistula was made either by cystography or cystoscopy. One-stage resection of the inflamed bowel with fistula and affected the bladder wall was proved to be an effective treatment for these three patients, while a long term follow up is specifically necessary in the patient with Crohn's disease.

Key words: enterovesical fistula, Crohn's disease, diverticulitis

Introduction

Enterovesical fistula is an uncommon complication of inflammatory and neoplastic bowel diseases. Urgent diagnosis and surgical treatment are often necessary because it causes recurrent urinary tract infection. Among the causative inflammatory bowel diseases, diverticulitis of the sigmoid colon is most frequent¹⁾. In Western countries, there have been a number of reports of Crohn's disease causing enterovesical fistula²⁻⁶⁾. However, Crohn's disease with enterovesical fistula is very rare in Japan⁷⁻⁹⁾. We report two cases of enterovesical fistula caused by diverticulitis of the sigmoid colon and one caused by Crohn's disease.

Case report

Case 1: A 74-year-old male with a history of gastrectomy for gastric ulcer and tuberculous epididymitis consulted National Yokosuka Hospital because of the long term complaints of pneumaturia, dysuria, and turbid urine. There were no abnormal findings in the physical examination. The laboratory examination, however, suggested bacterial infection of the urine, and *E. coli* was found in the bacterial culture of the urine. Cystography revealed vesicosigmoid colon fistula (**Fig. 1**). Multiple diverticula of the sigmoid colon were found in the barium enema. Sigmoidectomy with the resection of vesicosigmoidal fistula including the bladder wall was effective for the treatment of the patient (**Fig. 2**).

Fig. 1 Cystograph showing enterovesical communication.

Fig. 2 The resected sigmoid colon with the bladder wall showing evidence of enterovesical fistula.

Fig. 3 Fistulograph revealing sigmoid colon with diverticula.

Fig. 4 Barium enema with irregular stenosis of terminal ileum and cecum wall suggesting Crohn's disease.

Case 2: A 76-year-old male was treated by his physician after a diagnosis of cystitis with hematuria, micturia, and dysuria. He had previously had an operation for thyroid goiter and had been medicated for hypertension and diabetes mellitus. He consulted the hospital because lower abdominal irritation appeared with continued urinary symptoms. Tenderness was apparent in the lower abdomen. In the laboratory findings, leukocytosis was present and a number of red blood cells and white blood cells were found in the urine with the cultures of *E. coli* and *enterococcus faecalis*. The sigmoid colon was visible with the influx of contrast material for cystography, and fistulography provided more precise evidence of vesicosigmoidal communication (Fig. 3). Barium enema revealed diverticula of the sigmoid colon. The patient was cured by sigmoidectomy with the resection of the fistula and the affected bladder wall.

Case 3: A 32-year-old female consulted the hospital because of pain in the right lower abdomen with diarrhea and dysuria. In the past, she had been operated on anal fistula. At the physical examination, a palpable mass was present with tenderness in the right lower abdomen. The laboratory test revealed anemia, and red and white blood cells and *E. coli* in the urine. A barium enema suggested irregular stenosis in the terminal ileum and cecum (Fig. 4). Computed tomography revealed a mass and a thick intestinal wall in the ileocecal area. Cystography showed that the right posterior wall of the bladder was compressed, and a crater with pus efflux was found by cystoscopy. Crohn's disease with a development of enterovesical fistula was diagnosed, and ileocecal resection and the resection of the fistula and affected bladder wall were successfully carried out. In the resected ileum mucosa, there were numerous linear ulcers and a cobble stone formation. There has been no evidence of any complications nor any recurrence of Crohn's disease in one year of follow-up observations.

Dicussion

Diverticulitis is the most frequent cause of enterovesical fistula (41%), and the other two major causes are Crohn's disease (17%) and colorectal cancer (16%)¹⁾. Complications caused by previous operations and pelvic radiation are iatrogenic causes of enterovesical fistula^{1,10,11)}. One hundred cases of enterovesical fistula caused by sigmoid colon diverticulitis have been reported in Japan¹²⁾. While the frequency of the enterovesical fistula formation in Crohn's disease ranged from 2 to 6 percent in America²⁻⁵⁾, the incidence of enterovesical fistula in Crohn's disease is extremely rare in Japan; only thirty-two cases have been reported in the Japanese literature⁹⁾. The discrepancy might come from the difference of the population of Crohn's disease patients in the two countries.

The age of patients with enterovesical fistula is related to the cause of the disease; older in the case of diverticulitis and younger in the case of Crohn's disease. The common symptoms are dysuria, pneumaturia, and fecaluria from recurrent or persistent cystitis. The referable symptoms may be related to the causative diseases. *Escherichia coli* is the most frequent pathogen of enterovesical fistula¹⁾. The present three enterovesical cases (74 and 76 year-old males with sigmoid colon diverticulitis and a 32 year-old female with Crohn's disease) had complaints of urinary tract infection caused by *E. coli*.

In most cases, barium enema shows abnormalities in the intestinal tract. However, cystoscopy is most helpful in confirming evidence of enterovesical fistula. Secondly, cystography is useful in the diagnosis of enterovesical fistula¹⁾. In our case 1 and 2, enterovesical fistula was confirmed by cystography, and fistulography was successfully performed for the more detailed findings in case 2. Direct evidence of enterovesical fistula was observed by cystoscopy in case 3. Because of the evidence of enterovesical fistula, the decision for surgical treatment was made. Multiple-stage operations for enterovesical fistula were proposed in high risk patients or in patients with intraperitoneal sepsis or bowel obstructions. However, a one-stage operation was recommended in most cases^{1,6,12)}. We successfully treated all three patients with a one-stage operation to resect the primary bowel lesion, fistula and affected bladder wall. Specifically in Crohn's disease, medical treatment using 6-mercaptopurine was also proposed for the enterovesical fistula⁵⁾. In any treatment of Crohn's disease, however, a long term follow up is necessary

because of the possibility of a recurrence of the disease.

In conclusion, enterovesical fistula caused by inflammatory bowel diseases could be appropriately diagnosed by cystography, cystoscopy, and barium enema in patients with recurrent cystitis, and one-stage surgical treatment was proposed in low risk patients without lethal complications.

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