ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN — POLONIA
VOL. LIV, 57 SECTIO D 1999

II Katedra i Klinika Chirurgii Ogólnej Akademii Medycznej w Lublinie
Kierownik: dr hab. Grzegorz Wallner

GRZEGORZ WALLNER, KRZYSZTOF ZAJĄCZKOWSKI

Vesico–intestinal fistulas, vesico–sigmoid fistula in the course of sigmoid cancer

Przetoki pęcherzowo–jelitowe. Przetoka pęcherzowo–esicza w przebiegu raka esicy

Vesico–intestinal fistulas are pathological connection between the urinary bladder lumen and intestinal lumen. They belong to idiopathic internal fistula. The fistulas between alimentary tract and urinary tracts appear quite rarely (9, 16). Vesico–intestinal fistulas are the most common among them. The causes of vesico–intestinal fistulas are: sigmoid diverticulum inflammation – 55% of cases, colorectal carcinoma – 16% of cases. Vesico–sigmoid fistulas belong to the most common in this group (1, 11, 16). The Leśniowski–Crohn disease is the cause of 12% of vesico–intestinal fistulas, while cystoscrirrhus is the cause of only 5% of fistulas. The other causes are: appendicitis with appendiceal abscess, injuries – including injuries resulted in endoscopy of urinary bladder and intestine, radiotherapy in the area of pelvis minor, adnexitis, intestinal tuberculosis, the Hirsprung disease, and foreign bodies in the urinary bladder (1, 2, 3, 4, 7, 14). The innate vesico–intestinal fistulas usually accompany the imperforate anus (7). The location where fistulas appear most often is usually among urinary bladder lumen and sigmoid, ileum and appendix (2). The location of fistulas is connected with anatomical system of organs in the peritoneal cavity as well as with frequent occurrence of inflammatory and neoplastic processes in the distal part of the colon (2).

As far as etiology is concerned we can divide fistulas into 4 categories: innate, neoplastic, traumatic and inflammatory. Vesico–intestinal fistulas occur more often in case of men then women, mainly due to the fact that female's urinary bladder is surrounded partly by uterus with its wide ligaments (2). Patients suffering from vesico–intestinal fistulas are mainly middle–aged or elderly people. The main causes of fistulas in younger patients are: the Leśniowski–Crohn disease and appendicitis. In case of elderly patients the main causes are: diverticulitis and colon carcinoma (18).

Among frequent symptoms there are chronic ailments from the urinary system, which are strictly bound with perivesical inflammation to intestinal pathologies. Patients are frequently treated because of urinary tract infections (18). At the moment of formation of the junction between intestine and urinary bladder there are pneumaturia and fecaluria dominant in the clinical picture. Pneumaturia occurs in 66% of patients with fistula (4). Gas can be produced in the urine of patients suffering from diabetes in the course of sugar fermentation, which is caused by gram–negative bacteria and anaerobic Clostridia with the production of carbon dioxide. During the cystoscopy the air can get into a urinary

bladder, therefore pneumaturia is not a pathognostic symptom. The test which will enable us to eliminate all the doubts is placing the Foley's catheter in the container under water and simultaneously performing sigmoidoscopy with the insufflation of air into intestine. The diagnosis of vesico–intestinal fistula is confirmed by the occurrence of pneumaturia in this case (2). Inserting a catheter under water can be replaced by turning upside down a sack, partly filled and hanging below a bladder, which is connected with a catheter. Fecaluria is a pathognomic symptom, but it occurs at only 20–50% of patients with a fistula (2). The above mentioned symptoms may be accompanied by abdominal pain, fever, dysuric symptoms. Significant amounts of *E. coli*, *Proteus* or *Streptococcus* bacteria are to be found in the urine culture. Very often there are: pathological resistance of abdominal cavity, tenderness in hypogastrium or epigastrium and symptoms accompanying lower and upper urinary tracts inflammation to be found as well. The increased leucocytosis and blood sedimentation occur more often in cases of patients with inflammatory process than in patients suffering from colorectal carcinoma (2).

Visible symptoms of limited inflammation are easily seen during the cystoscopy in approximately 50% cases of vesico–intestinal fistulas. However, ostium of fistula canal is seen only in 33% of patients (2).

Cystoscopy, as a diagnostic method of fistula, should be supplemented with an attempt of inserting an ureteral catheter in the ostium of fistula, being monitored by fluoroscopy. The examination can be completed with giving contact, insufflation of large intestine or enema with methylene blue and simultaneous endoscopic evaluation. Considering the coexistence of other urinary tracts pathologies, urography appears to be absolutely necessary. Mictic cystography more often reveals the fistula canal (2). There is need, however, to search for intestine pathologies. Barium enema should be carried out in cases of patients with inflammatory process of intestine, sigmoid diverticula or patients with the suspicion of colon carcinoma. After performing barium enema we may place the sediment of centrifugeting urine on X–ray film and make a picture. The presence of barium sulphate, which is impermeable for X rays, allows to diagnose vesicocolonic fistula (17). The discovery of barium sulphate after the enema in front of a passage assures us that a fistula between the bladder and large intestine exists (2). In the past this test was replaced by the so–called "poppy test". It was based on administering poppy seeds orally, which went through the enterovesical fistula and finally appeared in the urine. In case of diverticulitis, sigmoidoscopy with the enema are contraindicated up till the moment when infection will be under control. The evaluation of extent of inflammatory process is done by means of computer tomography or ultrasonography. According to the location where the communication of bladder and intestine takes place, we can divide fistulas into 3 groups: vesico–ileostomy fistulas, vesico–appendix fistulas and vesicocolonic fistulas. Among vesico–colonic fistulas we distinguish vesicosigmoid and vesicorectal fistulas. However, vesicosigmoid fistulas are more common, especially in the course of diverticulitis of sigmoid. One of the rarest causes of vesicosigmoid fistula is necrosis in the area of sigmoid carcinoma of infiltrating bladder (9, 11, 16). Such complication occurs in only a few percent of patients suffering from colorectal carcinoma and it attests the advanced stage of cancer. Metastases to regional lymphatic nodes occur in 33% of cases (20), and metastases to distant organs usually such as: liver, lungs occur in 25% of cases. The diagnosis of vesico–intestinal fistula absolutely qualifies the patient to surgical treatment, as the only proper therapeutic regiment. The decision of the extent of surgical procedure is made during the operation and it depends on the size and etiology of fistula. One of the most area–limited surgical interventions in case of inflammatory vesico–coecal fistulas, consists of resection of a canal and rims of the fistula without resection of an intestinal segment. If an inflammatory infiltration is bigger, there is strong need to perform the resection of an intestinal seg-

ment and a part of urinary bladder with fistula. A big inflammatory infiltration requires, however, a two–stage operation. If we find a big cavity of abscess during the operation, it is advisable to perform drainage of the cavity of abscess first and later cut out the canal of fistula. In case of vesico–colonic fistulas with inflammatory background, it is necessary to perform colostomy as the first phase of operation and it is better to postpone further surgical procedures.

In case of fistulas resulting from perforation of diverticulum of the colon, patients are qualified to one of four categories, depending on the course of diverticulitis, classified according to the present, valid Hinchey's classification (8). Patients from the first group may undergo one–stage operation. It is based on resection of intestinal fistula with a part of intestine affected with diverticulosis, sulture of loss of urinary bladder wall and reconstruction of a former continuity of intestine. In case of patients from the second group we perform a two–phase operation, in which the second phase consists of closure after 6–12 weeks of colonostomy. In the third group of patients of III–IV Hinchey's degree, the operation has to consist of 3 phases. During the first phase we place the colostomy on transverse colon, drain the cavity of abscess and peritioneum and we leave catheter or cystostomy in the urinary bladder. Next, in the second phase, after 1–4 weeks, we cut out the fistula canal and partly sigmoid, then we close opening of fistula in the urinary bladder wall. In the third and last phase colostomy is closed. A transdermal drainage by ultrasonographic monitoring or CT may be the procedure of the first phase.

If vesicocolonic fistula has neoplastic features we are obliged to apply the rules of oncological surgery with the evaluation of degree of carcinoma progression, degree of affecting lymphatic nodes and the ability of tumor resection. In case of small neoplastic infiltration a tumour is cut out with a margin of 2 cm. If bladder wall is not infected, the opening in the urinary bladder is closed in layers and urine is diverted suprapubicly (20). We must perform cystectomy, if due to the size of a tumour, partial resection of urine bladder does not bring any improvement. We should take into consideration the possibility of exenteration, if it is the only way of retaining the margin of healthy tissue. In patients with general neoplastic disease, the best solution seems to be constructing artificial anus. The amount of operation phases depends on the possibilities of intestinal anastomosis, general condition of a patient and symptoms of peritonitis (2). The authors of this publication present the case of a patient with sigmoid–vesical fistula, in course of sigmoid carcinoma, who was treated in the surgical department in the Regional Hospital in Parczew.

CASE DESCRIPTION

A patient K.M., 48 years old (number of case record 5695/97) was admitted to hospital because of urinary tracts infection. 3 months earlier he was treated symptomatically because of bleeding from the lower part of alimentary tract, urinary tracts infection and anemia. The patient complained about painful pollakiuria as well as cloudy urination and uracrasia. At the moment of admission to hospital he did not notify any complains about alimentary tract. During laboratory investigation certain abnormalities were detected: albuminuria, pyuria, leucocytosis 10500, blood sedimentation 62/140. Additionally *E. Coli* 10^7 bacteria, sensitive to Nitrofurantoin, Gentamycin, Negram and Norfloxacin were found in the bacteriological urine analysis. Urography showed: proper size, shape and location of kidneys. In the projection of urinary tracts there are no calcium shadows reminding calcium deposits. After intravenous administration of contrast, both kidneys secreted contrast medium urine. Left kidney secreted urine with slight delay. Right pyelocalyceal system and right ureter remained un-

changed. However, left pyelocalyceal system was found to be dilated and left ureter dilated up till the height of pelvis minor lumen. The most probable cause was pressure on the distal segment of ureter and on urinary bladder on the left side through the formation of soft tissue tumor of left iliac fossa (Fig. 1).

Ultrasonographic examination proved the diagnosis of urinary bladder tumour, infiltrating muscular coat of bladder in the area of its apex and left wall. It also showed stagnation in the pyelocalyceal system of the left kidney with a significant dilatation of subpyelo segment of left ureter.

The results of cystography: There has been filling defect, occupying half of the urinary bladder lumen in the upper–lateral part on the left side (Fig.2).

In cystoscopy there has been remaining dense contents of green and dark colour and of smell of rotten plants found in the urinary bladder. During the rinsing of the urinary bladder there were some small pieces of foil (the kind of foil that meat is wrapped) and blueberries found. The movements of cystoscope were limited by compact tumour, easily bleeding while being in contact with the instrument. The presence of vesico–intestinal fistula of diameter 0.5 cm was discovered on the front–lateral wall on the left side.

In the two–handed examination, which was performed in the intraspinal anesthesia, there was tender resistance of diameter 8 cm, movable while examining, found in the pelvis minor.

Colonoscopy proved the diagnosis of neoplastic tumour of sigmoid, infiltrating the medial wall of intestine. The canal of fistula was not exposed. The result of histopathological examination was: Adenocarcinoma G–2/G–3, *colitis chronica*/285–44(97).

The patient was qualified for the operation. During the operation, the sigmoid tumour of 5 cm diameter, infiltrating the urinary bladder was found. The resection *en bloc* was performed by cutting out segmentally sigmoid and partial cystectomy. The postoperative period turned out to have no complications. The patient was discharged from hospital on the 18th day after the operation. The histopathological examination of the removed tissue was performed by the Department of Pathology, University School of Medicine in Lublin revealed: *Adenocarcinoma tubulare focale muciparum*. The proximal and distal margins – *colitis chronica*.

The control examination was conducted after 1 and 3 months. The follow–up 20 months after the operation did not show any relapse of neoplastic process.

DISCUSSION

Vesico–intestinal fistulas are difficult to diagnose and often get diagnosed after many examinations. Vesico–intestinal fistula was described for the first time in 1888 by Hamisan Cripps. He emphasised that its pathognomonic symptom is the excretion of gas and stools in the patient's urine and that in the first phase of disease ailments of alimentary tract seem to be dominant.

Fecaluria is pathognomonic symptom but it occurs less frequently in 20–50%. In our case the diagnose of fistula was done during cystoscopy. Its cause after histopathological examination of specimen of sigmoid tumour, was found out during colonoscopy. Endoscopic diagnostic techniques made the diagnosis of fistula much easier. The treatment of vesico–intestinal fistula is operative. The extent of

Fig. 1. Urography. Left pyelocalyceal system and left ureter slightly dilated to the pelvis minor

Fig. 2. Retrograde cystography. Defect of shadow occupies approximately half of bladder's lumen in the upper–lateral part on the left side

surgical intervention depends on the cause. In case of fistula with retraction in neoplastic infiltration of urinary bladder it is advisable to perform the *en bloc* type resection (4). This way it reduces the traumatisation of tissues, improving oncological aseptics. Despite poor prognosis, radical surgical procedure and early treatment, in selected cases supplemented by chemotherapy (1) led to 20 months period without relapse of neoplastic process. It gives us hope of curing.

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Otrz.: 1999.11.30

STRESZCZENIE

Przedstawiony chory, lat 48, mężczyzna. Od 3 miesięcy leczony ambulatoryjnie z powodu zakażenia dróg moczowych i krwawienia z dolnego odcinka przewodu pokarmowego. Po przyjęciu do szpitala stwierdzono znaczną niedokrwistość i fekalurię. Wykonano badania diagnostyczne układu moczowego: urografię, USG jamy brzusznej, cystografię wstępującą, cystoskopię oraz badanie oburęczne narządów miednicy małej. Wykonano kolonoskopię z pobraniem wycinków. Na podstawie badania histopatologicznego rozpoznano: *Adenocarcinoma* G–2/G–3.

Rozpoznano guz nowotworowy naciekający esicę i pęcherz moczowy z przetoką łączącą oba narządy. Chorego operowano, wykonując jednoczasowo częściową cystektomię, wycięcie częściowe esicy. Ciągłość przewodu pokarmowego odtworzono, wykonując zespolenie koniec do końca. W przypadku przetoki nowotworowej z wciągnięciem w naciek nowotworowy pęcherza moczowego operacja typu *en bloc* wydaje się rozwiązaniem najwłaściwszym. Przebieg pooperacyjny był niepowikłany. Kontrola po 20 miesiącach nie wykazała wznowy procesu nowotworowego.