Case Report 4
Colovesicular Fistula

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Summary
A fistula is an atypical connection between two epithelial surfaces, in the case of an enterovesical fistula between the urinary and gastrointestinal systems. These may be the result of a number of causes including:
1. Congenital abnormalities
2. Inflammatory diseases of the bowel (such as diverticulitis and Crohn's Disease)
3. Cancer
4. Infection
5. Trauma
6. Iatrogenic (such as a post-operative complication) [3]

A colovesical fistula (colovesicular fistula), an abnormal connection between the bladder and colon, is a known complication of diverticular disease, occurring in around 2%-22% of patients suffering from diverticulosis. These fistulae tend to occur three times more often in males than in females. The difference in occurrence is thought to be related to the fact that in females there is the uterus which may prevent the colon and bladder from coming into contact with each other. In fact in females other types of fistulae, such as vesicovaginal and enterovaginal, occur more frequently than colovesical fistulae. [2]

Aim:
This article highlights the importance of the early identification and management of colovesical fistulae, which although uncommon complications of diverticulitis, can be very uncomfortable for the patient and if not treated early, can lead to high morbidity.

Presenting Complaint:
A 58- year-old gentleman was admitted to hospital for an elective sigmoidectomy in view of a colovesical fistula. The patient had been diagnosed with a colovesical fistula two months prior to the surgical operation.

The patient had originally presented with dysuria (pain during micturition) which did not improve after taking a course of antibiotics. Upon further investigation the patient also described symptoms of pneumaturia and faecaluria. Upon systemic enquiry the patient did not complain of any changes in bowel habit or per-rectal bleeding, abnormal urinary frequency, nocturia, haematuria, weight loss or lethargy. The patient had no respiratory, cardiovascular or neurological symptoms.

The patient suffers from hypercholesterolaemia and diverticular disease. The patient was also being monitored since he was known to have an infra-renal abdominal aortic aneurysm. The patient is not known to suffer from diabetes mellitus or hypertension.

At 31-years-of-age the patient had a surgical procedure for a pilonidal sinus.

The patient's medication included aspirin (stopped approximately a week prior to the proposed date of surgery) and simvastatin. The patient is not known to suffer from any drug allergies and did not suffer from any complications with anaesthesia.

The following findings were made following a physical examination:
- Patient was afebrile.
- Blood pressure: 125/85 mm Hg
- Pulse: 87 bpm
- Heart Sounds: S1+S2+0
- Chest was clear with good air entry.
- Abdomen was soft and non-tender.
- No pallor, jaundice or clubbing present.
- No oedema or tenderness of lower limbs. Mild bilateral varicose veins in lower limbs were present.

Family History
The patient's mother and brother both suffer from diabetes mellitus. The patient's sister passed away 21 years ago, at the age of 45, following complications of a uterine cancer.

Social History
The patient works as a telephone operator. He smokes around 10 cigarettes a day and drinks alcohol socially. The patient lives with his wife.

Investigations:

Cystogram
Reason for cystogram: A 58yr old gentleman with past history of colonic inflammatory strictures now presented with pneumaturia.
Result: The bladder showed a smooth outline with no evidence of any fistula. Even though the bladder was stressed, no communication with another viscus was noted. No obvious gas within the bladder could be identified. Till the day before the cystogram was performed the patient was still complaining of pneumaturia and also faecaluria.

Barium Enema
A double contrast barium enema was performed. A short stricture in the sigmoid colon was identified. No abnormalities could be seen in the right side of the colon. A review of a CT scan which had been performed two years previously showed the presence of extensive diverticular change and mural thickening in the sigmoid colon and descending colon with loss of the fat plane between the sigmoid colon and the posterior wall of the urinary bladder.

Possible diagnosis: A diverticular stricture with suspected fistula formation between the sigmoid/ rectum and the urinary bladder.

Treatment
The preferred treatment in this case is sigmoid colectomy with resection of the colovesical fistula. This procedure starts by performing a midline incision. Once that the incision has been performed the descending colon, all the way up to the transverse colon, is mobilised. The sigmoid colon and urinary bladder are then separated from each other by both sharp and blunt dissection, thus freeing the colon all the way down to the healthy rectum. The sigmoid is then resected and the descending colon and rectum are normally anastamosed together. An omental patch is placed between the colon and the bladder to prevent further fistulae.

Outcome and follow-up
Two days following the procedure the patient said he was feeling well. He was haemodynamically stable and passing clear urine (via a catheter). On examination the patient was found to be afebrile and his abdomen was found to be soft and not tender. No bleeding was noted from the incision. The patient was started on IV antibiotics.

Four days after the procedure the patient had the following vital signs:
- BP 130/75
- Heart Rate: 90bpm
- Afebrile

The patient's WBC count was noted to be 14.40, the absolute neutrophil count was 10.68 and his Hb was 12.7.

The patient reported that he still hasn't had bowel movement, nor has he passed flatus yet.
The patient is to be monitored until he is in a better condition and is opening his bowels regularly

Discussion
The majority of colovesical fistulae occur as a complication of diverticular disease, of which around 10%-15% of patients require surgical treatment for diverticulitis.[5]

Most often, patients having a colovesical fistula present with pneumaturia (presence of air in the urine) and faecaluria (presence of faeces in urine), both of which were present in this patient. Patients then tend to develop dysuria and abdominal pain, mostly in the suprapubic region. In the majority of cases the fistula allows material to travel in only one direction, from the colon to the urinary tract, and therefore all symptoms are urinary in nature, and in fact fistulae rarely give rise to gastrointestinal symptoms (e.g. urinary leakage into the colon). Generally symptoms are associated with chronic urinary tract infections. The trademark presentation of a colovesical fistula is known as Gouverneur syndrome. This refers to a patient presenting with suprapubic pain, frequency, dysuria, and vesical tenesmus. Patients may also present with other signs, namely abnormal urinalysis findings, foul smelling urine, debris in the urine, haematuria, and UTIs. [2] [5]

Even though pneumaturia is common in patients with a colovesical fistula (occurs in about 50%-60% of patients), it is not diagnostic of a fistula since it may be caused by gas-producing bacteria which have invaded the urinary tract (e.g. Clostridium).

This is especially common in patients suffering from diabetes mellitus. On the other hand, faecaluria, which occurs in roughly 40% of cases, is a cardinal sign of a colovesical fistula. [3]

When diagnosing a colovesical fistula, taking the patient's clinical history is of vital importance since it may be indicative of the disease. If a colovesical fistula is suspected, a Charcoal test may be performed. The patient is given oral activated charcoal, and if a fistula is present, particles of charcoal should appear in the urine a couple of hours after its administration. However this is not specific for a colovesical fistula, since it only confirms the presence of a connection between the gastrointestinal and urinary systems. [2,5]

An abdominal CT scan is diagnostic in about 90%-100% of patients with a colovesical fistula. The CT scan would show air or oral contrast in the bladder. A CT scan will also give information regarding intraluminal or extraluminal pathology. [5]

Another investigation which can be carried out is a cystoscopy. Colonic fistulas normally occur on the left side and dome of the bladder (as opposed to small bowel fistulae which occur on the right side and dome of the bladder). The vast majority of cases (80%-100%) exhibit bullous oedema, erythema, or exudation of faeculent material from the fistula site. However, even though cystoscopy is able to detect these signs, it is suggestive of a fistula in only 10%-46% of cases, since the fistula is not always visualized. Unfortunately cystoscopy is reported to be successfully diagnostic in only 38%-48% of cases. [1] [4] [5]

Occasionally a VCUG (voiding cystourethrogram) can be performed. However, since most often these fistulae only allow a unidirectional flow, it is highly unlikely that any contrast medium will make its way from the bladder into the colon. [2]

When treating colovesical fistulae, two approaches may be taken: the medical treatment, and the surgical treatment. The first choice would be a primary resection of the colon with anastomosis performed as a 1-stage procedure, involving either simple closure, use of an omental flap, or resection and closure of the bladder defect. Alternatively laparoscopic treatment of colovesical fistulae has also been successfully performed. Laparoscopic treatment is advantageous when compared to conventional surgery since it causes less scarring, a shorter post-operative stay, and a lower occurrence of ileus. [1] [4] [5]

Occasionally patients refuse the surgical procedures or are deemed to be unfit for surgical treatment (e.g. if other comorbid conditions are present). Patients will keep on suffering from pneumaturia and mild urinary symptoms. Antibiotic treatment can be given intermittently but it is very unlikely that this alone will control the urinary symptoms. Antibiotic treatment can nevertheless prevent more life-threatening conditions, such as sepsis, bacteraemia and renal failure from occurring. Experimental studies performed on animals have shown that colovesical fistula may be tolerated quite well, unless a distal urinary or gastrointestinal obstruction develops. [1] [4] [5]

Learning points

- Colovesical fistulae are a known complication of diverticular disease.
- These fistulae are about three times more common in males than in females.
- Often these fistulae allow material to travel in only one direction, from the colon to the bladder, and in the majority of cases, symptoms are urinary.
- Signs and symptoms vary between individuals but commonly include:
  - Pneumaturia
  - Faecaluria
  - Recurrent UTIs
  - Gouverneur syndrome (suprapubic pain, frequency, dysuria, and vesical tenesmus)
- Diagnosis very often confirmed through CT imaging of abdomen: air will be present in the bladder.
- If possible, treatment of choice is a primary resection of the colon with anastomosis performed as a 1-stage procedure.

References

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