

Diagnosis and management of colovesical fistulae

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Abstract

Introduction

Colovesical fistulae (CVF) are the relatively uncommon presentation in colorectal surgical practice. However, the rarity of the disease gives rise to problems in diagnosis and treatment as adequately powered data is lacking in published literature. Furthermore, the aetiology of CVF in Asia differs from the West which plays an important role in patient management.

Methods

The records of all the patients with CVF managed in the Gastrointestinal and Urological surgical units of a tertiary care centre over a nine-year period were collected and analysed. Follow-up data have been collected prospectively to assess the outcome.

Results

A total of 11 patients (M:F=9:2) with a median age of 59 years were studied. Faecaluria, pneumaturia and recurrent urinary tract infections were the commonest presenting symptoms. The diagnosis was based on clinical evaluation. Cystoscopy, colonoscopy and CECT were utilized to identify the underlying pathology, complications and for staging. Commonest benign pathology was diverticular disease (n=7), followed by tuberculosis (n=1). Adenocarcinoma of the sigmoid colon and squamous cell Carcinoma of the bladder were reported in three patients. Majority of patients (n=9) were managed successfully by open-left colonic resection with or without temporary ileostomy and bladder repair, while inoperable patients were managed with a stoma.

Conclusion

CVF is a relatively uncommon condition in our setup and mostly related to isolated diverticular disease of the sigmoid

colon. Diagnosis of CVF can be made with accuracy by proper clinical assessment. Cystoscopy and LGIE are essential components of the diagnostic workup of a patient with suspected CVF. During surgery, segmental resection of the colon is favoured than local repair.

Introduction

Abnormal communication between bladder and colon is a recognized disease entity in gastrointestinal and urological surgery. The sigmoid colon is more frequently involved in colovesical fistulae (CVF) than the rest of the colon. The first report of a CVF was in 1685, and it was scientifically described by Harrison Cripps in his landmark paper in 1888 (1). Diverticular disease, inflammatory bowel disease and malignancies of colon and bladder are the commonly recognized causes of CVF (2).

However, the rarity of CVF gives rise to problems in diagnosis and management as adequately powered data is lacking in published literature. Moreover, underlying aetio-pathology complicates the situation which seems to be different in Asia when compared to the Western world (3). Lack of data on CVF from Sri Lanka makes the preparation of tentative guidelines on management strategies difficult. When considering the impact of colovesical fistula on the quality of life of these patients, early diagnosis and evidence-based management are critically important. Therefore, we decided to analyse the data from a group of patients with CVF, who were managed in gastrointestinal and uro-surgical units in a tertiary care centre of Sri Lanka.

Methods

The records of all patients who had treatment for CVF in the Gastrointestinal and Urological surgical units of Colombo South Teaching Hospital from 1.1.2010 to 31.12.2018 (9 years) was collected. Demographic data, nature of the presentation, investigations carried out and interventions performed in all patients were analysed. Follow-up data have been collected prospectively to assess the outcome. Approval for the study was obtained from the Ethics Review Committee of the Institute.

Results

Hospital records of eleven patients with CVF were identified.

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The male to female ratio was 9:2. Age of presentation varied from 38 to 76 with a median of 59 years. Commonest method of presentation was faecaluria (n=10) followed by recurrent urinary tract infections (n=6) and pneumaturia (n=1).

Cystoscopy and lower gastrointestinal endoscopy (LGIE-flexible sigmoidoscopy or colonoscopy) were carried out in all patients. Fistula tracts were detected by cystoscopy in 7 patients. On the other hand, LGIE was not able to identify the fistula in any of the patients. Contrast enhanced CT Abdomen and pelvis (CECT) was carried out in four patients which revealed features such as hydronephrosis, thickened sigmoid colon and air in the bladder. However, fistula tracts were not identified in CECT scans. When considering the anatomy of fistulae, all patients had fistula tracts between the sigmoid colon and the posterior wall or dome of the bladder.

The most common underlying pathology was diverticular disease (n=7) of the sigmoid colon. Other causes included adenocarcinoma of the sigmoid colon (n=2) and tuberculosis (n=1). One patient came with fecaluria two weeks after transurethral resection of a bladder tumour done elsewhere. The histopathology of the bladder tumour was squamous cell carcinoma.

Open surgical procedures were carried out to treat our patients. Sigmoid colectomy with colo-colic anastomosis, repair of bladder defect in two layers and inter-positioning of the omentum was the procedure performed in patients with benign pathologies. Out of those, one patient was managed initially by local repair of the sigmoid defect instead of segmental resection due to extensive adhesions. That patient had an early recurrence and underwent colectomy later with a successful outcome. Except for the patient with undiagnosed tuberculosis, all patients who underwent laparotomy and repair of the CVF had an unremarkable recovery.

Undiagnosed tuberculosis patient had persistent fever postoperatively and further investigations revealed tuberculosis and treatment initiated. Later, histopathological assessment of the resected CVF specimen confirmed the disease. The patient who developed the CVF after TURBT was in ASA III category due to cardiac disease and diabetes mellitus. She has had surgery for ovarian carcinoma 18 years ago. As she was having severe urinary sepsis, defunctioning colostomy was done but she succumbed three days later due to cardiac failure.

When considering the patients with malignant pathologies, one patient with sigmoid colon malignancy had undergone anterior resection with defunctioning ileostomy, cystectomy and ureterosigmoidostomy and survived only for three months. Other patient presented five years after a reversal of

Hartman procedure, which was performed due to recto-sigmoid carcinoma. Defunctioning ileostomy was performed as the patient was not operable due to acute on chronic renal impairment and early mortality was reported.

Discussion

Colovesical fistulas are less common in females and it is believed that uterus acts as a barrier between colon and bladder (4). This was evident in our case series too. Diverticular disease of the sigmoid colon is the commonest reason for CVF in our patients, which is similar to western literature (1). It is responsible for CVF in two-thirds to three-fourths of cases (3, 5, 6).

Interestingly, prior to this presentation our patients with diverticuli causing CVF did not have any complications of diverticular disease. On the other hand, we did not encounter Crohn's disease induced fistulae probably due to the low prevalence of the disease in Sri Lanka (7). Bladder carcinoma leading to CVF is rare and when it happens is usually due to squamous cell carcinoma of the bladder which constitutes only about 1-3% of bladder malignancies (1, 8). This was true in our case with bladder cancer causing the CVF too.

In our case series mainstay of diagnosis was clinical, and investigations were performed to identify underlying pathologies and for staging purposes of cancer detected. Faecaluria and pneumaturia are considered as pathognomonic features of colovesical fistula, and the majority of our patients had these symptoms (2). Emphysematous cystitis is the only other cause which can cause pneumaturia and it is extremely rare (2). However, patients hardly divulge these symptoms by themselves unless questioned directly as they consider faecaluria and pneumaturia are medically insignificant and describe recurrent urinary sepsis as the main problem.

Therefore, focused history taking and clinical evaluation are invaluable for prompt diagnosis. Historically poppy seed test was a simple but very useful bedside test to diagnose a CVF (2). Orally ingested poppy seeds were collected from urine confirming the presence of a connection between the bowel and bladder. With the advent of sophisticated investigations, this has become obsolete. The Bourne test where voided urine after barium enema is spun down and imaged for contrast is also not done anymore as barium enema itself has been replaced by LGIE and CECT scanning (9).

LGIE was performed in all the patients to exclude an underlying malignancy or strictures and to detect diverticular disease rather than to identify the fistulous tract. In contrast, cystoscopic evaluation has a higher sensitivity in the identification of the fistulous opening (2, 3, 4). Fistula appears as a localized area of erythema and congestion in the early

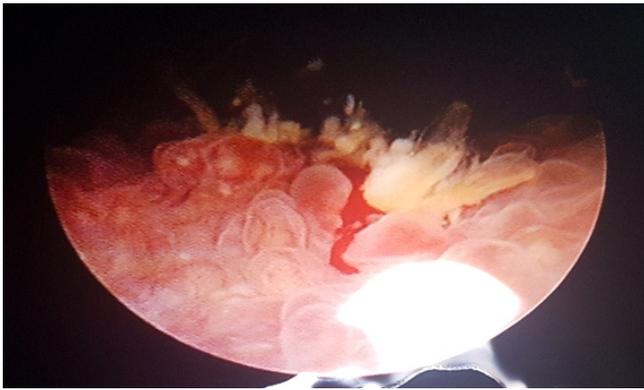


Figure 1. Bullous oedema of bladder mucosa around the opening of the fistula. Faecal particles are seen in yellow colour.

stages and becomes papillomatous when it matures and very rarely seen as a clear defect in the bladder wall [Figure 1]. Therefore, careful observation of the abnormal area of the bladder for a few minutes is useful, which often reveals the inflow of faecal particles or purulent material into the bladder. If not, an inexperienced clinician may assume the findings as just a bladder tumour and will be disappointed with benign histology of the biopsy and would lead to repeated biopsies and delay in diagnosis. CECT was performed in our patients selectively, even though it is considered the most accurate diagnostic tool to assess the extraluminal pathologies which is the usual cause of the CVF. According to our experience CECT was not useful in identifying the fistulous tract in most cases. Most authors agree that radiological definition of a CVF is notoriously difficult (3). Hence, a normal CECT could not exclude the possibility of a CVF. However, some authors believe that CECT, barium studies, and cystography are superior to lower GI endoscopy & cystoscopy in CVF diagnosis (6). Staging of colonic malignancy and suspected pelvic collections were the main indication for CECT in our patients.

Segmental resection and local repair are the main modalities of reported surgical interventions in colovesical fistula (3). Resection of the involved segment of colon is vital to achieve satisfactory healing and to prevent a recurrence. According to our results too, colonic resection and anastomosis is the most appropriate strategy. Single stage repair and anastomosis is possible in most of the patients, especially when an isolated diverticulum is the cause of CVF. Defunctioning ileostomies were performed selectively in our patients, especially in patients with malignant pathologies following colo-rectal anastomosis. This strategy has enabled us to minimise the consequences of an anastomotic dehiscence while reducing stoma related complications. Recently published studies describe the efficacy of laparoscopic and robotic assisted repair of CVF (10, 11). However, these require expertise and

resources and rarity of CVF makes these less viable options for a low-middle income country like Sri Lanka.

Conclusion

CVF is a relatively uncommon condition in our country and mostly related to isolated diverticular disease of the sigmoid colon. Diagnosis of CVF can be made with accuracy by proper clinical assessment. More specifically, male patients more than 50 years of age with a history of faecaluria, pneumaturia and severe, recurrent urinary tract infections should be suspected of having a CVF. Cystoscopy and LGIE are essential components of the diagnostic workup of a patient with suspected CVF. Vigilant cystoscopic inspection by a clinician with awareness of the expected findings improves the sensitivity of objectively diagnosing a CVF. During surgery, segmental resection of the colon is favoured than local repair.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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