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Difficulties in the clinical diagnosis of intestinal-vesical fistula: A review

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ABSTRACT

Introduction: An intestinal-vesical fistula, also known as an enterovesical fistula, is an abnormal connection between the intestine and the bladder. This pathological connection allows the contents of the intestine to pass the bladder and can cause various symptoms and complications. **The aim:** The aim of this case report is to present the diagnosis of an entero-vesical fistula in a patient. **Case report:** 71-year-old female presented with recurrent abdominal and lower back pain, anemia with an Hb level of 9.2 g/dl, a 10kg weight loss over 2.5 months, and recurrent UTIs over two months, unresponsive to ciprofloxacin, amoxicillin, and fosfomycin. **Results:** After the diagnosis of an intestinal-vesical fistula, the woman was transferred to the Department of General Surgery for bladder wall reconstruction and after that she will remain under the supervision of the urology clinic. **Conclusions:** The patient's symptoms like abdominal and lower back pain, significant weight loss, anemia, and unresponsiveness to antibiotics suggest the possibility of fistula. More advanced diagnostic evaluation, including imaging and cystoscopy, to confirm the diagnosis and initiate a suitable treatment plan. The prognosis is influenced by the root cause and the patient's general health condition. Surgical intervention commonly has good outcomes, although the complexity of the condition can vary significantly based on the cause and extent of the entero-vesical fistula.

keywords: Fistula, intestinal-vesical fistula, UTI

1. INTRODUCTION

A fistula is an improper connection between two or more internal organs that arises as a result of diseased processes within the body (e.g., Crohn's disease, colitis ulcerosa), complications of surgical operations for example during casual puncture of the intestine with a surgical instrument or mechanical trauma

(Banasiewicz et al., 2017; Chapman et al., 1964). We have two groups of fistulas: internal fistulas, which arise between internal organs, and external fistulas, which are connections between organs and skin (Ghimire, 2022). An example of an internal fistula is a vesicourethral fistula (which can lead to urine leaking into the vagina).

In contrast, an example of an external fistula is a perianal fistula (which, due to the connection between the rectal lumen and the skin of the anal area, can lead to infection of the perineal area) (Wu et al., 2021). When the intestinal lumen connects incorrectly to another organ or the skin, we deal with an intestinal fistula. Due to the high number of complications, the surgical treatment of this type of fistula is challenging for the surgical specialist like general surgeons, gynecologists, urologists (Børseth et al., 2019; Misiak et al., 2023). Internal fistulas are most often the result of disease progression from the affected organ to an adherent organ (Gosemann and Lacher, 2020).

They often coexist with tumours that produce anomalous connections during the necrotic and infiltrative process. Symptoms rely on the site of exit of the fistula and its size (Tolan, 2016; Dalal and Schwartz, 2016). Prior to surgery, the patient's nutritional status should be constant and the chronic disease stabilised, providing the new intestinal anastomosis to heal more quickly. A patient with this kind of fistula should be under the care of various specialists such as a dietician and a dressing nurse to provide the best possible care after surgery (Zhang et al., 2017; McGregor et al., 2023). In our paper, we will present the case description of a patient who was diagnosed with an internal, entero-vesical fistula.

2. METHODOLOGY

This case study was conducted by searching for current papers on PubMed and Google Scholar using the search phrases fistula AND entero-vesical fistula. After eliminating duplicates, we appraised all publications using the titles and abstracts. Following an exact revision of complete manuscripts, 20 articles met the inclusion criteria. The research took place in June 2024.

3. CASE DESCRIPTION

A 71-year-old female patient was brought to the hospital due to recurrent abdominal pain, lower back pain, and a weight loss of approximately 10kg over the past 2.5 months. She has also been experiencing recurrent urinary tract infections for the past two months, which were treated by her primary care physician with ciprofloxacin, amoxicillin, and fosfomycin without improvement. Outpatient tests revealed anemia with an Hb level of 9.2 g/dl. Upon admission to the Gabriel Narutowicz Specialist Municipal Hospital in Krakow, Department of Internal Medicine with Endocrinology, the patient was in good general condition, conscious, alert, and in logical contact, with stable circulation and respiration. On auscultation of the lungs: Normal vesicular breath sounds. Her abdomen on examination was painful in the lower abdomen but without peritoneal symptoms.

Laboratory tests showed high inflammatory parameters and moderate anemia, with stable Hb values in follow-up assessments (Table 1). The doctors performed gastroscopy which revealed a single erosion near the pylorus of the stomach with no other abnormalities. An abdominal CT scan showed a circumferential thickening of the sigmoid wall to approximately 13mm. Adjacent to this finding were extensive fluid collections, enlarged lymph nodes, and pockets of free gas, suggesting a likely adhesive perforation of the gastrointestinal tract with a neoplastic background, with a less likely inflammatory cause. Directly adjacent to these changes was the bladder with gas present, raising the possibility of an intestinal-bladder fistula.

A thick-walled pathological channel filled with gas, up to a maximum diameter of 13mm, extended from the site of the pathological intestinal loop to the bladder upwards along the left iliac vessels (Figure 1 to 6). After a surgical consultation, the doctors decided to transfer the patient to the General Surgery Department for further treatment. In the Department of Internal Medicine with Endocrinology, the patient was treated with Metronidazole 500mg three times a day i.v., Sterofundin 500ml once daily i.v., No-spa 2 ampoules three times a day i.v. in 250ml 0.9% NaCl, Conaret 2.5g, and Paracetamol 1g three times a day i.v.

Table 1 Shows the laboratory results performed in the department.

Date of Examination	10.07.2024, 11:30	10.07.2024, 15:40	12.07.2024	Units
WBC	7.72	6.18	5.52	tys/uL
RBC	3.49	3.31	3.52	mln/uL
HGB	8.4	7.9	8.3	g/dL
ALBUMIN	-	34	33	g/L
CREATININE	48	47	-	umol/L
eGFR	>60	>60	-	ml/min/1.73m2
CRP	147.8	139.8	-	mg/L
SODIUM	141	136	142	mmol/L
POTASSIUM	3.8	3.9	3.9	mmol/L

**Figure 1** Shows an abdominal CT scan.



Figure 2 Shows an abdominal CT scan.

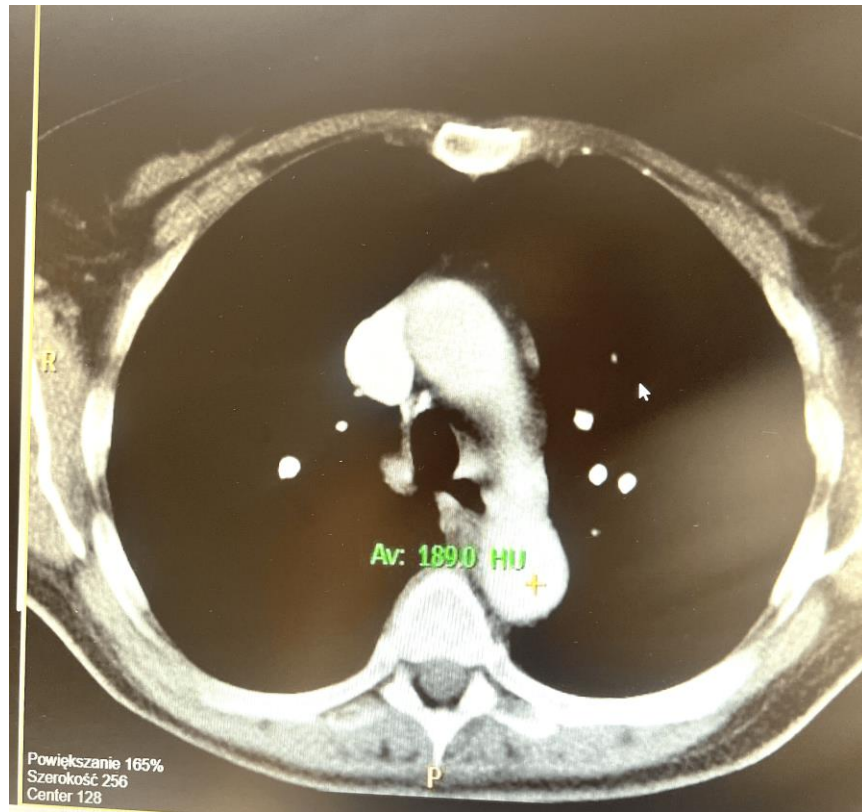


Figure 3 Shows an abdominal CT scan.



Figure 4 Shows an abdominal CT scan.

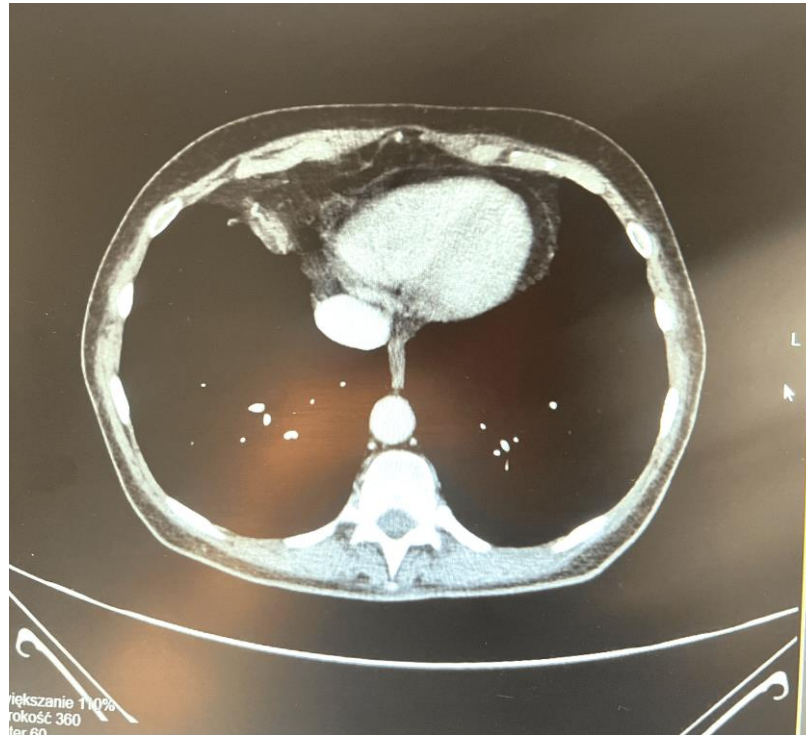


Figure 5 shows an abdominal CT scan.

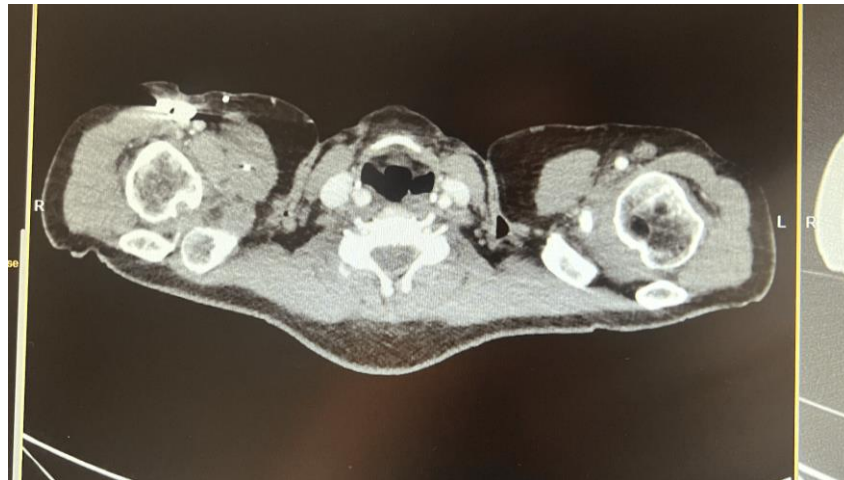


Figure 6 Shows an abdominal CT scan.

4. DISCUSSION

Enterovesical fistulas are a rare but serious clinical condition that can lead to a significant deterioration in the patient's quality of life. The case of our patient, who has been hospitalized due to this pathology, shows vital aspects of the diagnosis and treatment of this disease (Scozzari et al., 2010; Levy and Tremaine, 2002). Enterovesical fistula is an abnormal connection between the lumen of the intestine and the urinary bladder. This results in the leakage of intestinal contents into the urinary tract. Complications of diverticular disease are the main cause of colonic colovesical fistulas (Golabek et al., 2013). Diverticular disease, the most common cause of colovesical fistulas, is a common disease today. Study shows that 15 to 25% of patients with diverticulosis will develop diverticulitis (Scarpignato et al., 2018).

A retrospective review 2013 found that the lifetime chance is lower at only 4% (Shahedi et al., 2013). The risk of colovesical fistula in patients with diverticular disease ranges from 2% to 23% (Melchior et al., 2009). The average age at which colovesical fistula has been

diagnosed is 55 to 75 years. Patients with colovesical fistula usually present recurrent urinary tract infections. Pneumaturia and, or fecaluria are also common. Pneumaturia occurs in approximately 70% to 90% and fecaluria in 50% to 70% of patients with colovesical fistulas (Najjar et al., 2004; Melchior et al., 2009; Garcea et al., 2006). Patients may also experience dysuria, hematuria, urinary urgency, urinary frequency, or suprapubic pain. To diagnose a colovesical fistula, the patient undergoes a computed tomography of the abdomen with oral contrast.

This test is susceptible, with more than 90% accuracy. A patient who is a candidate for surgery should undergo open or minimally invasive surgery to repair the enterovesical fistula. After bladder surgery, the patient will require a Foley catheter inserted for 7-10 days postoperatively. The prognosis of enterovesical fistula depends on the underlying etiology. The most common cause of colovesical fistula is benign diverticular disease associated with a good prognosis. Recent publications have shown little or no difference in complication rates when comparing surgical treatment with non-surgical, conservative treatment of colovesical fistula (Solkar et al., 2005). In the event of an entero-vesical fistula, early diagnosis and appropriate treatment are crucial. Optimal patient care requires a multidisciplinary approach and cooperation between gastroenterologists, urologists and surgeons.

5. CONCLUSIONS

Intestinal-vesical fistulas, commonly called urinary fistulas occur relatively infrequently, and their symptoms are often nonspecific, making them a diagnostic challenge. The most frequently described type of fistula is the colovesical fistula, originating in the sigmoid colon. Where through nonspecific symptoms like dysuria, abdominal pain (as in the described patient), recurrent urinary tract infections, itching, the presence of gas bubbles in the urine at the end of micturition or occurrence of an inflammatory mass, the use of advanced imaging techniques are required. These include computed tomography which is a tool of choice in majority of fistula-related cases. Determining the point of origin of the fistula affects not only surgical treatment but also pharmacological and preoperative management.

In contest of pelvis and abdominal cavity it is especially hard to interpret alleged diagnosis based on laboratory tests, which are considered to be nonspecific tools in case of imaging diagnosis deprivation. It is essential to perform a general urinalysis and microbiological examination as its results often present hematuria, fecal matter, cloudy urine as well as bacteria such as anaerobic microorganisms or coli group bacteria. Furthermore, fistula formation is always associated with tissue necrosis. The standard examination used to visualize fistulas is contrast cystography. It is performed as a basic procedure, but it is not always definitive and often requires additional diagnostic methods, as the absence of abnormalities after contrast agent administration does not exclude the presence of fistulas.

In clinical practice, cystoscopy is widely used to establish the final diagnosis. Some cases require rectoscopy as well. During surgical intervention, majority of patients are supplied with cystostomy and enterectomy. Surgical management strategies also include anus emerging with further anorectal reconstruction. Following research data, despite advanced diagnostic methods availability, elementary tests such as poppy seed tests are still performed. Life-threatening complications of this condition typically become apparent after a rapid deterioration in the patient's general condition. Therefore, prompt and thorough diagnostics are essential to predict and prevent outcomes such as urosepsis or persistent organ-specific disability.

Author's Contribution

Anna Józefiak: Conceptualization, methodology

Magdalena Szczepanik: Conceptualization, investigation

Cezary Bochyński: Methodology, Review and editing

Dominika Kropidłowska: Resources, writing- rough preparation

Maciej Horbaczewski: Conceptualization, writing- rough preparation

Jolanta Mazurek: Review and editing, formal analysis

Gabriela Mazurek: Review, Visualization, data curation

Patryk Góralski: Resources, writing- rough preparation

Project administration: Anna Józefiak

Informed consent

Not applicable.

Ethical approval

Not applicable.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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