APPENDICOVESICAL FISTULA: A RARE COMPLICATION OF APPENDICITIS

F. Golfam*[1], S. K. Forootan[2], P. Golfam[3], A. R. Khalaj[1], S. S. Sayedmortaz[1]

1) Department of Surgery, Mostafa Khomeyni Hospital, Shahed University, Tehran, Iran
2) Department of Urology, Mostafa Khomeyni Hospital, Shahed University, Tehran, Iran
3) Department of Anesthesiology, Kermanshah University of Medical Sciences, Kermanshah, Iran

Abstract- Appendicovesical fistula is an uncommon type of enterovesical fistula and a rare complication of unrecognized appendicitis. Appendicovesical fistula often presents with recurrent or persistent urinary tract infection, especially in men. The commonest causes are appendicitis, cecal diverticulitis, and cystadenocarcinoma or carcinoid tumors of appendix. Approximately 114 cases have been reported previously in the literature, the vast majority in young male patients. Our special case joins the other cases which have already been described in the international literature. This case is a middle-aged man and is the first who has large and multiple fecaliths. We reviewed other cases and contributed an additional one with hope that increased awareness of this entity may facilitate the correct diagnosis and avoid inappropriate management.

Acta Medica Iranica, 46(2): 159-162; 2008

Key words: Appendicovesical fistula, enterovesical fistula, fistula

INTRODUCTION

Abdominal pain is the main symptom of acute appendicitis. Classically, period of pain is varying from 1 to 12 hours, although usually within 4 to 6 hours. Immediate appendectomy has long been the recommended of acute appendicitis because of the known risk of progression to rupture. Appendicular rupture occurs most frequently in children and older patients. The overall rate of perforated appendicitis is 25.8 % (1,2).Patients that present with a longer duration of symptoms may progress to appendicular mass. In 2-6% of the patients, appendicular mass will be detected.

The appendix and the bladder may occasionally become fused in an inflammatory condition and producing necrotic focus and at last creating a fistula. Rarely appendix abscess may rupture into the bladder, producing an Appendicovesical fistula (AVF). Sometimes this evidence penetrates into the intestine, onto the skin or other organs adjacent to appendicular abscess or phlegmon and creates another form of appendicular fistula. Clinical presentation of AVF can be with a history of abdominal pain with characteristics of appendicitis that undergo antibiotic therapy and after a period patients present prominently with urologic symptoms and infrequently with subacute or chronic abdominal pain. On the other hand, appendicitis without any formation of fistula was seen with bladder tumor, hematuria, and pelvic mass with urethral obstruction, respectively. AVF can be classified as a subgroup of colovesical fistula with the same clinic and paraclinic colovesical fistula. Dysuria, frequency, pneumaturia or fecaluria can be the urologic symptoms in AVF. Appendicitis particularly pelvic form (3), is the most common cause in AVF cases that reported till now but other underlying causes such as radiation (4), Crohn's disease (5, 6), papillovillousadenoma of appendix

Received: 28 Oct. 2006, Revised: 7 Nov. 2006, Accepted: 16 Dec. 2006

*** Corresponding Author:**
Farzaneh Golfam, Department of Surgery, Mostafa Khomeini Hospital, Shahed University, Italy Ave., 88963122, Tehran, Iran
Tel: +98 21 880969437-8
Fax: +98 21 44990105
E-mail: fgolfam@yahoo.com

(7), appendicular diverticulitis (8), cystadenocarcinoma of the appendix (9) and carcinoid tumors, neuroma (10), mucinous adenocarcinoma, ileocecal actinomycosis (11), Hirschsprung's disease (12) and cystic fibrosis (13) had been reported.

The diagnosis of AVF is difficult and usually delayed. Barium enema and colonoscopic examinations, magnetic resonance imaging ultrasonography, cystography have minimal role in AVF diagnosis. Computed tomography (CT) readily detects air within the bladder earlier and without equivocation when compared with other imaging techniques. It is also useful in the assessment of the extent and the degree of pericolonic inflammation, thus playing an important role in preoperative surgical planning and postoperative follow-up (14). In spite of aforementioned tests in some study laparoscopy was reported as the only diagnostic modality (6, 15).

CASE REPORT

A 36-year old man presented with persistent dysuria with leukocyturia. He was treated with broad spectrum antibiotics for several months. He had abdominal pain history in 8 months ago that he performed plain abdominal x-ray (Fig. 1). One prominent fecalith obvious in primary abdominal x-ray but the patient unfortunately missed and received a great amount of antibiotics.

While this patient was admitted in our service he had no abdominal tenderness in physical exam in spite of the presence of dysuria and pneumaturia.

Fig. 1. First plain abdominal x-ray of the patient.

Fig. 2. Second plain abdominal x-ray of the patient after 8 months.

He was under broad spectrum antibiotics coverage and urine culture was negative. Cystoscopy showed some bullous edema of the posterior bladder wall.

Additional Plain abdominal x-ray was performed that demonstrated 2 additional fecalith and remarkable growth in size (Fig. 2). An AVF was confirmed by CT, which showed gas in the bladder and thickening of the bladder wall adjacent to the fecaliths (Fig. 3). Findings were confirmed at laparotomy. Retrograde appendectomy amasses with fistula and resection margin of involved bladder wall was performed. Defect of bladder wall was repaired too. In the pathologist report no evidence of malignancy was seen and only characteristic of appendicitis and chronic cystitis was described.

DISCUSSION

AVF is a rare form of internal fistula usually occurring in boys and young men. Only 113 cases in all ages have been reported previously in literature (12). Fistula is formed via direct extension of ruptured appendix or secondary to abscess erosion into the bladder. The site of the tract in the bladder is depended on the route of the spread-out. Although the essential cause of AVF is intestinal origin, most complaints of patient have urologic symptoms (16). As the other forms of internal fistula, gastrointestinal symptoms range from mild abdominal cramps to sever abdominal pain and diarrhea. Hypokalemic hyperchloremic metabolic acidosis can be one of appendicovesical fistula presentations (17).

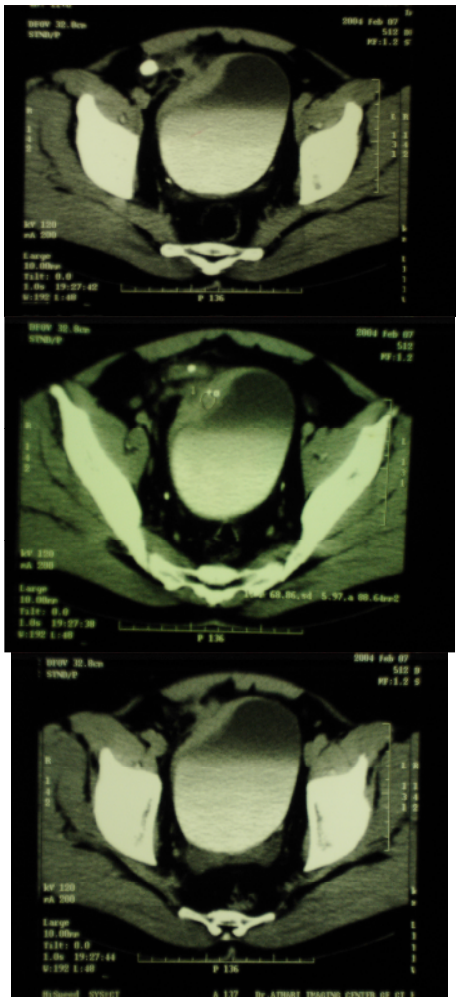

Fig. 3. Abdominal computed tomography (CT) scan with double contrast.

For obtaining objective records and anatomical position of the suspected AVF several studies were conducted. Although cystoscopy with "beehive" sign on the bladder may be valuable in diagnosing the presence of a colovesical fistula (18). Cystoscopy and barium enema is often unsuccessful and independently had a sensitivity of less than 50% generally in colovesical fistula (19). Plain film, cystogram and IVP infrequently demonstrate a fistula in most studies. CT has newly been advocated for documentation of colovesical fistula (20) the most diagnostic finding in fistula between gastrointestinal tract and bladder is presence of gas in bladder in particular patients without recent transurethral instrumentation. Another usefulness of CT can be achieved with oral contrast before the administration of intravenous contrast material that allow visualization of orally ingested contrast material in the bladder or in suspected image with centrifuging of urine the small amount of barium can be detected (Bourne test) (21).Another CT findings included focal bladder-wall thickening ,thickening of adjacent bowel wall ,and an extraluminal mass that often contained air (22) .Several studies recommend that CT is the most exact diagnostic test accessible for demonstrating enterovesical fistula and should therefore replace the use of other less sensitive diagnostic tests currently included in the initial evaluation of patients with a suspected enterovesical fistula (23). Shinojima *et al.* and Anderson *et al.* (1997) evaluated 3-dimentional CT in comparison the conventional axial CT (24). The finding of this studies suggest that 3-dimensional CT provides superior and more complete visualization of the anatomic relationship of the bladder and the colon and that can be used to improve appreciation of the complexity of local structure, additional aiding in the diagnosis and facilitating the definitive surgical procedure required (24).

In summary, the diagnosis of AVF is difficult and can be frustrating occasionally, resulting in multiple nondiagnostic investigations and delayed surgical treatment when this is deemed appropriate. In view of several study CT scan can be as a first line investigation in all patients with suspected AVF and for rule out of malignancies in patient whom AVF without evidence of appendicitis such as history and fecaliths. We recommend colonoscopy following the CT. Other investigative modalities should only be used if the diagnosis is in suspiciouse or further information is needed to plan operative management. Due to the mild and ambiguous symptomatology, the diagnosis of this kind of fistula is difficult to be definite, and this diagnosis can be obtained with a severe doubt to a vesicointestinal communication. Exploratory laparotomy is usually diagnostic and leads to decisive therapy. Expertise with diagnostic laparoscopy adds a potent tool to the evaluation of patients with difficult or unusual surgical problems. Subsequent performance of minimally invasive techniques for surgical therapy when proper can notably decrease hospitalization and period of recovery. At last, only an awareness of this condition can be a key and that will lead to prompt diagnosis and definitive therapy.

REFERENCES

1. Flum DR, Koepsell T. The clinical and economic correlates of misdiagnosed appendicitis: nationwide analysis. Arch Surg. 2002 Jul; 137(7):799-804.
2. Flum DR, Morris A, Koepsell T, Dellinger EP. Has misdiagnosis of appendicitis decreased over time? A population-based analysis. JAMA. 2001 Oct 10; 286(14):1748-1753.
3. Reig Ruiz C, Vila Barja J, Quintanilla Muñoz B, Tremps Velázquez E, Fakiani Rumie A, Soler Roselló A. [Appendico-vesical fistula secondary to acute appendicitis. Review of the literature]. Arch Esp Urol. 1993 May;46(4):340-342. Spanish.
4. Carson, C.C., Malek, R.S. Remine, W.H. Urologic aspects of vesicoenteric fistula. J.urol.1978; 119: 744.
5. Steinberg R, Freud E, Dinari G, Schechtman Y, Zer M. Appendicovesical fistula in a child with Crohn's disease: a unique case. J Pediatr Gastroenterol Nutr. 1999 Jul; 29(1):99-100.
6. Albrecht K, Schumann R, Peitgen K, Walz MK. [Laparoscopic therapy of appendicovesical fistula- two case reports]. Zentralbl Chir. 2004 Oct; 129(5):396-398. German.
7. Timmermans LG, Casselman J, Defloor E. [Association of an appendicovesical fistula and an appendiceal adenoma. Case report]. Acta Chir Belg. 1992 Jan-Feb; 92(1):60-62. French.
8. Steel MC, Jones IT, Webb D. Appendicovesical fistula arising from appendiceal diverticulum suspected on barium enema. ANZ J Surg. 2001 Dec; 71(12):769-770.
9. Ikeda I, Miura T, Kondo I. Case of vesico-appendiceal fistula secondary to mucinous adenocarcinoma of the appendix. J Urol. 1995 Apr;153(4):1220-1221.
10. Lund PG, Krogh J. Appendicovesical fistula associated with neuroma of the appendix. Urol Int. 1988;43(6):362-363.
11. Gonor S, Allard M, Boileau GR. Appendicovesical fistula caused by ileocecal actinomycosis. Can J Surg. 1982 Jan; 25(1):23-24.
12. Abubakar AM, Pindiga UH, Chinda JY, Nggada HA. Appendicovesical fistula associated with Hirschsprung's disease. Pediatr Surg Int. 2006 Jul; 22(7):617-618.
13. Cakmak MA, Aaronson IA. Appendicovesical fistula in a girl with cystic fibrosis. J Pediatr Surg. 1997 Dec; 32(12):1793-1794.
14. Jarrett TW, Vaughan ED Jr. Accuracy of computerized tomography in the diagnosis of colovesical fistula secondary to diverticular disease. J Urol. 1995 Jan; 153(1):44-46.
15. Yamamoto H, Yoshida M, Sera Y, Ikeda S, Terakura H. Laparoscopic diagnosis of appendicovesical fistula in a pediatric patient. Surg Laparosc Endosc. 1997 Jun; 7(3):266-267.
16. Izawa JI, Taylor BM, Denstedt JD. Appendicovesical fistula: case report and review. Can J Urol. 1998 Jun; 5(2):566-568.
17. Naik RB, Mathias CJ, Malik N, Lee HA, Jenkins JD, Abercrombie GF. Hypokalaemic hyperchloraemic metabolic acidosis and vesical stone complicating appendicovesical fistulae. Br J Urol. 1980 Aug; 52(4):274-279.
18. Kaisary AV, Grant RW. 'Beehive on the bladder': a sign of colovesical fistula. Ann R Coll Surg Engl. 1981 May; 63(3):195-197.
19. Athanassopoulos A, Speakman MJ. Appendicovesical fistula. Int Urol Nephrol. 1995;27:705.
20. Narumi Y, Sato T, Kuriyama K, Fujita M, Mitani T, Kameyama M, Fukuda I, Kuroda M, Kotake T. Computed tomographic diagnosis of enterovesical fistulae: barium evacuation method. Gastrointest Radiol. 1988 Jul; 13(3):233-236.
21. Amendola MA, Agha FP, Dent TL, Amendola BE, Shirazi KK. Detection of occult colovesical fistula by the Bourne test. AJR Am J Roentgenol. 1984 Apr; 142(4):715-718.
22. Goldman SM, Fishman EK, Gatewood OM, Jones B, Siegelman SS. CT in the diagnosis of enterovesical fistulae. AJR Am J Roentgenol. 1985 Jun; 144(6):1229-1233.
23. Fraley EE, Reinberg Y, Holt T, Sneiders A. Computerized tomography in the diagnosis of appendicovesical fistula. J Urol. 1993 Apr;149(4):830-832.
24. Shinojima T, Nakajima F, Koizumi J. Efficacy of 3-D computed tomographic reconstruction in evaluating anatomical relationships of colovesical fistula. Int J Urol. 2002 Apr;9(4):230-232.