



Case Report

Recurrent Urinary Tract Infections: A Red Herring for Primary Appendiceal Carcinoma

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ABSTRACT

Recurrent Urinary Tract Infections (UTIs) are a common issue in females owing mostly to the anatomy of their urinary tract. It can also hint at a pathology pertaining to the pelvic organs like tumors or infections that infiltrate the urinary bladder. We report the case of a 45-year-old woman who initially presented to her GP with recurrent UTIs worsening after the insertion of a Mirena coil for contraception. Primary appendiceal carcinomas invading the urinary bladder are very infrequent presentations in general practice. A low threshold for diagnosis should be kept in individuals with chronic symptoms pertaining to the urinary tract and adequate treatment started early to prevent spread.

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1. INTRODUCTION

Recurrent Urinary Tract Infections (UTIs) are a common issue in females owing mostly to the anatomy of their urinary tract. It can also hint at a pathology pertaining to the pelvic organs such as tumors or infections that infiltrate the urinary bladder. Sometimes, albeit rarely, it can be a red herring, distracting the clinician's attention from a more sinister cause, such as an appendiceal carcinoma. We discuss such a case where a primary mucinous appendiceal carcinoma was invading the bladder causing recurrent UTIs.

2. CASE REPORT

We report the case of a 45-year-old woman who initially presented to her GP with recurrent UTIs worsening after the insertion of a Mirena coil for contraception. After removal of the coil, she chose to undergo laparoscopic sterilization and that was when a pelvic mass was observed incidentally. The gynecology team organized a preoperative abdominal and transvaginal ultrasound, which revealed a mass in the urinary bladder. She was then referred to us for further evaluation. Her urine sample grew a heavy growth of *Escherichia coli* sensitive to all first-line antibiotics. A Computerized Tomography (CT) scan with contrast revealed a complex small bowel/bladder mass, involving the anterior wall of the urinary bladder, small bowel loops, and adjacent mesentery.

She was prepared for a rigid cystoscopy, which further demonstrated an unusual looking bladder tumor at the dome of the bladder with a grape-like appearance, inconsistent with transitional cell carcinoma, and a biopsy was taken. Histopathology results showed an adenocarcinoma composed of enteric-type glands with abundant extracellular mucin. Routine blood tests came back normal and her carcinoembryonic antigen levels were slightly raised at 9.5 µg/L. After discussion at the urological and colorectal Multidisciplinary Team Meeting, it was deemed that this was either a primary mucinous adenocarcinoma of the appendix involving the bladder or an urachal carcinoma. It was decided for her to undergo an exploratory laparotomy, and intraoperative findings included a large fixed bladder mass adherent to the appendix, caecum, and pubic rami. A radical cystectomy, ileal conduit, right hemicolectomy, appendicectomy, and right oophorectomy were carried out with a level II lymph node dissection. Histology established a moderately differentiated mucinous adenocarcinoma of the appendix with invasion of the bladder. There was no lymphovascular invasion, one out of nine lymph nodes was positive, and margins were clear. The tumor was classified as pT4a pN1. She was started on adjuvant chemotherapy with capecitabine and carboplatin, and 4 months from the surgery on follow-up, she shows no signs of recurrent cancer and remains healthy.

3. DISCUSSION

Neoplasms affecting the vermiform appendix are an infrequent occurrence with an age-adjusted incidence described in the literature as 0.12 cases per 1,000,000 per year and is seen in 1% of all appendectomy specimens [1]. They are notoriously challenging to be diagnosed preoperatively as their clinical presentations are very nonspecific [2]. They may present as a case of acute appendicitis, a

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right lower quadrant mass, or as intestinal obstruction. Rarely still, they may invade the urinary bladder in the form of a vesico-appendiceal fistula and manifest themselves as a frequent recurrence of UTIs and irritative symptoms such as increased urinary frequency, hematuria, and dysuria without any gastrointestinal symptoms. This is because the appendix has a distinct anatomical position such that it can involve the bladder prior to affecting the gastrointestinal system as it will not impede the passage of bowel contents or cause melena. None of the patients were diagnosed to have acute appendicitis preoperatively when the available literature was analyzed, which may entail that patients with chronic abdominal as well as urinary symptoms should be evaluated for a malignant disease such as appendiceal carcinoma [3].

An elevated carcinoembryonic antigen level may be observed and may be the only indication of the pathology arising from the gastrointestinal system [4]. Radiology investigations in the form of enhanced computed tomography scan, magnetic resonance imaging, or barium enemas can be performed with variable results and may indicate extrinsic compression, a pelvic mass or features suggestive of vesico-appendiceal fistula formation [5]. Immunohistochemical studies have been used to substantiate the nature and origin of the neoplasm with a panel involving cytokeratin CK7, CK20, thrombomodulin, and beta-catenin utilized to distinguish between colorectal and bladder carcinomas [6].

Appendiceal cancers present with lymph node spread in a quarter of the cases, and the advocated treatment for localized appendiceal carcinoma is considered to be right hemicolectomy with *en bloc* resection of the involved structures because the venous and lymphatic drainage of the appendix is the same as that of cecum and terminal ileum. Nitecki et al. [7] implied that the 5-year survival rate for patients undergoing right hemicolectomy was superior when compared to appendectomy alone (68% vs. 20%). Care should be taken during operation so as to remove all free mucin from the peritoneal cavity if it gets ruptured and thorough lavage instituted so as to prevent seedling of the mucinous elements, and the patient needs to be followed up meticulously to rule out pseudomyxoma peritonei.

4. CONCLUSION

Primary appendiceal carcinomas invading the urinary bladder are very infrequent presentations in general practice. A low threshold

for diagnosis should be kept in individuals with chronic symptoms pertaining to the urinary tract and adequate treatment started early to prevent spread. Owing to the lack of available standardized treatment for such an entity, we recommend thorough evaluation with an enhanced CT scan and cystoscopy with biopsy early with planning of right hemicolectomy with *en bloc* resection of involved structures.

CONFLICTS OF INTEREST

The authors declare they have no conflicts of interest.

AUTHORS' CONTRIBUTION

MUY formal analysis and writing (review and editing). SS study conceptualization and writing (original draft). All the authors read and approved the final manuscript.

REFERENCES

- [1] McGory ML, Maggard MA, Kang H, O'Connell JB, Ko CY. Malignancies of the appendix: beyond case series reports. *Dis Colon Rectum* 2005;48:2264-71.
- [2] Subramanya D, Grivas PD, Styler M. Appendiceal carcinoma: a diagnostic and therapeutic challenge. *Postgrad Med* 2008;120:95-100.
- [3] Mistry R, Ananthakrishnan K, Hamid BN, Powell C, Foster GE. Appendiceal carcinoma masquerading as recurrent urinary tract infections: case report and review of literature. *Urology* 2006;68:428.e1-428.e3.
- [4] Vidarsdottir H, Moller PH, Benediktsdottir KR, Geirsson G. Adenocarcinoma of the appendix with a fistula to the urinary bladder. *Scand J Urol Nephrol* 2010;44:354-6.
- [5] Arisawa C, Takeuchi SI, Wakui M. Appendiceal carcinoma invading the urinary bladder. *Int J Urol* 2001;8:196-8.
- [6] Zhong M, Gersbach E, Rohan SM, Yang XJ. Primary adenocarcinoma of the urinary bladder: differential diagnosis and clinical relevance. *Arch Pathol Lab Med* 2013;137:371-81.
- [7] Nitecki SS, Wolff BG, Schlinkert R, Sarr MG. The natural history of surgically treated primary adenocarcinoma of the appendix. *Ann Surg* 1994;219:51-7.