Oncology

Mucinous adenocarcinoma of the appendix invading the urinary bladder

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ABSTRACT

Appendiceal carcinoma is a rare disorder. Although imaging exams can suggest carcinoma of the appendix simulating as a primary bladder cancer a transurethral biopsy is essential for diagnosis. We reported a case of a 27-year-old man, presented with hypogastric pain associated with recurrent gross hematuria and dysuria without any intestinal symptoms such as pain, obstruction or melena. MRI revealed an enlarged appendix contiguous with the bladder. An en-bloc resection was performed and revealed appendiceal mucinous adenocarcinoma. Carcinoma of the appendix is an important differential diagnosis to other lesions and allow a good chance of cure by en bloc resection.

Introduction

Appendiceal carcinoma is a rare disorder being present in less than 0.08% of the surgically removed appendix. Besides that, bladder wall invasion by appendix tumor is rare, being initially reported by Richie in 1977. Primary appendix adenocarcinoma was first described by Berger in 1882 and in recent reports has an incidence of 0.12 cases per 100,000 inhabitants per year and corresponds to 0.01% of the gastrointestinal tumors. It is three times more common in man than in woman. More than 500,000 appendicectomies are performed annually in the United States and according to McCusker et al. and Deng et al. 0.9–1.4% display primary appendiceal tumor with less than half being diagnosed intraoperatively. We present a case of a 27-year-old man with inconclusive findings from transurethral resection and imaging studies suggesting appendiceal tumor invading bladder wall and make a brief review of the literature.

Case report

A 27-year-old African-american man, with no comorbidities, presented to with hypogastric pain associated with recurrent gross hematuria and dysuria in March 2019. On admission he reported any intestinal symptoms such as pain, obstruction or melena. On physical examination, any palpable mass was observed. Abdominal ultrasound (US) revealed a 05 cm tumor in the anterior bladder wall. Computerized tomography (CT) was performed and demonstrated a 5.2 cm tumor in the middle line raising the suspicion of urachal tumor. Cystoscopy identified a solitary villous large lesion in the aforementioned region of the bladder.

Transurethral resection biopsy was performed and drew attention by the gelatinous consistency of the tumor with some calcification and necrosis. The histopathological showed glandular cystis, intestinal metaplasia and low grade tubule-villous adenoma. After endoscopic resection magnetic resonance (MRI) was performed and revealed an enlarged appendix contiguous with the bladder therefore leading to the hypothesis of an appendiceal tumor with a bladder extension (Fig. 1). Colonoscopy was undertaken but did not disclosed any anomalies.

Exploratory laparotomy revealed an enlarged appendix with invasion of the bladder. An en-bloc resection including right colectomy and a partial cystectomy of the anterior bladder was performed and reconstruction was done with ileo-colon anastomosis and primary suture of the bladder wall. Frozen sections of the margin were negative for tumor. The patient was discharged without complications at the fifth postoperative day. The histopathological was Appendiceal mucinous adenocarcinoma, well differentiated, stage T4b, N0, M0. Interestingly, Schistosoma larve was detected in blood vessels like emboli and eggs in the tissue of the distal third of the cecal appendix adjacent to the tumor (Fig. 2).

Discussion

Appendiceal mucinous tumor with bladder invasion is an extremely rare. Clinical manifestation of appendix tumors usually is acute appendicitis, abdominal mass and bowel obstruction. Invasive appendiceal...
adenocarcinoma represents only 4–6% of the appendix cancers and primary diagnosis is difficult due to unspecific clinical presentation. In our case, any intestinal symptoms such as pain, obstruction or melena was reported on admission.

Histological, epithelial appendiceal tumors are divided in three categories including mucinous adenocarcinoma, the more prevalent, intestinal adenocarcinoma, the less prevalent and signet ring cell adenocarcinoma.

Late diagnoses of mucinous variant can lead to perforation and peritoneal dissemination causing mucinous ascites associated with Pseudomyxoma peritonei. This type of manifestation is usually treated with peritoneal resection and intraoperative peritoneal mitomycin instillation followed by 4–5 day course of intra-venous 5-fluoracil.

Appendiceal tumors metastases go through lymphatic circulation following cecal and terminal ileal paths. Initial dissemination occurs in ileocecal, infraduodenal and peri-aortic nodes. Appropriate surgical treatment comprehends right hemicolectomy with en-bloc mesenteric lymphadenectomy that accomplish 63% cancer specific survival of isolated appendicectomy.

In our case, gross hematuria associated with urinary symptoms and imaging studies mislead to the hypothesis of urachal bladder cancer. After transurethral resection, pathological finds with vilous-tubular adenoma suggested an enteric origin. MRI was extremely important in revealing the appendiceal nature of the disease and allowing a proper understanding and planning of the surgical strategy.

In certain regions of Brazil, Schistosoma mansoni infection is endemic. Although, correlation of bladder cancer and Schistosoma hematobium has been well established, colorectal cancer and this helminthes infection are not firmly described. Nevertheless several reports points to the possibility of some role in the genesis of colorectal cancer with Schistosoma japonicum e mansoni infestation. We were not able to find in the literature correlation of this parasitic infection and appendix adenocarcinoma. Nevertheless, it has been previously published by Lin et al. association of a giant mucinous cystadenoma of the appendix and intestinal schistosomiasis. In our case, histopathological reveled appendiceal mucinous adenocarcinoma, and schistosoma larve was detected in blood vessels like emboli and eggs in the tissue of the distal third of the cecal appendix adjacent to the tumor.

**Conclusion**

In conclusion, appendiceal mucinous tumor with bladder invasion is an unusual feature. Usually, patients present urinary symptoms like gross hematuria and may present associated with intestinal symptoms such as pain, obstruction or melena. Diagnosis can be suggested by imaging exams with MRI being more accurately than other exams. Transurethral resection biopsy is essential for assessment of intravesical tumor and therapeutic planning. Carcinoma of the appendix simulating as a primary bladder cancer is uncommon but important deferential diagnosis to other lesions and allow a good chance of cure by en bloc resection.
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Declaration of competing interest

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