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Implantation of Bladder Cancer into the Abdominal Wall; a Case Report

Implantation of high grade and invasive bladder carcinoma into the abdominal wall is not common and can occur as side effects of uninary bladder interventions and surgical procedures, including perforation of bladder wall during transurethral resection of the tumor.

Herein, we present a case of implantation of bladder transitional cell carcinoma into abdominal wall into an incisional hernia of a previous small bowel operation; three years after the bladder tumor had been diagnosed and treated.

In evaluating any mass lesion in the abdominal wall, it is important to consider the possibility of bladder tumor implantation.

Keywords: bladder tumor, implantation, abdominal wall, transitional cell carcinoma

Introduction

Bladder cancer is the most common malignancy of the urinary tract. [1,2] It is the fourth most common cancer after prostate, lung and colorectal cancers, accounting for 6.2% of all cancer cases. [3] Ninety-five percent of bladder tumors originate from the urothelium and among them 95% are transitional cell carcinomas (TCC). The vast majority of bladder carcinomas present with haematuria. [1,2] In advanced cases, a spread throughout the urothelium to other parts of the urinary system, invasion through bladder wall to adjacent organs, and lymphatic and hematogenous spread may occur. Bladder cancer also spreads by implantation in abdominal wounds, denuded urothelium, resected prostatic fossa or traumatized urethra. [3-5] Implantations occurs most commonly with high-grade tumors. Inadvertent bladder perforation during endoscopic resection can result in tumor seeding or metastasis, but this appears to be an uncommon event. [3,6,7] Implantation metastasis can occur after laparoscopic biopsy of bladder cancer as well as total or partial cystectomy.[5,8]

Iatrogenic implantation has been the main cause in the majority of cases of transitional cell carcinoma (TCC) with metastasis to the abdominal wall.[9]

Here, we present a case of TCC implantation into the abdominal wall in the region of an incisional hernia of a previous small bowel operation, three years after TCC was diagnosed and treated.

Case Presentation

An 86-year-old man with a history of abdominal operation for small bowel obstruction about five years prior to admission, was referred to the radiology department of Hashemi-Nejad Hospital, Tehran, for a CT evaluation with IV and oral contrast of an anterior abdominal wall lump, clinically diagnosed as an incisional hernia. In physical examination, there was a bulging in the midline

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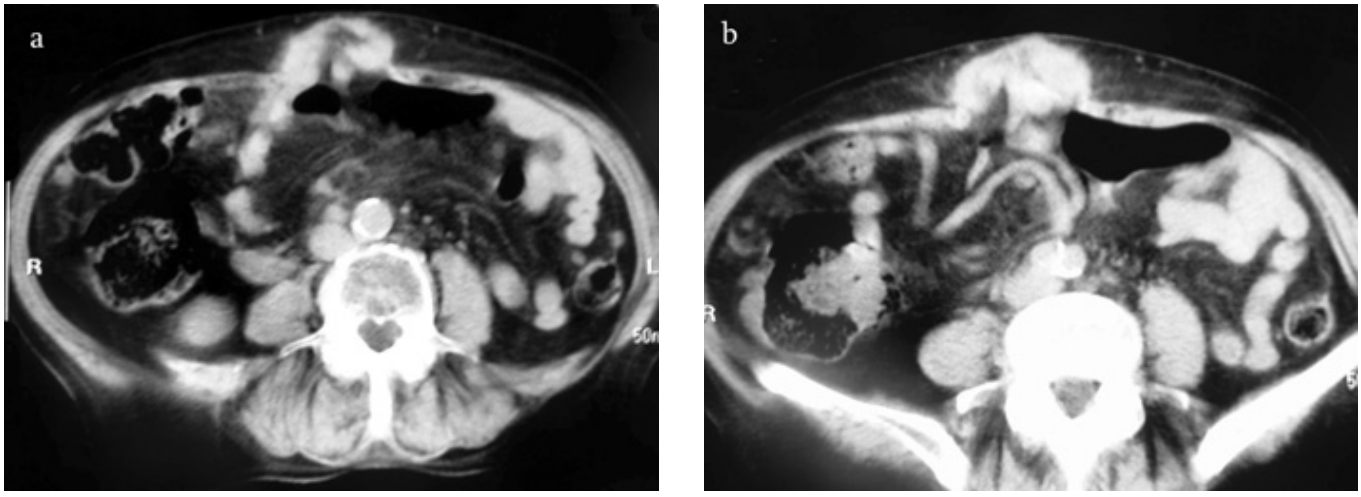

Fig 1. Axial CT-scan of the abdomen with oral and IV contrast: herniated bowel loops through incision of the previously done surgery are evident. Illdefined hypodensities are present between the bowel loops.

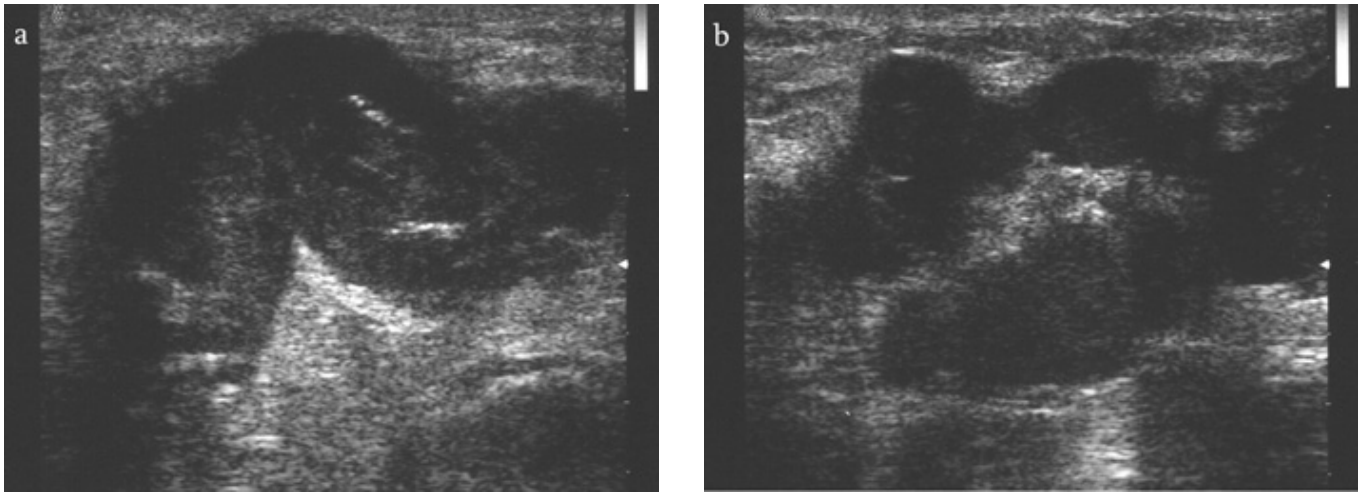

Fig 2. Ultrasonography from the abdominal wall mass just before performing biopsy: multiple lobulated hypoecho masses are evident just under the skin and in the fatty tissue among bowel loops.

anterior abdominal wall above the umbilicus with hard consistency in palpation. The CT scan device was a Neusoft (China) spiral dual row detector CT scanner with 4 MHU Varian X-ray tube. CT showed small bowel loops herniated through the defect of the anterior abdominal wall in the midline above the umbilicus consistent with a diagnosis of incisional hernia. But irregular soft tissue density masses with a lobulated appearance were present in the vicinity of the herniated bowel loops, under the skin, without significant contrast enhancement (Figures 1).

The patient referred again to our radiology department for a biopsy of the masses under the guide of ultrasonography. The ultrasound device was an Esaote, Technos MP (Italy) with linear multifrequency 5-10 MHz transducer. Ultrasonography showed multiple lobulated well-defined hypoechoic masses just under the skin and in the fatty tissue among bowel loops, with slightly hard consistency (Figures 2).

Multiple needle biopsies were taken from the masses with Cook (USA) 18 G, 15cm semiautomatic throcar biopsy needle under the guide of ultrasonography. Pathologic examination of the biopsy specimens revealed high-grade metastatic urothelial carcinoma according to WHO/ISUP system, compatible with transitional cell carcinoma grade III/IV of Ash grading system (Figures 3).

On history, the patient was admitted three years prior to the recent admission with a chief complaint of macroscopic hematuria and dysuria of one month duration. Ultrasonography and CT scan at that time

had shown irregular thickening of the bladder dome and the anterior wall (Figures 4).

Cystoscopy and the biopsy of the bladder lesion followed by transurethral resection (TUR) of the mass has been performed and the pathologic examination revealed invasive TCC of grade III. The patient had been referred for BCG therapy, chemotherapy and then radiotherapy.

In ultrasonography of the bladder that was performed during the abdominal wall biopsy, despite the patient's inability to fill the bladder, we found moderately irregular thickening of the dome and the superoposterior part of bladder wall with a maximum thickness of 1 cm.

Discussion

High grade and advanced bladder carcinomas may spread throughout the urothelium to other parts of urinary system, invade through the bladder wall to adjacent organs and spread via lymphatic or hematogenous roots. Bladder cancer also spreads by direct implantation in abdominal wounds, denuded urothelium, resected prostatic fossa or traumatized urethra. Implantation can occur after laparoscopic biopsy of bladder cancer, inadvertent bladder perforation during endoscopic resection, transurethral resection, and total or partial cystectomy. [3-6,8]

Implantation of bladder carcinoma is not a usual finding and there are few such reports in the literature.

Ku JH et al. have presented a 66-year-old woman with metastasis of TCC of the lower abdominal wall and right inguinal area 20 years after radical cystectomy.[9]

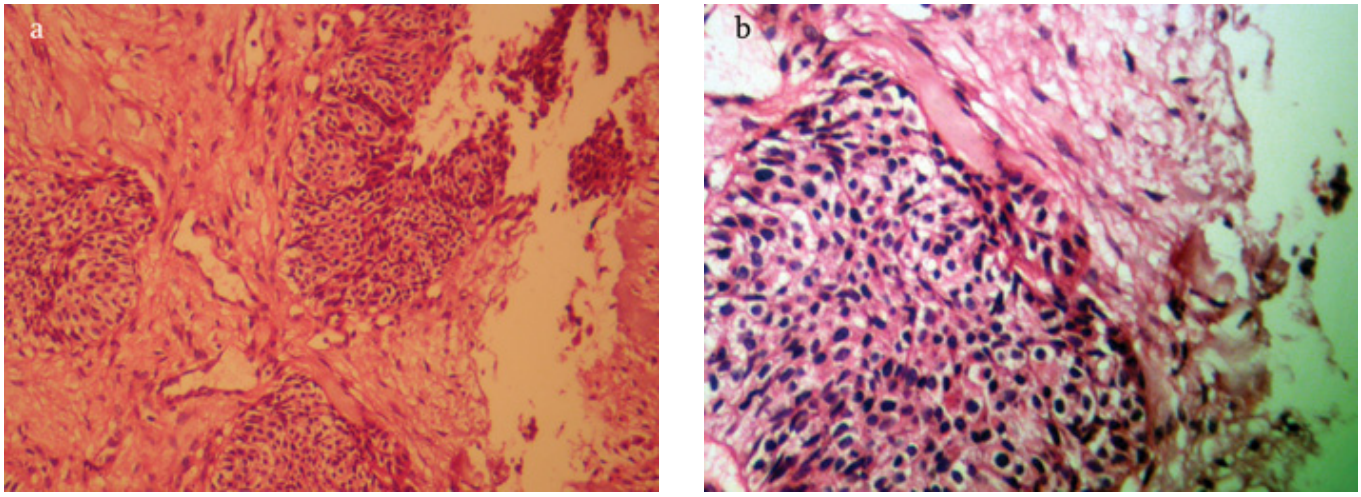

Fig 3. Pathologic examination of biopsy specimen: low power (a) and high power (b) examination shows infiltrating nests of transitional cells.

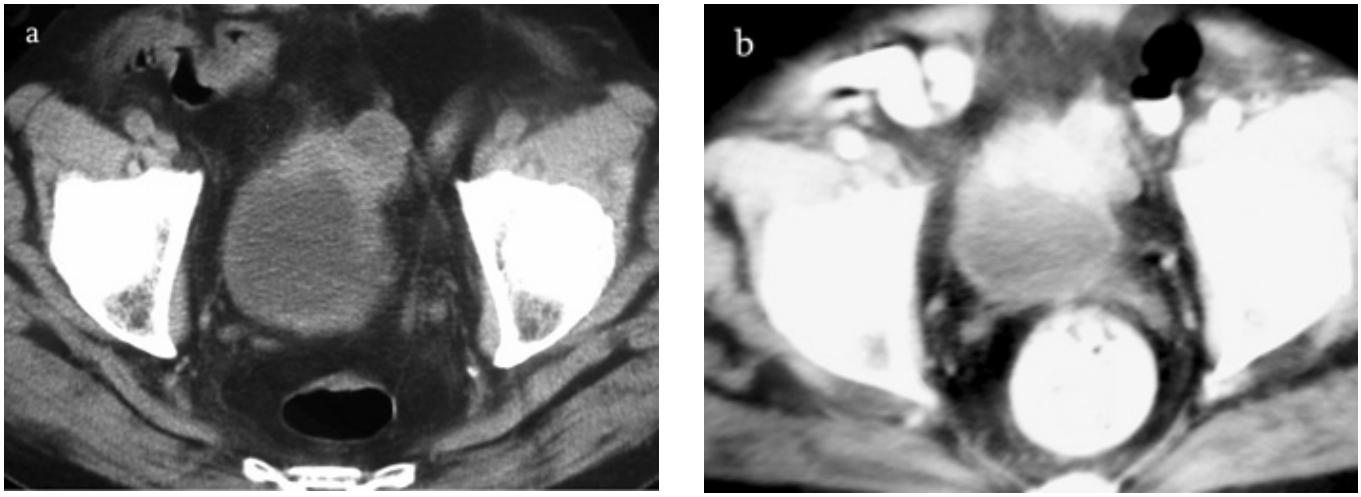

Fig 4. Axial CT-scan with and without IV and oral contrast, about 3 years prior to admission: bladder wall thickening and irregularities are evident in the anterior wall and bladder dome consistent with bladder carcinoma that seems to be involved the full thickness of the bladder wall.

Nyland TG et al. have reported a localized tumor implantation of the ventral abdominal wall following percutaneous ultrasound-guided fine-needle aspiration biopsy (FNAB) of TCC of the bladder, urethra, or prostate in dogs. [10]

Hita Rosino E. et al. have reported two patients with bladder tumor and cystic metastases to the abdominal wall. [4]

Tsujimura A et al. have reported a case of recurrence of TCC in bilateral upper urinary tracts and the ileal conduit with invasion to the abdominal wall around the nephrostomy following total cystectomy.[5]

Kasai T et al. have reported an 82-year-old woman with grade II TCC who underwent TUR, which revealed no invasion to the muscular layer of the bladder. The patient was admitted after one year with implantation of the tumor into the vaginal wall. They assumed that the vaginal implantation must have been due to irrigating fluid or urine. [11]

Here, we presented another case of the implantation of bladder TCC to the abdominal wall. It was interesting that at first, the patient only gave us a history of previous surgery due to bowel loop obstruction, presumably for an unrelated cause five years prior to admission and he did not mention the bladder tumor at all. In reviewing the patient's records, we did not find any report about bladder surgery or perforation during TUR attempt. We assume that the implantation could have occurred following bladder perforation during TUR, which had remained completely asymptomatic and undiagnosed.

Conclusion

Implantation of high grade and invasive bladder carcinoma into the abdominal wall is not common and can occur following laparoscopic biopsy of bladder cancer, inadvertent bladder perforation during endoscopic resection or transurethral resection, and also total or partial cystectomy.

In evaluating any mass lesion in the abdominal wall, it would be worth considering the possibility of bladder tumor implantation and inquiring about a history of bladder tumor or any related interventions.

References

1. Sutton D. Textbook of Radiology and Imaging. 7th ed. London; Churchill Livingstone: 2003: 885-988.
2. Pollack HM, McClennan BL, Clinical Urography. 2nd ed.Philadelphia: W.B.Saunders; 2000: 473-504
3. Retik AB, Vaughan ED, Wein AJ. Campbell's Urology. 8th ed.Philadelphia: WB Saunders; 2002: 2732-2764.
4. Hita Rosino E, Lopez Cubillana P, Nieto Olivares A, Torroba Caron MA, Gomez Gomez G, Bladder tumor. Presentation of 2 patients with soft tissue involvement. Arch Esp Urol. 1997; 50(5): 532-534.
5. Tsujimura A, Miki T, Takayama H, Gotoh T, Tsukikawa M, Suqao H, et al. Recurrence of transitional cell carcinoma in bilateral upper urinary tracts and ileal conduit with invasion in the abdominal wall around nephrostomy after total cystectomy: a case report. Hinyokika Kiyo. 1995; 41(5): 383-386.
6. Pansadoro A, Franco G, Laurenti C, Pansadoro V, Conservative treatment of intraperitoneal bladder perforation during transurethral resection of bladder tumor. Urology. 2002; 60(4): 682-684.
7. Mydlo JH, Weinstein R, Shah S, Solliday M, Macchia RJ. Long-term consequences from bladder perforation and/or violation in the presence of transitional cell carcinoma: results of a small series and a review of the literature. J Urol. 1999; 161(4):1128-1132.
8. Andersen JR, Steven K. Implantation metastasis after laparoscopic biopsy of bladder cancer. J Urol. 1995; 153: 1047-1048.
9. Ku JH, Yeo WG, Park MY, Lee ES, Kim HH, Metastasis of transitional cell carcinoma to the lower abdominal wall 20 years after cystectomy. Yonsei Med J. 2005; 46(1): 181-183.
10. Nyland TG, Wallack ST, Wisner ER. Needle-tract implantation following us-guided fine-needle aspiration biopsy of transitional cell carcinoma of the bladder, urethra, and prostate. Vet Radiol Ultrasound. 2002; 43(1): 50-53.
11. Kasai T, Moriyama K, Tsuji M, Uema K, Sakurai N, A case of vaginal implantation of transitional cell carcinoma of the bladder. Nippon: Hinyokika Gakkai Zasshi; 2001; 92(4): 538-541.