

Prostate cancer incorrectly diagnosed as a rectal tumor: A case report

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Abstract. Colorectal cancer is the third most commonly diagnosed type of cancer in the world. Prostate adenocarcinoma is the most common male genitourinary tract malignancy, usually occurring after the age of 60. Prostate adenocarcinoma is a highly metastatic cancer. The common metastatic locations of prostate cancer are the bone, lung and liver. The elective locations are bones. Solitary rectal metastasis of prostate cancer is relatively rare. In the present study we report a case of solitary metastasis of a prostate adenocarcinoma with the prostatic capsule intact, which initially led to an incorrect diagnosis.

Introduction

The incidence of prostate cancer in many Asian populations has gradually increased, and almost all prostate cancers are detected in men aged >50 years. Early prostate cancer is usually asymptomatic and is typically only detected on screening examination for prostate specific antigen. The proportion of patients with metastatic prostate cancer in Asian countries is higher than that in western countries. A previous study revealed that the proportion of patients with metastatic prostate cancer in a Chinese cohort was 32% when compared with 4.2% in an American cohort (1). Prostate cancer commonly metastasizes to bone, lung, liver, especially the axial skeleton and the 5-year survival rate in Singapore-Chinese patients with metastatic cancer is 33.7% (1). Solitary rectal metastasis

of prostate cancer, however, is relatively rare. The current study reports a case of rectal metastasis of a prostate cancer, which was initially incorrectly diagnosed as rectal cancer.

Case report

A 73-year-old male patient was admitted to the Department of Colorectal Surgery at Guangdong Gastrointestinal Hospital, China, due to altered bowel habits with hemafecia which had persisted for 6 months. The patient denied abdominal pain and prior episodes of diarrhea and melena. He had no significant medical background and family history. In 2009 the patient underwent transurethral resection of the prostate (TURP) due to an enlarged prostate and prostate cancer was detected in the postoperative pathological analysis. Following this, the patient underwent bilateral surgical orchiectomy and oral Casodex (50 mg) was taken once daily following surgery for 20 months. The Gleason score of the patient at primary diagnosis was 4+5=9. A cauliflower-like, half circumferential, firm, non-smooth tumor, which was 2.5 cm away from the anal verge, was palpable in the 6 o'clock position during the knee-chest position rectal palpation. The adhesion of the tumor and prostate was noted. Enteroscopy revealed a 2.5x3.5-cm elevated lesion of thickened mucosa with ill-defined margins, of which the surface was anabrotic. No abnormal findings were revealed via chest and abdomen computed tomography (CT) scanning. Pelvic enhanced CT identified a thickening of the low rectal wall (Fig. 1). Pelvic enhanced magnetic resonance imaging (MRI) revealed low rectal cancer and a mass located between the prostate and fundus of the urinary bladder which was considered to be benign and derived from the prostate, while the prostate was well encapsulated (Fig. 2). No other sites of lymph involvement were identified at that time from the chest and abdomen CT and pelvic enhanced CT scans. Enteroscopy revealed a rectal tumor: a 3.5x3.5-cm in size, firm, poorly defined rectal protruding lesion with erosion of the surface, which was located 3 cm away from the anal verge (Fig. 3). An increased rate of prostate specific antigen (PSA) was identified following admission. The level of the serum PSA reached 9.387 ng/ml (normal range, 0-4 ng/ml). No abnormal findings were revealed throughout the laboratory tests with the exception of the PSA level. Rectoscopic biopsies were performed and revealed a poorly differentiated adenocarcinoma (Fig. 4).

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Figure 1. Transversal view of pelvic enhanced computed tomography evaluation of enhanced. Thickening of the low rectal wall is observed.

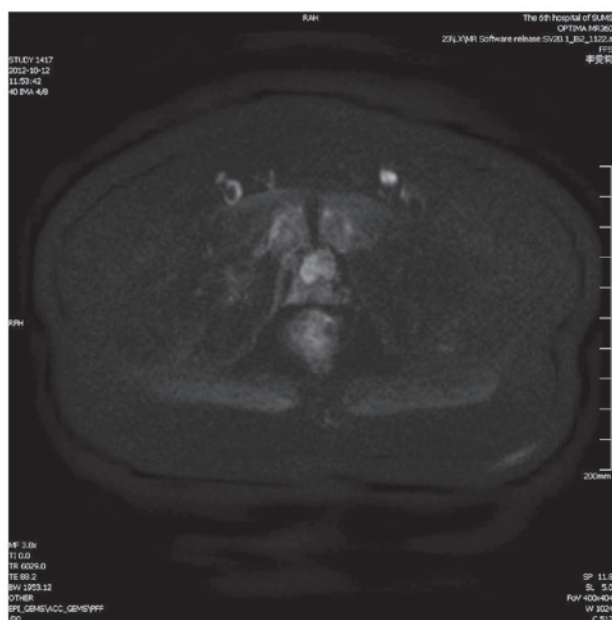


Figure 2. Transversal view of pelvic diffusion-weighted magnetic resonance imaging reveals low rectal cancer and a mass located between the prostate and fundus of the urinary bladder which was considered to be benign and derived from the prostate, while the prostate was well encapsulated.

The immunohistochemical analysis of the biopsy specimen revealed PSA(+), CK20(-), CDX2(-), Villin(+) and P504S(+). From the overall clinical presentation, preceding history and immunohistochemical analysis, the view that the rectal adenocarcinoma was derived from the prostate was still favored. Finally, it was confirmed that the patient's rectal neoplasm was derived from the prostate by the results and his clinical manifestation. Taking the noted adhesion of the tumor and prostate into consideration, we advised the patient to undergo neoadjuvant chemoradiotherapy prior to surgery. Neoadjuvant

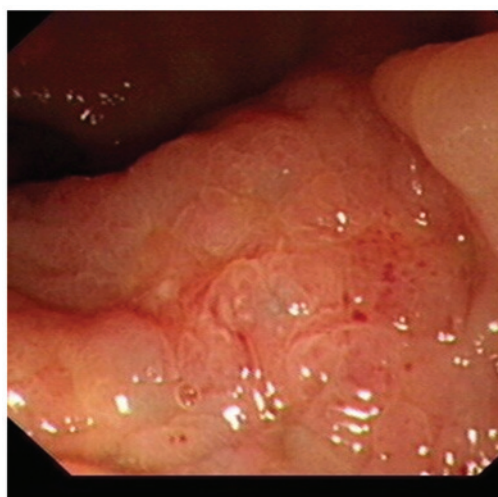


Figure 3. Enteroscopy findings of the rectal tumor: a 3.5x3.5-cm in size, firm, poorly defined rectal protruding lesion with erosion of the surface, which was 3 cm away from the anus.

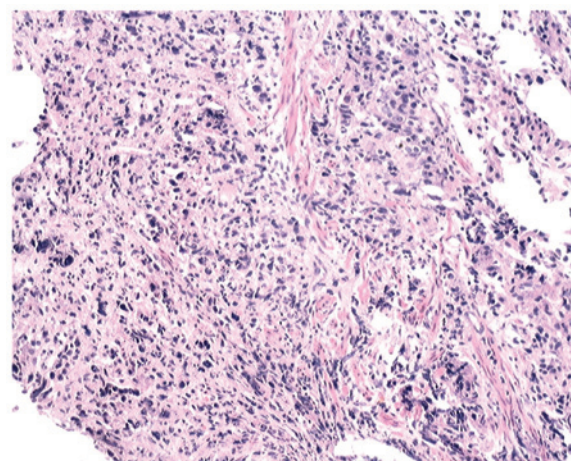


Figure 4. Microscopic findings of the rectal tumor (hematoxylin and eosin staining; magnification, x400). Proliferation of atypical glandular cells was observed.

chemoradiotherapy is considered to achieve notable downsizing of the tumor which benefits surgery. Written informed consent was obtained from the patient and this study was approved by the ethics committee of The Sixth Affiliated Hospital of Sun Yat-Sen University (Guangzhou, China).

Discussion

Colorectal cancer is the third most common type of cancer worldwide. The incidence of the colorectal cancer is high, particularly in China where the crude rate reached 29.44/10⁵ in 2012. In China, colorectal cancer is the fourth most common carcinoma (2). Small colorectal neoplasm is often asymptomatic. Occult blood in the stool may be the only symptom. As the size of the lesion grows, certain other symptoms including a change in stool caliber, tenesmus, constipation or obstruction may occur. The lesions may produce abdominal cramps. Constitutional symptoms, including weight loss, anorexia and fatigue, are common. The most frequent presenting symptoms

are constipation, abdominal pain, rectal bleeding and diarrhea; symptoms which are identical to those observed with carcinoma of the rectum. Prostate cancer is the most common male genitourinary tract malignancy, usually occurring after the age of 60 years. The treatment for metastatic disease is hormonal ablation, as most prostate cancers are androgen-sensitive. Methods of androgen ablation include surgical and pharmacological options. Bilateral surgical orchiectomy is the gold standard for ablating testosterone production. Prostate cancer commonly metastasizes to the bone, in particular the axial skeleton. Peripheral bone metastasis of prostate adenocarcinoma is even more uncommon (3). Digestive tract metastasis of the prostate adenocarcinoma is relatively rare, but may occur in the esophagus (4), stomach (5), small intestine (6) and other locations. Although prostate cancer is one of the most commonly encountered malignancies in clinical practice, it is extremely unusual for prostate cancer to metastasize to the small bowel, colon and rectum (7). Studies relating to solitary rectal metastasis are uncommon (8,9). Herein we report a case of solitary rectal metastasis of prostate adenocarcinoma, for which a differential diagnosis was required. This type of case had not been previously reported in the literature. Prostate carcinoma involving the rectum occasionally presents with rectal obstructive symptoms and an annular constricting lesion of the rectum (10) and rectal bleeding, or as a rectal ulcer (11). Prostate cancer is a slowly growing neoplasm that is easily missed during its early stages. Patients not previously diagnosed with prostatic adenocarcinoma may present initially with metastases (12). Rectal infiltration takes the form of an anterior rectal mass with or without ulceration in 52% of cases, an annular stricture in 45%, and separate metastasis in 3%. In 40% of patients, a preceding history of prostatic adenocarcinoma was elicited at the time of gastrointestinal presentation, while in 60% it was not elicited (13). Our patient had a preceding one-year history of prostate adenocarcinoma prior to admission to our department.

Prostatic adenocarcinoma spreading to the rectum takes place by various routes, including direct invasion and distant metastasis. For our patient, a contiguity invasion was excluded due to the fact that the prostatic adenocarcinoma was encapsulated. It is extremely rare for prostate cancer to metastasize to nearby organs, including the rectum. Autopsy studies have indicated that rectal involvement by prostatic adenocarcinoma occurs in 4% of patients (13). Prostate cancer metastasizing to colorectal tissue may occur through at least four potential routes. The first is an implantation of prostate cancer cells due to transrectal biopsy of the prostate. Prostate cancer cells can spread through needle biopsy, by seeding into perirectal or rectal tissue along the needle biopsy (14). Our patient had never undergone transrectal biopsy of the prostate; therefore this situation could be excluded. The second route is through the lymphatic channels, since the prostate and rectum share certain lymphatic drainage to groups of pelvic lymph nodes (15). Only one case has been reported to support this. Histopathological examination of the resected rectal tissue of that patient using the step section method revealed a number of cancer cells in the intramural lymphatic duct (10). Prostate adenocarcinoma metastasizing to the rectum by way of lymphatic flow

is directly evident. The fact that the prostate and rectum share certain lymphatic drainage to groups of pelvic lymph nodes also demonstrates the rare solitary prostate metastasis of colorectal carcinoma (16,17). However, a retrospective study also supports this view, with a conclusion that 5 of 112 (4.5%) rectal adenocarcinoma patients were identified as having metastatic prostate adenocarcinoma within the positive perirectal lymph nodes (15). The third route is hematogenous metastasis, which is also possible in the case of our patient, as he had previously undergone TURP, during which bleeding is relatively common. The fourth type, with subserosal metastatic implant of the proximal sigmoid, may occasionally be encountered (16).

Although the PSA may not be at a high level in all patients with prostatic adenocarcinoma (17), the elevated rate of serum PSA indicated a recurrence of prostate adenocarcinoma. This suggests that the monitoring of the PSA rate is a significant element of follow-up after resection of the prostate.

Discriminating between primary rectal carcinoma and prostate carcinoma metastasis to the rectum is of obvious significance due to the different treatments and prognoses involved. The significance of the correlation between urinary and gastrointestinal symptoms in detecting prostatic neoplasms in older male patients should be emphasized. Careful immunohistochemical examination of specimens may prevent inappropriate surgical interventions. Immunohistochemical inspection is an essential tool in distinguishing the origin of a lymph node metastasis, particularly in cases when the histology does not appear typical of rectal carcinoma (18).

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