

## Refractory Haematuria Resulting From Peritoneal Dissemination of Metastatic Gastric Cancer: Radiation Therapy For A Nodule Infiltrating The Urinary Bladder

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Bladder metastases from remote primary sites are rarely reported. We present a case of haematuria caused by infiltration of the urinary bladder wall by a nodule resulting from peritoneal dissemination of a primary gastric tumour. The nodule was detected by computed tomography, magnetic resonance imaging and cystoscopy. Transarterial embolization or haemostasis could not be performed because of the haematuria, thus the vesical bleeding was treated with a low irradiation dose of 3 Gy/fraction for a total of 30 Gy administered to the dome of the urinary bladder. No adverse effects occurred, and the gross haematuria and nodule resolved within 1 week. Thus, radiotherapy should be considered for treatment of visceral bleeding caused by peritoneal dissemination of gastric cancer when other methods of haemostasis cannot be performed.

### INTRODUCTION

Bladder metastases from distant primary sites are believed to account for only 1.5% of all bladder tumours<sup>(1,2,3)</sup>. We describe a patient suffering from refractory haematuria in the form of a nodule resulting from peritoneal dissemination infiltration of the urinary bladder, which was clearly detected on imaging and by cystoscopy. Following local radiation therapy for this nodule, vesical bleeding stopped as the nodule was markedly diminished. There are no previous reports on radiation therapy performed for haematuria caused by a nodule resulting from peritoneal dissemination of a primary tumour.

### CASE REPORT

A 64-year-old man became aware of tarry stools and subsequently gastric and rectal tumours were discovered. Tumour biopsy revealed poorly differentiated and moderately differentiated adenocarcinoma, respectively. According to immunostaining, the primary gastric and rectal cancer were CK-7 (+) plus CK-20 (-) and CK-7 (-) plus CK-20 (+), respectively, indicating different primary tumours. As rectal stenosis was suspected, a colostomy was performed. Intraoperatively, nodules representing peritoneal dissemination were identified under the abdominal incision and removed for biopsy. The biopsy of one of these nodules indicated carcinoma and immunostaining revealed them to be CK-7 (+), while were almost CK-20 (-). Multiple peritoneal dissemination nodules were found in the dome of the bladder. On whole-body computed tomography (CT), no other primary lesion was detected, so the diagnosis was peritoneal dissemination of gastric cancer. The patient became aware of gross haematuria eight months after the initial examination. On CT, a nodule infiltrating the dome of the bladder was identified which was strongly contrast-enhanced (**Figure 1**). Magnetic resonance diffusion-weighted imaging confirmed the same nodule (**Figure 2**). A cystoscopic examination revealed that the nodule, which was clearly extramural, had infiltrated the dome of the urinary bladder wall, resulting in bleeding (**Figure 3**). Subsequently, the haematuria increased and the number of blood transfusions increased. We planned for biopsy of the extramural nodule on cystoscopy and definitive haemostasis was attempted, but it was not possible to observe the inside of the urinary bladder because it was filled with haematoma. Therefore, radiation therapy was planned to control vesical bleeding. Radiation was delivered to the nodule with a 1cm margin. As the patient's general condition was poor, the irradiation dose was 3 Gy/fraction for a total of 30 Gy. The extramural nodule at the dome of the urinary bladder and the haematuria resolved one week after the completion of radiation therapy (**Figure 4**) and the patient's anaemia was improved with no further blood transfusions. The patient died with malignant ascites after 20 days after the completion of radiation therapy, during this short follow-up period, bladder bleeding did not recur.

### DISCUSSION

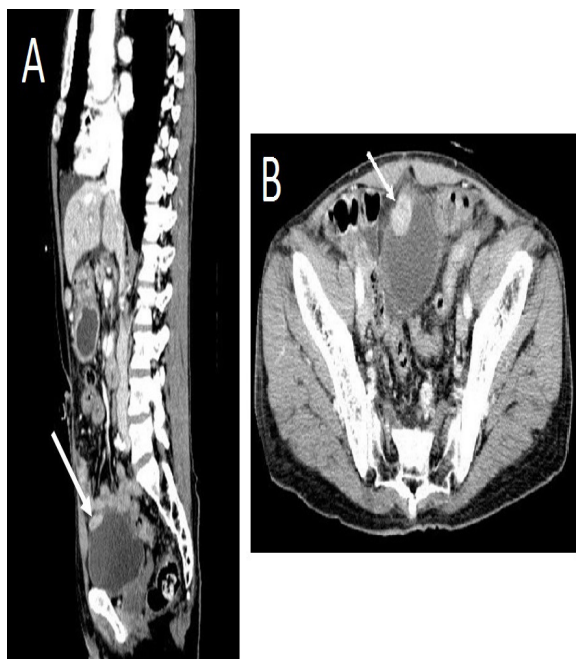
Bladder metastases from distant primary sites are described to account for only 1.5% of all bladder tumours<sup>(1,2,3)</sup>.

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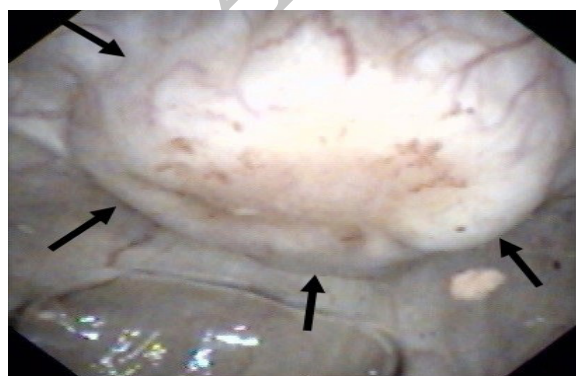
**Figure 1.** (a) Whole body enhanced computed tomography (CT) and pelvic CT (b) showing a strongly contrast-enhanced nodule at the base of the abdominal cavity on the bladder dome (white arrow).



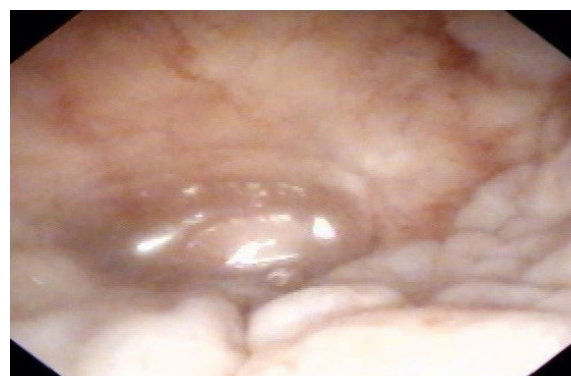
**Figure 2.** MRI with diffusion-weighted image showing high signal intensity of the lesion depicted in CT (white arrow).

Furthermore, peritoneal dissemination is reportedly common in melanoma, breast cancer and gastric cancer<sup>(4)</sup>. There are three reports describing peritoneal dissemination detected as protuberances with bladder metastases from gastric cancer on CT or cystoscopy<sup>(5,6,7)</sup>. Two cases were not treated and one underwent partial cystectomy. Our present report is the first, to our best knowledge, describing a case for which radiation therapy was performed. Peritoneal dissemination of digestive tract malignancies including gastric cancer for which whole abdominal cavity irradiation (12 Gy/3 fr) was performed has been reported<sup>(8)</sup>. In general, the sensitivity of gastric cancer to radiation is considered to be poor, but there are cases with lymph node relapses who received radiation therapy, and shrinkage was observed in some cases<sup>(9)</sup>. There is only one case report on perito-

neal dissemination from gastric cancer for which local radiation therapy was performed, a lesion infiltrating the rectum at a total dose of 40 Gy, which ameliorated rectal stenosis<sup>(10)</sup>. Our present case also received a total dose of 30 Gy and the nodule resolved. As our present case has shown, radiation therapy is effective for treating vesical bleeding caused by peritoneal dissemination when haemostasis via a cystoscopic approach is difficult.



**Figure 3.** Cystoscopy image showing the nodule, which was clearly extramural, had infiltrated the dome of the urinary bladder wall, resulting in slow bleeding (arrows).



**Figure 4.** Cystoscopy image taken 1 week after the completion of radiation therapy. The extramural nodule at the dome of the urinary bladder and the hematuria had resolved.

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