Metastatic Signet-Ring Cell Adenocarcinoma to the Urinary Bladder

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Gastric signet-ring carcinoma can metastasize to unusual sites. Occult cardiac metastasis, disseminated cutaneous lesions without involvement of internal organs, secondary prostatic involvement, and breast metastasis have all been described (1–4). We were able to find only 4 reported cases of metastatic signet-cell adenocarcinoma to the urinary bladder, three of which were found in the Japanese literature. We report a case of gastric signet-ring adenocarcinoma with bladder metastasis.

Case report. The patient was a 52-year-old white male diagnosed with signet-ring cell carcinoma of the stomach (Fig. 1) in 1987 treated with subtotal gastrectomy followed by radiation therapy. Pathology revealed tumor extension to the serosa, and negative regional lymph nodes. Carcinoma recurred in 1992 and was of the same signet-ring type. A Whipple procedure with resection of the remainder of his stomach was performed. His medical history was also significant for recurrent pulmonary emboli and a cerebrovascular aneurysm with rupture on three occasions, necessitating discontinuation of his oral anticoagulant and placement of a Greenfield filter. In July of 1994 he presented with gross hematuria. A CT scan of the abdomen and pelvis revealed ascites and a polypoid lesion in the posterior wall of the bladder (Fig. 2), as well as a large pleural effusion and new retroperitoneal adenopathy. Cystoscopy showed a large, broad-based lesion at the left posterior wall, with mucinous strands. Biopsies revealed adenocarcinoma with signet-ring identical to his earlier gastric tumor (Fig. 1). His respiratory status deteriorated over several days and he died despite attempts to resuscitate him. No autopsy was performed.

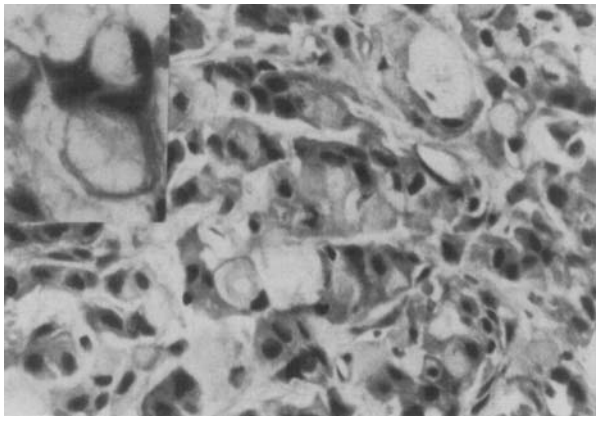

Fig. 1. Primary signet-ring adenocarcinoma of the stomach, with signet-ring cells from the metastatic bladder carcinoma shown in the right upper corner of the picture.

Discussion. Primary bladder tumors of signet-cell histology have been characterized by insidious development, predominance of voiding symptoms, submucosal growth, late diagnosis, and poor sensitivity to radiotherapy or chemotherapy (5). Ages at presentation were reported between 28 and 83 years with males affected in 3/4 of the cases (6). Spontaneous splenic rupture was reported in one case (7). A rapidly fatal outcome, with 6–7.5 months, survival has been reported despite pelvic exenterations in one small series (8). The presence of a thick bladder wall is the most common finding on CT (9). In some cases signet-ring cells are found on cytologic evaluation (10). The serum CEA may be elevated (11), suggesting the possible diagnosis of a primary gastric carcinoma (12).

Signet-ring cell carcinoma rarely metastasizes to the bladder (6). Only 4 cases of metastatic signet-ring carcinoma to the bladder have been reported, all of which were of gastrointestinal origin. In one case a complete remission following combination chemotherapy with mitomycin-c, 5 fluorouracil, and cytosine arabinoside was reported in a metastatic gastric carcinoma after a total gastrectomy for a poorly differentiated tumor (13). The second case was metastatic from colon carcinoma (14). The third and fourth cases were metastatic from gastric carcinoma. In one case, the gastric tumor was discovered subsequent to the bladder tumor (15).

Whether the common GI origin of these tumors reflects the biological behavior of signet-ring cell tumors in general, or is simply a result of the small number of reported cases is not clear.

This, however, raises the question of whether a proportion of 'primary' signet-ring cell carcinoma of the bladder has metastasized from an occult neoplasm. Of course it is not possible to prove that the bladder cancer is not a second primary rather than metastatic. The conclusion of metastasis in this and other cases is based on the circumstantial evidence that both the gastric and bladder tumors were of signet-ring type. The finding of an elevated CEA level in few of the so-called primary bladder signet-ring carcinomas (11, 16) and the fact that in one case the bladder

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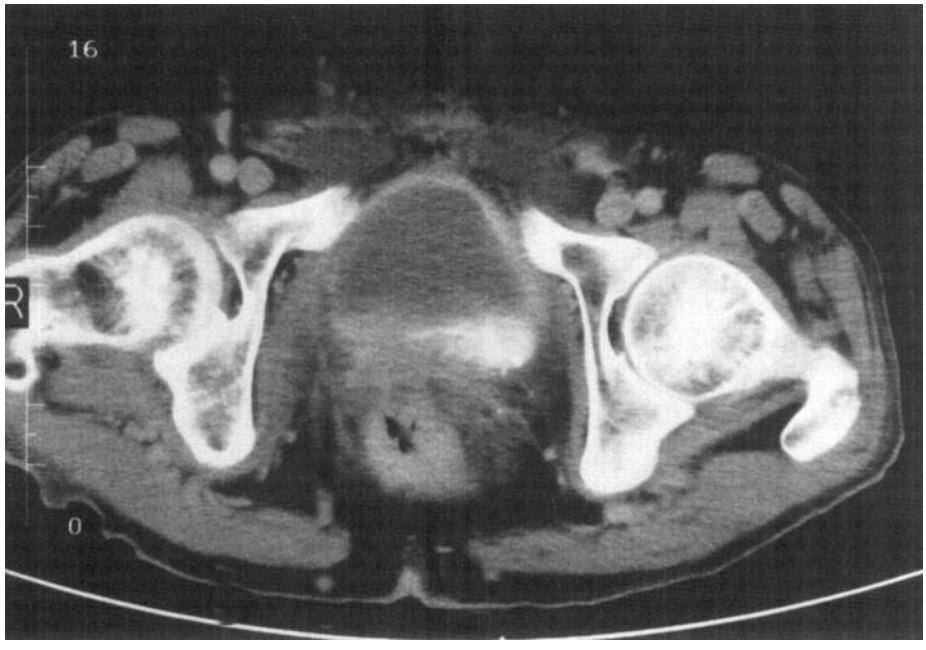

Fig. 2. CT of the pelvis showing metastatic signet-cell carcinoma as a defect in the posterior bladder wall.

carcinoma heralded the discovery of the gastric tumor, support the theory that these tumors were metastatic. It would be fair to say that when a signet-ring tumor is diagnosed in the bladder, it is most likely a primary, on the basis of the very few cases of metastatic disease reported in the literature; however, a metastatic disease from a GI primary is possible, and should be taken into consideration when the histopathology of the biopsy obtained gives the diagnosis of signet-ring carcinoma. Therefore, in spite of this rare manifestation, a gastroscopy and possibly a colonoscopy may be considered in the diagnostic work up. This may influence the type of therapy because cystectomy must be considered in the light of poor sensitivity to radiotherapy or chemotherapy of a primary bladder tumor of signet-ring cell histology.

In conclusion, signet-ring cell adenocarcinoma of the bladder is a rare lesion which may present as either a primary or metastatic tumor. The presence of foci of epithelial tumor cells such as squamous or transitional cells would suggest a primary tumor. A history of previous cancer should raise the possibility of metastatic disease. Occasionally, the bladder may be the first manifestation of an occult primary, usually of GI origin. Looking for such a primary, despite its rarity may have significant clinical and prognostic implications, and should therefore be considered.

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