Metastatic Transitional-Cell Carcinoma to the Mandible:
A Case Report

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Transitional-cell carcinoma to the mandible is an uncommon occurrence. Only three cases have been reported in the literature. This is a case report of such a metastasis, the first diagnosed by fine-needle aspiration. Emphasis is placed on the cytologic features of the tumor cells. Diagn Cytopathol 1988;4:156–158.

Key Words: Fine-needle aspiration; Metastatic transitional-cell carcinoma; Metastatic carcinoma to the jaw

Metastatic tumor to the jaw is an extremely rare phenomenon.[1] In a recent literature review, the most common primary tumor sites were breast, lungs, and kidneys, in decreasing order.[2,3] In a small but significant number of cases, metastasis to the jaws is the first indication that metastatic spread has occurred; in a small number of cases, it is the first sign that a malignancy is present.[2,4]

Bony metastasis of transitional-cell carcinoma of the bladder is not uncommon.[5–7] When it does occur, it usually affects adjacent pelvic bones—a result of direct extension.[6,8] Distant involvement of bones secondary to hematogenous spread is rare; only three cases of metastasis to the jaw have been reported in the literature.[1,2,9]

We present a case report of a 63-yr-old male with transitional-cell carcinoma metastatic to the mandible. The cytomorphologic features of the aspiration are discussed, and the current literature is reviewed.

Case Report

A 63-yr-old white man was hospitalized for malaise and pain in the left flank. One and a half weeks prior to admission (PTA), he complained of malaise, increasing difficulty in movement, several episodes of left-chin numbness and tingling, sudden onset of difficulty with speech progressing to true aphasia, and a transient (30 min) numbness of the left arm. Four days PTA, he experienced spontaneous left lumbar pain and tenderness, which progressed to dull, continuous pain in the inferior left costal margin and left hip.

There was no history of urinary tract infection, stone, hematuria, dysuria, incontinence, or frequency; however, a 4–5-yr history of decreased force of stream and nocturia (one or two times per night) had been present. The patient's diagnosis upon admission was pyelonephritis. An intravenous pyelogram showed an obstructed left ureter with a possible bladder mass. Transurethral biopsy tissue revealed a transitional-cell carcinoma with widespread infiltration of the muscularis propria; there were admixed areas of moderately differentiated adenocarcinoma. He underwent abdominal and pelvic CT scan, revealing possible hepatic metastasis.

Throughout the hospitalization, the patient developed increasing left flank pain; intravenous pyelogram subsequently revealed total obstruction of his left ureter, and he underwent emergency nephrostomy. A CT-directed biopsy of the liver revealed atypical cells not considered diagnostic for tumor. A Panorex film of the left mandible, obtained due to jaw pain, revealed a lytic lesion which was biopsied by fine-needle aspiration and diagnosed as metastatic transitional-cell carcinoma with adenomatous components. Thus, it was concluded the patient had stage D transitional-cell carcinoma.

After two courses of chemotherapy, a bone scan revealed diffuse, increased uptake with significant increase in activity over previous studies. Since no diminution of disease had occurred, chemotherapy was discontinued. The patient died a short time later; no autopsy was performed.

Pathologic Observations

Multiple sections from the bladder tumor revealed widespread infiltration of both lamina propria and muscularis propria by tumor cells (Fig. 1). The tumor contained a

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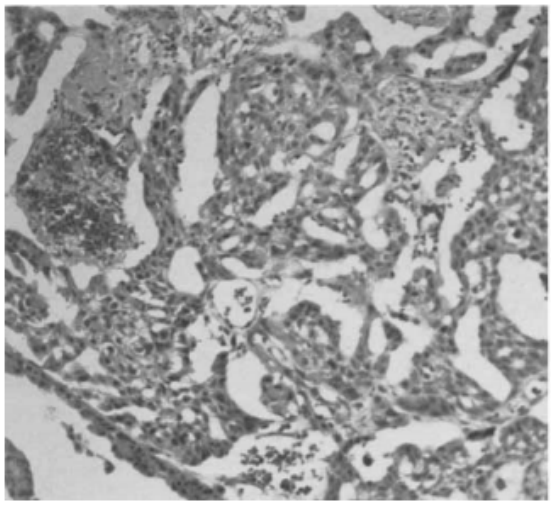

Fig. 1. Original bladder biopsy with widespread infiltration of both lamina propria and muscularis propria by tumor cells (routine H&E, ×350).

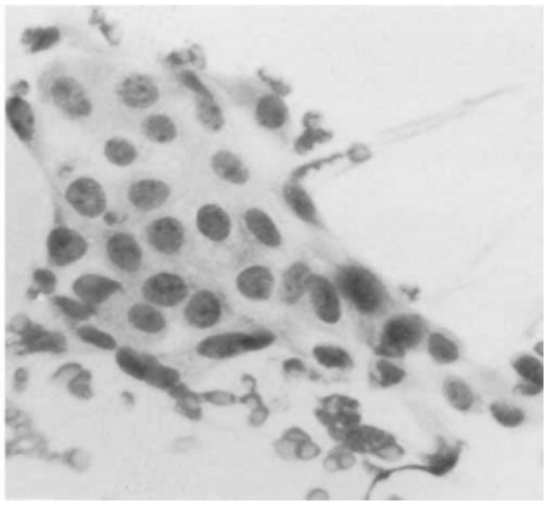

Fig. 2. Large sheet of tumor cells (Papanicolaou stain, ×800).

distinctly acinar pattern, especially prominent in the deeper regions. Mucin stains revealed prominent Alcian blue positivity within the acini. Some periodic acid–Schiff (PAS)–positive intracytoplasmic mucin was also present. Elsewhere, the tumor formed distinct papillary fronds with delicate fibrovascular cores, but without glandular differentiation. There was prominent fibrosis and desmoplasia throughout the infiltrated regions.

The cytologic specimen was obtained by fine-needle aspiration of the lytic lesion of the mandible. Smears were made using the two-slide pull method, and half were fixed with 95% alcohol and stained with a modified Papanicolaou stain. The other half were air-dried and later stained with Diff-Quik stain. The needle and syringe were then washed with sterile saline to remove any remaining cells. This fluid was fixed with an equal amount of 50% ethyl

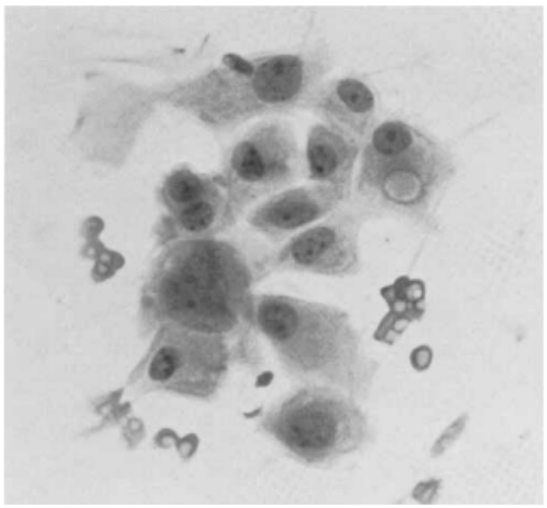

Fig. 3. Prominent nucleoli in the tumor cells with abundant, basophilic cytoplasm (Papanicolaou stain, ×800).

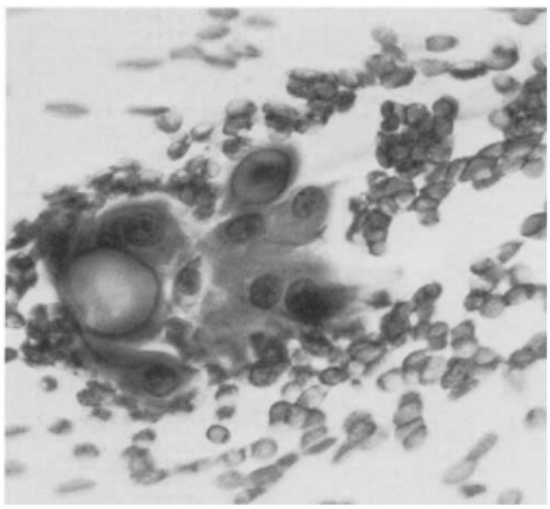

Fig. 4. A discrete secretory vacuole (Papanicolaou stain, ×800).

alcohol, filtered using a Millipore filter, and stained by the Papanicolaou method.

Cytologic examination of the material revealed large cells with abundant, basophilic cytoplasm occurring singly, in small groups, and in large sheets (Fig. 2). Nuclei were hyperchromatic and variable in size with prominent nucleoli (Fig. 3); multiple nucleoli were observed occasionally. Scattered secretory vacuoles were noted (Fig. 4). The final cytologic diagnosis was transitional-cell carcinoma metastatic to the mandible, consistent with the patient's primary malignancy.

Discussion

Metastatic tumor growths are believed to arise as a result of circulating tumor cells in the bloodstream or lymphatics. Osseous metastases are due to hematologic spread; their sites of maximum incidence correspond to sites in which red marrow is found in the adult. The most common sites of metastatic involvement in decreasing order of frequency are vertebral column, ribs, sternum, pelvis, skull, femur, humerus, and (only occasionally) the other bones.[10] Metastases to the bones of the jaw are uncommon as the existence of red marrow in the mandible is uncommon.[11]

The most common primary tumors that metastasize to the jaw are breast, lung, and kidney.[2,3] Of clinical importance is the fact that metastases involving the jaws may be the first symptom of malignant disease.[2,4] The most frequent symptoms of metastatic carcinoma to the jaws are swelling and pain. More characteristic features of mandibular metastasis are anesthesia and paraesthesia.[2] The presence of an external mass, soft-tissue mass, or loosening of the teeth also occurs.[4] Spontaneous jaw fractures are rare.[2] Some patients may be asymptomatic.[3] The prognosis is very poor, with 70% mortality within the first year of diagnosis.[2]

Bone involvement by transitional-cell carcinoma of the bladder is occasionally seen.[5–7,12] When it does occur, it usually affects the vertebral column, pelvic bones, ribs, femur, and humerus.[5,6] Involvement of the jaw has been reported in only three previous cases.[1,2,9] Including the present case, prognosis is poor with relatively rapid progression and death in all four cases. Despite the poor prognosis, cytologic evaluation of the jaw lesion is important in order to prevent inappropriate therapeutic measures.[1,4] Also, this form of metastasis may be the first indication that the tumor has progressed.[2,4]

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