CASE REPORT

Adductor longus muscle metastasis of transitional cell carcinoma of the urinary bladder

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SUMMARY

Bladder cancer most commonly spreads to the lymph nodes, lungs, bones and adrenal glands. Metastasis of bladder cancer to the skeletal muscle is extremely rare, as is the case in other malignancies. We report a case of a 62-year-old male patient who presented with pain and swelling in the right lower extremity and had difficulty walking, and who was later found to have metastasis in the adductor longus muscle 3 months after the initial diagnosis of transitional cell carcinoma of the urinary bladder. The study also provides a review of the current literature.

BACKGROUND

Bladder cancer ranks fourth in men and eighth in women among all cancers, and it is the second most common cancer in men among other genitourinary cancers.¹ Transitional epithelial cell (transitional or urothelial) cancer accounts for more than 90% of bladder cancers and the remaining are composed of squamous cell cancer and adenocarcinoma.² Bladder tumours mostly exhibit local invasion. Lymphatic spread most commonly occurs in the pelvic lymph nodes. The haematogenous spread of this tumour is a less common mode of invasion in contrast to other cancers.² Metastasis of transitional cell carcinoma (TCC) of the urinary bladder to the striated muscles is an extremely rare condition as is also the case in other cancers.³ In this case report, we present a patient who presented with pain and swelling in the right lower extremity and difficulty walking, and who was later found to have adductor longus muscle metastasis from TCC of the urinary bladder, and we also provide a review of the current literature.

CASE PRESENTATION

A 62-year-old male patient presented with pain and swelling in the right lower extremity and difficulty walking that started 2 weeks before and became progressively worse. The patient reported an increase in symptoms while standing and a decrease at rest. The patient's history was not remarkable for low back pain or trauma. The patient's medical history was remarkable for TCC for which he has been followed and administered therapy for the past 4 months. Pathological examination of the transurethral resection (TUR) material revealed 'high-grade invasive TCC with lamina propria invasion' (figure 1). The patient has been receiving intravesical BCG (8 mg/week, for 6 weeks) therapy due to stage T1G3 TCC of the bladder.

During physical examination, the patient was in the lumbar flexion posture and he was mobile using forearm crutches. The skin on the right foot and leg up to the femur around the hip joint was stretched; the patient had 3+ pitting oedema, and arterial pulses were palpable. The marked difference between the diameters of both limbs was a striking finding. The right thigh circumference was 67 cm, left thigh circumference was 62 cm, right leg circumference was 42.5 cm and left leg circumference was 38 cm. Muscle strength in the upper and lower extremities was bilaterally normal (5/5); there were no signs of sensory loss, and deep tendon reflexes were normoactive. Joint movement was painful in the right hip, and range of motion was normal in all joints. The Lasegue's test was negative.

INVESTIGATIONS

Complete blood count, liver and kidney function tests, total protein and acute phase reactants were all within normal ranges. Analysis of the urine showed no specific finding other than the presence of abundant erythrocytes. Chest X-ray, echocardiography, and venous and arterial colour Doppler ultrasonography of the lower extremities revealed normal findings. Radiographic assessment revealed no pathological finding other than soft tissue swelling in the right thigh. Ultrasonography of the right thigh showed a 'thickening in the subcutaneous tissue'. Lymphoscintigraphy showed findings consistent with left lower extremity lymphoedema. Considering the history of malignancy, MRI of the pelvis and hip was requested due to suspicion of soft tissue metastasis. T2A-weighted MRI showed

Figure 1 Infiltration of lamina propria by atypical cells with eosinophilic cytoplasm and hyperchromatic nucleus in transitional cell carcinoma of the urinary bladder (H&E × 400).

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heterogeneous pathological signal changes and oedema in the right iliopsoas and right adductor longus muscles and postcontrast T1A-weighted MRI showed opacification in the corresponding areas (figure 2). Thorax CT was evaluated as normal. MRI findings were suggestive of soft tissue metastasis, and an incisional biopsy was therefore obtained from the right adductor longus muscle in order to establish a histopathological diagnosis.

Histopathological examination of the tissue sections prepared from the adductor longus biopsy specimen revealed tumour infiltration generally as isolated individual cells and focal cell groups in the fibrous stroma and striated muscle tissue. The final result was reported as 'metastasis from urothelial carcinoma' (figure 3). Furthermore, left leg lymphoedema was thought to be secondary to tumour metastasis.

TREATMENT

A therapy was initiated involving gemcitabine (1000 mg/m²; at days 1 and 8, and every 21 days thereafter) and carboplatin (according to Calvert's formula AUC=4; first day of every 3 weeks). The patient was recommended to wear compression socks, elevate the legs, perform a range of motion exercises, receive passive massage and foot care.

OUTCOME AND FOLLOW-UP

At the third month of the follow-up, the patient developed pneumonia and deterioration in general condition; the patient died despite all medical interventions.

DISCUSSION

Lymphoedema results from the accumulation of protein-rich fluid in the interstitial space due to anatomic or functional obstruction in the lymphatic system. Tumours, infections, radiotherapy, trauma and lymphatic interventions are the most common causes of secondary lymphoedema.⁴ Lung cancer, kidney and colon cancer are the most common tumours spreading to the soft tissues. The autopsy series reported that the psoas and abdominal muscles were the most commonly involved body sites.⁵

Bladder cancer most commonly spreads to lymph nodes, lungs, bones and adrenal glands.²⁻⁶ Striated muscles are extremely resistant to distant (haematogenous) metastasis

although they receive a significant share from the cardiac output. This was attributed to the contractile activity of the striated muscles, accumulation of metabolites, pH changes, inhibition of angiogenesis by lactic acid, blood pressure within the muscle tissue and local changes in temperature.⁷ However, an increase in the incidence of metastasis has been reported in patients sustaining a trauma.⁸ Normal physiology of the striated muscles is impaired by trauma, causing focal hyperaemia. As a result, the ability of the muscle tissue to eliminate lactic acid is reduced and metastatic cells exhibit increased tendency to infiltrate into muscle tissue. Based on this fact, reports have emphasised the need for questioning patients for the history of trauma.⁸⁻⁹ Haematoma, muscle rupture and soft tissue infections that manifest with similar clinical findings should be kept in mind in the differential diagnosis.⁸⁻⁹ The current case did not have a remarkable history for trauma that would facilitate muscle metastasis. Furthermore, superficial ultrasonography, MRI and routine investigations did not show any finding suggestive of haematoma, strain or infection.

Metastases to soft tissues are relatively more common in lung, kidney and colon cancers.⁵ TCC of the urinary bladder rarely spread to the muscles; however, the deltoid and psoas muscles have been reported to be the most common sites for metastasis.¹⁰ In addition, a case has been reported in the literature that showed metastasis to adductor longus muscle.⁵ In the current case, the psoas muscle was one of the involved body sites. However, we consider that this manuscript is important because it presents the second case in the literature that showed adductor longus muscle metastasis from bladder carcinoma.

Treatment options for bladder tumours spreading to striated muscles include chemotherapy and/or radiotherapy and simple surgical resection in selected cases.⁵ Metastasis to striated muscles is usually associated with poor prognosis. Life expectancy after the diagnosis of muscle metastasis ranges between 6 and 12 months.¹⁰⁻¹¹ Despite the administered chemotherapy, the current case died at the third month after the detection of muscle metastasis.

In conclusion, although metastasis to striated muscles is extremely rare in bladder cancer, patients presenting with swelling in the soft tissue, decreased joint movements and limb pain should be evaluated for a history of malignancy, and muscle metastasis should be kept in mind in the differential diagnosis.

Figure 2 Postcontrast T1A-weighted MRI showing hypointense pathological signal changes and oedema in the right adductor longus muscles.

Figure 3 Tumour cells infiltrating the fibrous stroma and striated muscle tissue as isolated individual cells and focal cell groups (H&E × 400).

Learning points

- ▶ Metastasis to striated muscles is extremely rare in bladder cancer.
- ▶ This manuscript is important because it presents the second case in the literature that showed adductor longus muscle metastasis from bladder carcinoma.
- ▶ Patients presenting with swelling in the soft tissue, decreased joint movements and limb pain should be evaluated for a history of malignancy, and muscle metastasis should be kept in mind in the differential diagnosis.

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