

## Case Report

# Unusual Site of Metastasis of Renal Cell Carcinoma

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### Abstract

*Renal cell carcinoma (RCC) usually metastasizes to lung, liver, bone and brain. We report a case of an elderly man who underwent radical nephrectomy for renal cell carcinoma and developed a metastasis in the plane between contralateral psoas muscle and quadratus lumborum muscle 11 years after the operation*

**Key words:** Radical nephrectomy; Contralateral psoas; Quadratus lumborum

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### Introduction

Renal cell carcinoma (RCC) represents 2–3% of all malignancies and consists of 90% of renal malignancies. The most common site of metastasis of renal cell carcinoma are lungs (50%), lymph nodes (35%), liver (30%), bone (30%) and adrenal gland (5%). Skeletal metastasis is a rare occurrence.<sup>1,2</sup>

### Case report

A 70-year-old Bangladeshi man who underwent left radical nephrectomy for RCC (Fuhrman nuclear

grade-2) in 2003, presented to our hospital with a mass at right lumbar region. After nephrectomy he was clinically well and did not receive any adjuvant therapy. Several USG and CT scan were done during follow-up and were unremarkable.

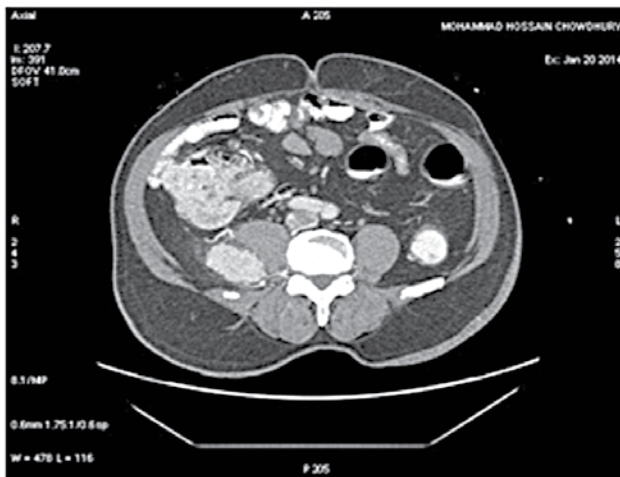


Fig 1. CT scan showing a mass behind right psoas muscle



Fig 2. CT abdomen with angiogram showing left sided nephrectomy state and right sided mass supplied by 4th lumbar artery

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At 2014 CT scan revealed left sided nephrectomy state with normal CT urography on the right side. There was a retro-peritoneal mass behind the right psoas muscle. CT angiogram showed that the mass was supplied by right 4<sup>th</sup> lumbar artery. CT-guided FNAC from the mass showed that it is a metastatic renal cell carcinoma.

Regional MRI located the tumour in the fat plane between psoas muscle and quadratus lumborum muscle. CT scan, USG, X-ray chest showed no other metastasis.

Patient was prepared for surgery and the mass was completely removed. Post operative period was uneventful. Histological studies confirmed the mass as metastatic renal cell carcinoma, clear cell type.

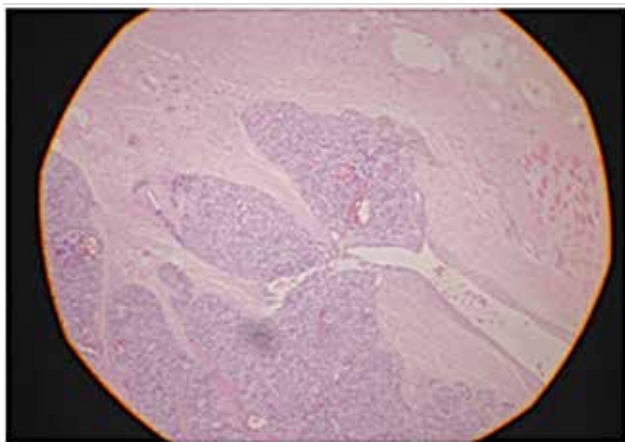


Fig 3. Histopathological findings of metastatic RCC in between muscles

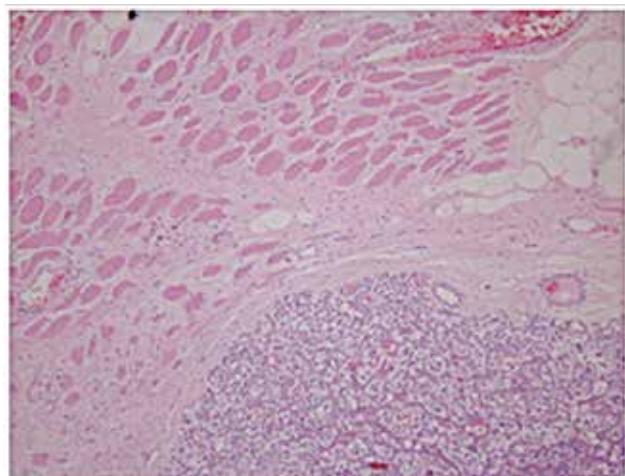


Fig 4. Enhanced view of Fig. 3

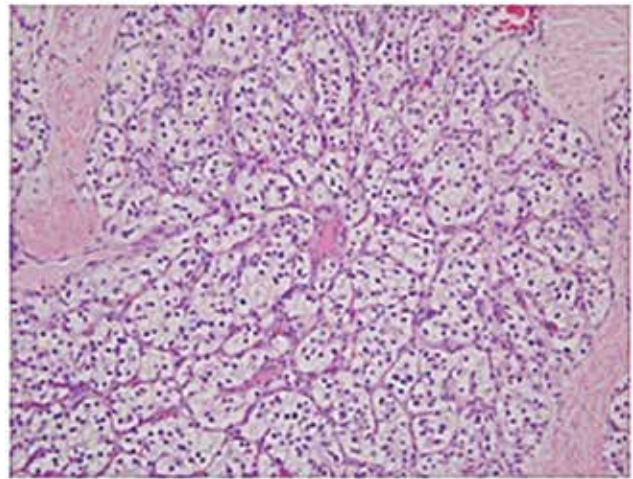


Fig 5. Metastatic renal cell carcinoma

## Discussion

Skeletal muscle is a rare site of metastasis regardless of the primary site of origin.<sup>1</sup> The reason for the rarity of metastasis in skeletal muscle is thought to be that protease inhibitors in the muscle extracellular matrix resist invasion by tumour enzymes, muscular contractions may dislodge the tumour cells or the acidic conditions within the muscle produced by different metabolites may interfere with metastatic growth.<sup>2</sup> Metastasis to the skeletal muscle represents less than 1% of all hematogenous metastases from the lung, colon, kidney or stomach and less commonly from the breast, bladder, cervix or thyroid.<sup>3</sup>

Renal cell carcinoma has widespread and unpredictable metastatic potential<sup>4</sup> even after curative nephrectomy.<sup>5,6</sup> RCC is able to metastasize to virtually any site. The most common sites of metastatic RCC are the lungs, lymph nodes, bones, liver and brain.<sup>7</sup>

Till date limited number of cases concerning skeletal metastasis from RCC has been described and its prevalence is 1.6%. Possibly the first case of skeletal metastasis originating from an RCC was reported in 1979, describing a slowly enlarging biceps muscle mass as an atypical presentation of RCC, diagnosed with biopsy needle.<sup>1</sup>

Our patient developed skeletal metastasis 11 years after radical nephrectomy. Several studies have demonstrated the development of muscular metastasis during the follow-up period after radical nephrectomy,

with onset times varying between a number of months and 19 years.<sup>1</sup>

Muscular metastasis has been found in various muscular localizations. Linn et al<sup>6</sup> reported the first case of psoas muscle metastasis 14 years after radical nephrectomy for an organ-confined RCC. The metastatic site was contralateral to the primary tumour. Our patient had similar contralateral metastasis. Linn and colleagues did not state the mechanism of metastasis. Several explanation has been suggested which includes direct invasion and hematogenous spread.<sup>6</sup> Taira et al<sup>8</sup> reported a case of solitary psoas muscle metastasis after radical nephrectomy for RCC where they suggested the hematogenous spread of metastasis. Arteriography showed that the tumour is supplied by right 4<sup>th</sup> lumbar artery.<sup>8</sup> CT angiogram of our case showed similar type of picture but the site of metastasis is contralateral. But Sountoulides et al<sup>9</sup> described that unpredictable metastatic pathway of RCC is due to its complex lymphatic drainage.

Surgical removal of metastatic RCC improves the outcome of the patient and five years survival rates are between 35% and 50% after surgical therapy for solitary metastasis.<sup>7</sup> Five years overall survival was highest after curative metastasectomy in a series of 278 patients with recurrent RCC in common sites.<sup>10</sup> Complete resection of unusual metastatic sites improves survival reaching a median survival time of 25 months compared to three months without surgical management.<sup>11</sup>

The unpredictable metastatic potential of RCC suggests the need of thorough follow-up of patient and raise the suspicion of metastasis if any soft tissue mass is noticed.

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