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An unusual cause of chyluria- post radiofrequency ablation (RFA) of a renal cell carcinoma: a case report

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Abstract

Introduction

This case aims to highlight the rare cause of chyluria which occurred post radiofrequency ablation (RFA) of the renal cell carcinoma. In most institutions, clinicians will need to have a high index of suspicion as this may not be diagnosed routinely on imaging follow up post treatment. As chyluria can vary from the asymptomatic to hypoproteinaemia, hypolipidemia and impaired immune function a prompt diagnosis would allow timely management of their symptoms.

Case presentation

A fit and well 79-year old Caucasian man was found to have a 2.1cm peripherally situated tumour and underwent renal RFA as primary treatment. Periodic imaging followed up at our institution had shown no evidence of residual or recurrent disease within the zonal ablation at two years. In our institution, our routine imaging protocol included upper abdomen only for kidneys assessment and pelvic examination is not part of the examination. However, he had a computed tomography (CT) abdomen and pelvis performed at his hospital at the request of his local urologist two and half years post renal RFA. A fat-fluid level was seen within the urinary bladder consistent with chyluria. As the patient was asymptomatic, he was treated conservatively.
Conclusion

It is important to be aware of chyluria as a complication post renal RFA and to recognise the fat-fluid level sign within the bladder/collecting system on CT. As most institutions do not routinely performed CT pelvis as part of their follow up protocol post renal RFA, a high index of suspicion is required for diagnosis. Routine urinalysis for fat should be considered as prompt diagnosis is crucial to guide management for symptomatic patients.
Introduction

Image guided percutaneous renal radiofrequency ablation (RFA) therapy is now an increasingly popular treatment for small and selected renal cell carcinoma. It has low morbidity, high technical success and good mid-term outcome results (1, 2). Post renal RFA, the treatment efficacy is usually monitored by periodic cross sectional imaging either with computed tomography (CT) or magnetic resonance imaging (MRI). Most institutions especially in Europe would only perform cross sectional imaging of the kidneys and the pelvis is not routinely performed as part of the imaging follow up. We would like to report a case of incidental diagnosis of chyluria on CT in a patient following renal RFA of a small left renal cell carcinoma. This case report aims to highlight a rare but important cause of chyluria post renal RFA and clinicians will need to have a high index of suspicion as this may not be diagnosed routinely on imaging follow up. As chyluria can present with varying degrees of severity from the asymptomatic to hypoproteinaemia, hypolipidemia and impaired immune function prompt diagnosis would allow timely management of their symptoms. (Our institution does not require IRB approval for retrospective case reports).

Case presentation

A fit and well 79-year old Caucasian man was found to have a 2.1cm peripherally situated tumour during a routine renal ultrasound examination for lower urinary tract symptoms as a result of benign prostatic hypertrophy. He had no other significant past medical history and his serum
creatinine was within normal limits (104µmols/L). He was referred to me for consideration of percutaneous renal RFA. This case was discussed at my local urology multi-disciplinary meeting and the consensus was to offer surgery such as radical or partial nephrectomy or percutaneous RFA. The treatment options and risks were discussed in detail with the patient who agreed to proceed to percutaneous RFA as first line treatment.

The procedure was performed under general anaesthesia. A 16G co-access sheathed needle system (Boston Scientific, MA, USA) was inserted into the tumour under imaging guidance using a combination of ultrasound and contrast enhanced CT (100mls Ultravist 300, Schering AG, Germany). An 18G needle core biopsy of the tumour was obtained and was immediately followed by insertion of a Le Veen RFA array probe with a 3cm diameter (Boston Scientific, MA, USA). Three overlapping treatments were performed and the total ablation time was 20 minutes and 50 seconds. The patient was given 80mgs Gentamicin intravenously as prophylaxis. Histological examination of the tumour biopsy confirmed a grade 2 conventional renal cell carcinoma. He was able to pass urine adequately following the procedure and was discharged the following day with stable renal function (creatinine 100µmols/L). He was followed up imaging at 1, 3, 6 and 12 months in the first year and repeat imaging at two years at our institution had showed no evidence of residual or recurrent disease within the treated area (Fig 1). In my institution, our routine imaging protocol included upper abdomen only for kidneys assessment and pelvic examination is not part of our examination. However, he had a CT abdomen and pelvis
performed at his local hospital at the request of his local urologist two and half years post renal RFA. A fat-fluid level was seen within the urinary bladder consistent with chyluria (Fig. 2). As the patient was asymptomatic, he was treated conservatively.

Discussion

Chyluria is rare and caused by communication between the lymphatic and urinary tract system. The commonest cause is secondary to filariasis infection (3). Other causes include abscesses, tumour, tuberculosis and congenital conditions. These are usually due to rupturing of the lymphatic system into the pelvi-calyceal system. Rarely, iatrogenic cause of chyluria has been described following radical and partial nephrectomy resulting fistulous connection from the lymphatics to the collecting system (4-6). Interestingly, two cases of asymptomatic chyluria were diagnosed during routine follow up post renal RFA recently in California, USA where their routine follow up imaging included both abdomen and pelvis (7).

Renal RFA has been around for over 10 years and it is interesting to note that many complications related to the procedure have been well reported but not chyluria until recently. In my institution, as we do not usually include pelvic examination for the follow up, it does mean that unless the patient is symptomatic it is likely that we will not diagnose the asymptomatic chyluria patient post renal RFA will be missed. The diagnosis only came to light in this case when his pelvis was scanned for other clinical reasons. The lack of reports of chyluria post renal RFA up until now...
could be related to the fact most follow up protocols do not routinely include examination of the pelvis.

However, it is extremely important to recognise the fat-fluid level sign in the bladder or collecting system on CT especially in patients who had previous history of renal ablation. This would allow prompt diagnosis of chyluria. As chyluria can vary from the asymptomatic to hypoproteinaemia, hypolipidemia and impaired immune function prompt diagnosis would allow timely management of their symptoms (8). Usually symptomatic patients will complain of milky-white urine and fat that can be detected on urinalysis. Treatments include nutritional support, renal sclerotherapy and surgical ligation of the lymphatic system (4, 9).

**Conclusion**

It is important to be aware of chyluria as a complication post renal RFA and to recognise the fat-fluid level sign within the bladder/collecting system on CT. As most institutions do not routinely performed CT pelvis as part of their follow up protocol post renal RFA, a high index of suspicion is required for diagnosis. Routine urinalysis for fat should be considered as prompt diagnosis is crucial to guide management for symptomatic patients.

**Consent**

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.
Competing interests

The author declared that she has no competing interests.

Authors’ contributions

“TW analyzed and interpreted the patient data, treatment and imaging and was a major contributor in writing the manuscript. The author read and approved the final manuscript.”

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Not applicable
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Figure legends

Figure 1- Axial section of contrast enhanced CT of the left kidney following renal RFA shows the treated region (white arrow) with no evidence of residual or recurrent disease at two years post left renal RFA.

Figure 2- Axial section of contrast enhanced CT of the bladder shows a fat-fluid level (black arrow) with the bladder consistent with chyluria.