

## Serial Fluorodeoxyglucose Positron Emission Tomography-Computed Tomography Scan Distinguishing Infected Seroma from Recurrence in a Necrotic Lymph Node in a Case of Squamous Cell Carcinoma of the Right Kidney

### Abstract

Seroma can occur as a complication following nephroureterectomy. We report a case of squamous cell carcinoma of the kidney, postnephroureterectomy where serial fluorodeoxyglucose positron emission tomography-computed tomography images helped in distinguishing the diagnostic dilemma between lymph node recurrence and infected seroma.

**Keywords:** Fluorodeoxyglucose positron emission tomography-computed tomography, infected seroma, necrotic lymph node, squamous cell carcinoma of kidney

Squamous cell carcinoma (SCC) of the Kidney is a rare entity, comprising 15% of total urothelial malignancy cases.<sup>[1,2]</sup> Radical nephrectomy is the standard of care. Seroma can arise following surgery, due to acute inflammation or wound healing. Increased vascular endothelial growth factor and decreased endostatin at the operated site can result in the collection of exudate from damaged vessels and lymphatics.<sup>[3,4]</sup> A cystic lymph node and seroma often show the same attenuation in computed tomography (CT) images. Infected seroma creates a diagnostic uncertainty to differentiate it from recurrence in a necrotic lymph node in fluorodeoxyglucose positron emission tomography-CT (FDG PET/CT) images. We present an interesting case where serial FDG PET/CT helped to differentiate infected seroma from the recurrence in a cystic lymph node.

A 71-year-male patient diagnosed as an SCC of the right kidney. He underwent right nephroureterectomy. After obtaining informed written consent, an FDG PET CT scan was done 6 weeks after surgery for metastatic workup. The FDG PET/CT images revealed metastases to the right adrenal gland, multiple retroperitoneal, and left axillary lymph nodes [Figure 1].

A non-FDG avid, well-defined homogeneous fluid attenuation lesion in the retroperitoneal lymph node region was noted [Figure 2]. It was considered as cystic lymph node/seroma. Three cycles of chemotherapy were administered subsequently. Response assessment FDG PET/CT showed a complete resolution of all the metastatic lesions. However, no change was noted in the retroperitoneal cystic lesion. The patient received one more cycle of chemotherapy. During the course, the patient developed fever and abdominal pain. Ultrasound showed a complex echogenic lesion in the retroperitoneal area with solid and cystic components suspicious for lymph nodal recurrence. The patient had referred again for FDG PET/CT to rule out the recurrence. FDG PET/CT revealed heterogeneous FDG uptake in the previously non-FDG avid retroperitoneal lesion. Lesion increased in size and showed enhancing thick walls and loculations. It was measuring 6 cm × 3.8 cm × 8.9 cm. Given cystic collections with enhancing thick walls and loculations, infected seroma was considered as the first differential. A CT-guided aspiration and cytology was done to rule out infection. About 12–15 ml of purulent material was aspirated. Cytology was negative for malignancy and culture yielded *Escherichia coli*.

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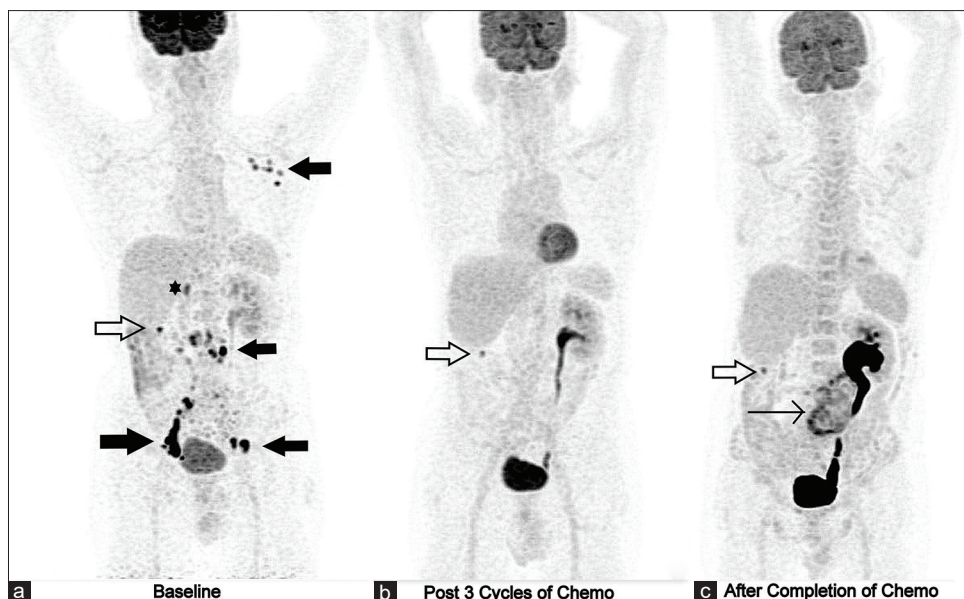


Figure 1: MIP images (a) showed multifocal fluorodeoxyglucose uptake (Solid arrow) in the bilateral retroperitoneal and left axillary lymph node region; a focal uptake was noted in the right adrenal gland (star). (b) Showed a focal uptake in infra hepatic region (open arrow), which corresponded to a polyp in a hepatic flexure. Complete metabolic response was noted. (c) Showed heterogeneously increased fluorodeoxyglucose uptake (long arrow) in midline near the left common iliac lymph node region. No other abnormal fluorodeoxyglucose uptake was noted in the visualized whole-body images

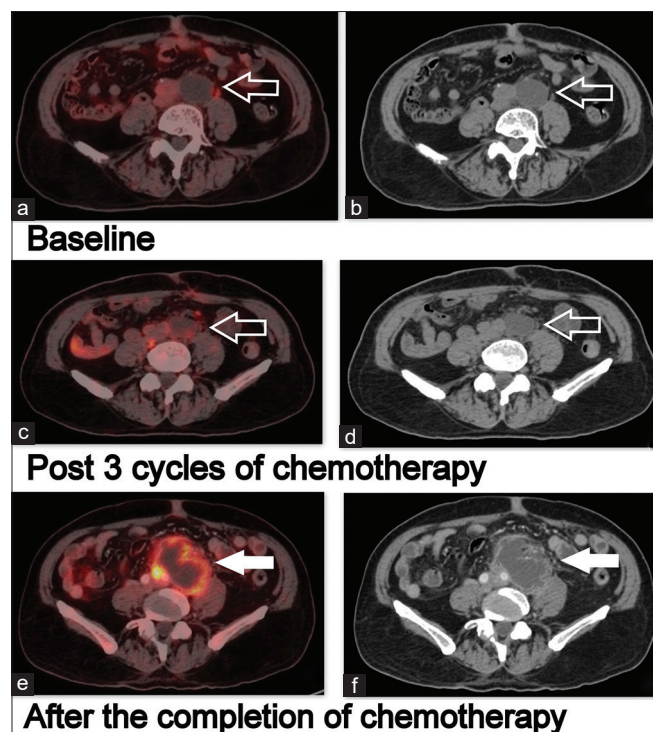


Figure 2: Transaxial sections at the level of bifurcation of the abdominal aorta in baseline and response assessment fluorodeoxyglucose positron emission tomography-computed tomography study. (a-d) Showed a well-defined homogeneous fluid attenuation lesion (open arrow) measuring 2.7 cm × 2.4 cm × 2.7 cm in midline in the retroperitoneal region. No abnormal fluorodeoxyglucose uptake was noted over the lesion. fluorodeoxyglucose positron emission tomography-computed tomography performed after completion of chemotherapy when the patient presented with abdominal pain. (e,f) Showed a fluid collection with enhancing thick walls measuring 6 cm × 3.8 cm × 8.9 cm in the right common iliac region (solid arrow). Heterogeneous fluorodeoxyglucose uptake was noted

Seroma can be diagnosed as an anechoic fluid collection in ultrasonography.<sup>[5]</sup> CT will show a well-defined homogeneous fluid attenuation lesion with enhancing wall. A mild degree of FDG uptake can be noted in seroma.<sup>[6,7]</sup> Spontaneous degradation of keratin and cellular debris, sudden blockage of lymphatic flow with lymph fluid filling into the rest of the potential spaces can lead to the formation of cystic lymph node metastases in cases of SCC.<sup>[8]</sup> A cystic lymph node can be FDG avid depending upon the tumoral content in the periphery. In our case, the cystic lesion was persistent following surgery with absent metabolic activity documented in the initial and 1<sup>st</sup> follow up PET/CT scans. The presence of abdominal pain, fever and complete metabolic response of metastatic lesions in the previous PET/CT, presence of loculations in the cystic lesion favored infective etiology which confirmed with pus aspiration and culture.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

## References

1. Sahoo TK, Das SK, Mishra C, Dhal I, Nayak R, Ali I, *et al.* Squamous cell carcinoma of kidney and its prognosis: A case report and review of the literature. *Case Rep Urol*. 2015;2015:e469327.
2. Nakadai J, Ide H, Hirasawa Y, Ito Y, Uchida Y, Masuda T. Isolated cervical lymph node metastasis of renal pelvic squamous cell carcinoma: A case report. *Can Urol Assoc J* 2013;7:E344-6.
3. Kuroi K, Shimozuma K, Taguchi T, Imai H, Yamashiro H, Ohsumi S, *et al.* Pathophysiology of seroma in breast cancer. *Breast Cancer* 2005;12:288-93.
4. Sampathraju S, Rodrigues G. Seroma formation after mastectomy: Pathogenesis and prevention. *Indian J Surg Oncol* 2010;1:328-33.
5. Gokhale S. Sonography in identification of abdominal wall lesions presenting as palpable masses. *J Ultrasound Med* 2006;25:1199-209.
6. Basu S, Kumar R, Alavi A. PET and PET-CT imaging in infection and inflammation: Its critical role in assessing complications related to therapeutic interventions in patients with cancer. *Indian J Cancer* 2010;47:371-9.
7. Gomez Portilla A, Onaindia E, Larrañaga M, López de Heredia E, Echenagusía V. Periprosthetic seroma with false-positive FDG PET-CT reactive nodes mistaken for metastases in a patient previously treated of metastatic melanoma. Potential source of diagnostic errors. *Int J Surg Case Rep* 2017;38:66-8.
8. Mokhtari S. Mechanisms of cyst formation in metastatic lymph nodes of head and neck squamous cell carcinoma. *Diagn Pathol* 2012;7:6.