Ga-68 DOTA-NOC PET/CT for the Detection of Residual/Recurrence in a Rare Case of Sacral Spinal Canal Paraganglioma

Dear Editor,

A 40-year-old male patient of sacral paraganglioma, who underwent S1-S2 laminectomy with excision of the sacral subdural paraganglioma 2 years ago, presented with ache in the lower back since 3 months with no history of numbness or weakness in both his limbs. Magnetic resonance imaging (MRI) of his hip revealed a subcentimetric heterogeneous nodule in the T1-weighted (T1W) and T2-weighted (T2W) short tau inversion recovery (STIR) images in the sacral region. Ga-68 DOTA-NOC positron emission tomography/computed tomography (PET/CT) was performed to characterize the lesion. Ga-68 PET/CT images [Figure 1] revealed a tracer avid (the maximum standardized uptake value being 4.7) subcentimetric (8.0 mm × 8.0 mm) soft tissue nodular lesion in the spinal canal at the level of the S1 vertebra. The fat planes with the adjacent nerve roots appeared to be lost and so, local radiotherapy was planned for the patient.

Spinal paraganglioma is a very rare tumor, accounting for around 0.07% of all paragangliomas and 3–4% of all spinal tumors.[1] The common locations of spinal paraganglioma are the cauda equina and filum terminale regions at the end of spinal column below the 1st lumbar vertebra (L1 vertebra) level.[2] The clinical presentation of spinal paragangliomas depends on the level of the affected spinal cord and the degree of compression. The sacral spinal paraganglioma commonly presents with back pain radiating to the lower limbs, sensory and motor deficits, and bowel-bladder incontinence.[3] Spinal paraganglioma is difficult to distinguish radiologically from other spinal lesions.[1] Other intradural lesions such as lipoma, schwannoma, meningioma, ependymoma, and dermoid tumor should be included in differential diagnosis, which shows the same MRI imaging feature as paraganglioma.[4,5] Ga-68 DOTA-NOC PET/CT shows tracer avidity in neural crest tumors, such as paraganglioma, due to the expression of somatostatin receptors.[6] Spinal paragangliomas rarely metastasize; however, in the literature, metastasis cases are documented.[7] Surgery is a primary treatment modality and even after gross tumor excision, only 4% shows local recurrence.[8] Radiotherapy is reserved for surgically

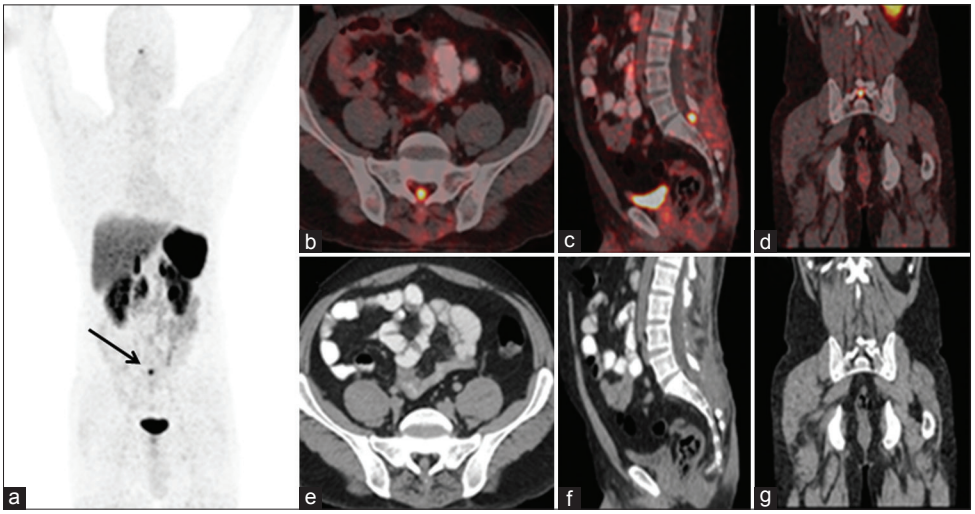

Figure 1: Ga-68 PET/CT maximum intensity projection (MIP) image (a) revealed solitary tracer avid focus in the sacral region. PET/CT and CT transaxial, sagittal, and coronal images (b-g) revealed a tracer avid (the maximum standardized uptake value being 4.7) subcentimetric sized (8.0 mm × 8.0 mm) soft tissue nodular lesion in the spinal canal at the level of S1 vertebra. The fat plane between the lesion and the nerve root, and the filum terminale appears to be nonpreserved

Address for correspondence:
Prof. Bhagwant Rai Mittal, Department of Nuclear Medicine and PET, Postgraduate Institute of Medical Education and Research, Chandigarh - 160 012, Punjab and Haryana, India. E-mail: brmittal@yahoo.com

nonassessable lesion(s) or recurrence; however, resistance to that treatment is also documented.[9] DOTA-NOC imaging is also able to facilitate curative treatment by the identification of surgically nonresectable disease or metastatic spread of the disease.[10] In the present case, DOTA-NOC scan showed tracer avidity in spinal canal paraganglioma, which is surgically not assessable due to the proximity of the nerve roots and can be considered for radiotherapy or Lu-177 DOTA-NOC therapy. To the best of my knowledge, this is the first case that reported somatostatin receptor expression in sacral spinal paraganglioma.

Financial support and sponsorship
Nil.

Conflicts of interest
The authors declare no conflicts of interest.

Tarun Kumar Jain, Rajender Kumar Basher, Jaya Shukla, Anish Bhattacharya, Mahesh Prakash[1], Bhagwant Rai Mittal

Departments of Nuclear Medicine and PET and [1]Radiodiagnosis, Postgraduate Institute of Medical Education and Research, Chandigarh, Punjab and Haryana, India

References

1. Simsek M, Onen MR, Zerenler FG, Kir G, Naderi S. Lumbar intradural paragangliomas: Report of two cases. Turk Neurosurg 2015;25:162-7.
2. Conti P, Mouchaty H, Spacca B, Buccoliero AM, Conti R. Thoracic extradural paragangliomas: A case report and review of the literature. Spinal Cord 2006;44:120-5.
3. Sundgren P, Annertz M, Englund E, Strömblad LG, Holtås S. Paragangliomas of the spinal canal. Neuroradiology 1999;41:788-94.
4. Faro SH, Turtz AR, Koenigsberg RA, Mohamed FB, Chen CY, Stein H. Paraganglioma of the cauda equina with associated intramedullary cyst: MR findings. AJNR Am J Neuroradiol 1997;18:1588-90.
5. Aggarwal S, Deck JH, Kucharczyk W. Neuroendocrine tumor (paraganglioma) of the cauda equina: MR and pathological findings. AJNR Am J Neuroradiol 1993;14:1003-7.
6. Sharma P, Thakar A, Suman KC, Dhull VS, Singh H, Naswa N, *et al*. 68Ga-DOTANOC PET/CT for baseline evaluation of patients with head and neck paraganglioma. J Nucl Med 2013;54:841-7.
7. Lau D, La Marca F, Camelo-Piragua S, Park P. Metastatic paraganglioma of the spine: Case report and review of the literature. Clin Neurol Neurosurg 2013;115:1571-4.
8. Yang C, Li G, Fang J, Wu L, Yang T, Deng X, *et al*. Clinical characteristics and surgical outcomes of primary spinal paragangliomas. J Neurooncol 2015;122:539-47.
9. Mishra T, Goel NA, Goel AH. Primary paraganglioma of the spine: A clinicopathological study of eight cases. J Craniovertebr Junction Spine 2014;5:20-4.
10. Gupta SK, Singla S, Karunanithi S, Damle N, Bal C. Peptide receptor radionuclide therapy with (177) 10. Lu DOTATATE in a case of recurrent carotid body paraganglioma with spinal metastases. Clin Nucl Med 2014;39:440-1.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

Access this article online

Quick Response Code:

Website: www.wjnm.org

DOI: 10.4103/1450-1147.167575

How to cite this article: Jain TK, Basher RK, Shukla J, Bhattacharya A, Prakash M, Mittal BR. Ga-68 DOTA-NOC PET/CT for the detection of residual/recurrence in a rare case of sacral spinal canal paraganglioma. World J Nucl Med 2016;15:71-2.