

The possible role of ^{68}Ga -DOTATATE PET in malignant abdominal paraganglioma

Zarni Win¹, Lucy Rahman¹, Joy Murrell¹, Jeannie Todd¹, Adil Al-Nahhas¹

¹ Nuclear Medicine, Hammersmith Hospital, 150 Du Cane Road, W120HS London, Acton, UK

Received: 24 August 2005 / Accepted: 1 November 2005 / Published online: 1 February 2006
© Springer-Verlag 2006

Eur J Nucl Med Mol Imaging (2006) 33:506

DOI 10.1007/s00259-005-0035-9

Paragangliomas are rare tumours that arise within the sympathetic nervous system originating from the neural crest. Nearly 90% of these tumours originate in the medulla of the adrenal glands, and are known as pheochromocytomas. The remaining 10% are extra-adrenal and are termed paragangliomas. In all, 10% are malignant, and these are often difficult to manage.

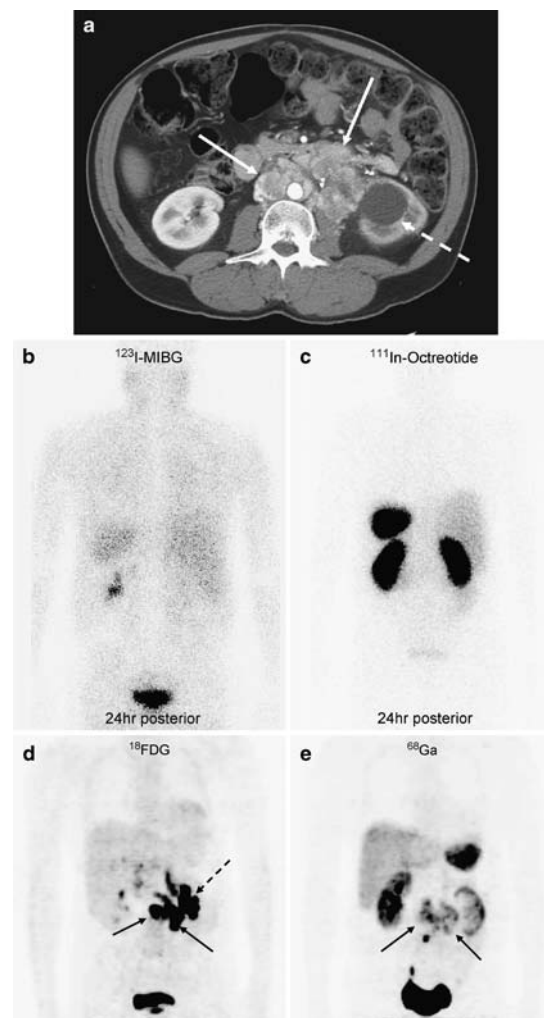
The authors discuss the case of a 51-year-old male who presented with biochemical recurrence of a malignant abdominal paraganglioma following surgical excision 4 months previously. CT showed an extensive soft tissue mass enveloping the abdominal aorta (a, solid arrows) and the left ureter, causing hydronephrosis (a, broken arrow). This represented local recurrence of tumour at the excision site. The lesion was inoperable. The tumour did not show affinity to ^{123}I -MIBG (b) or ^{111}In -octreotide (c). An ^{18}F FDG-PET scan demonstrated increased metabolic activity within the lesion (d, solid arrows), as well as left-sided hydronephrosis (d, broken arrow). PET imaging with ^{68}Ga -DOTATATE (DOTA-Tyr³-Thr⁸-octreotide) showed avid tracer uptake within the tumour, indicating positive somatostatin receptor status (e, solid arrows).

^{123}I -MIBG scan is the nuclear medicine imaging method of choice, with a cumulative sensitivity of 86% and specificity of 98% [1]. In neuroendocrine tumours, ^{68}Ga -DOTATOC (DOTA-D-Phe¹-Tyr³-octreotide) has been shown to have higher tumour to non-tumour contrast compared with ^{111}In -octreotide [2, 3]. In MIBG-negative cases, imaging with ^{68}Ga -DOTATATE should be considered, especially if the lesion is suspected to be small. Recurrence of malignant paraganglioma is often difficult to manage, especially if the tumour is MIBG receptor negative and is not amenable to surgery. In this challenging group, positive imaging with ^{68}Ga -DOTATATE carries the opportunity of targeted radionuclide therapy with suitable beta emitters such as ^{90}Y -DOTATATE [4].

References

1. Ell PJ, Gambhir SS. Nuclear medicine in clinical diagnoses and treatment. 3rd ed. New York: Churchill Livingstone; 2004

Zarni Win (✉)
Nuclear Medicine,
Hammersmith Hospital,
150 Du Cane Road,
W120HS London, Acton, UK
e-mail: zarni_win@hotmail.com
Tel.: +44-20-83831000



2. Hofmann M, Maecke H, Borner R, Weckesser E, Schoffski P, Oei L, et al. Biokinetics and imaging with the somatostatin receptor PET radioligand ^{68}Ga -DOTATOC: preliminary data. *Eur J Nucl Med* 2001;28:1751–7
3. Kowalski J, Henze M, Schuhmacher J, Macke HR, Hofmann M, Haberkorn U. Evaluation of positron emission tomography imaging using [^{68}Ga]-DOTA-D-Phe¹-Tyr³-octreotide in comparison to [^{111}In]-DTPAOC SPECT. First results in patients with neuroendocrine tumors. *Mol Imaging Biol* 2003;5:42–8
4. Lewington V. Targeted radionuclide therapy for neuroendocrine tumours. *Endocr Relat Cancer* 2003;10(4):497–501