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^{68}Ga-NOTA-exendin-4 PET/CT in detection of occult insulinoma and evaluation of physiological uptake

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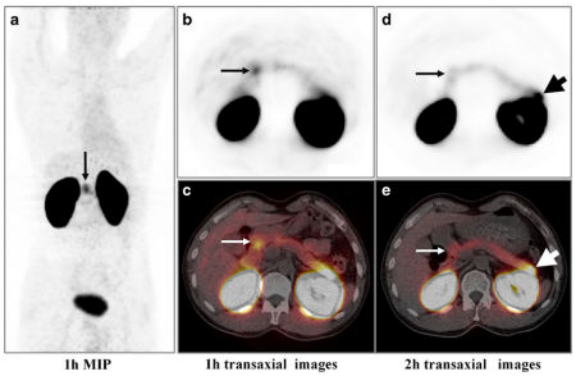
A 52-year-old man who had hypoglycaemia for 8 years was found to have endogenous hyperinsulinism indicating an insulinoma. Abdominal MRI, CT perfusion, endoscopic ultrasonography, and ^{99m}Tc-HYNIC-TOC SPECT/CT were negative. Thus, the patient was referred for ^{68}Ga-NOTA-exendin-4 PET/CT with the approval of the Institutional Review Board of our hospital.

As well as the intense physiological distribution in the kidneys and bladder due to urinary excretion, moderately elevated uptake is apparent in the proximal duodenum (**a**–**c** *long arrows*, SUVmax 5.2) and pancreas (SUVmax 2.9) at 1 h after injection of ^{68}Ga-NOTA-exendin-4. Because visualization of the pancreas tail was significantly influenced by the intense radioactivity in the left kidney, the patient was reimaged at 2 h after injection. A lesion with intense uptake (SUVmax 20.7) was clearly seen in the pancreas tail (**d, e** *short arrows*). Interestingly, radioactivity in the proximal duodenum significantly decreased (**d, e** *long arrows*, SUVmax 2.3) while the appearance of the normal pancreas remained unchanged.

The patient recovered from hypoglycemia after surgical removal of the pancreas tail insulinoma (WHO grade 1). Intraoperative ultrasonography excluded a duodenal tumor.

Glucagon-like peptide-1 receptor (GLP-1R) is highly overexpressed in insulinoma [1, 2]. SPECT/CT imaging of GLP-1R using ^{111}In-labelled or ^{99m}Tc-labelled exendin-4 has been shown to be highly accurate in the detection of insulinoma [2–4]. However, PET/CT imaging of GLP-1R has rarely been reported [5]. We present the first successful use of ^{68}Ga-NOTA-exendin-4 PET/CT for the identification of an occult insulinoma that could not be detected by other standard imaging methods. ^{68}Ga-NOTA-exendin-4 also shows great potential for evaluation of pancreatic physiology due to its uptake, presumably, by islet cells.



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