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Corresponding Author: Dr Bernard Khoo, M.R.C.P., Ph.D.

Corresponding Author's Institution: UCL Medical School

First Author: Damian Wild, M.D.

Order of Authors: Damian Wild, M.D.; Aikaterini Theodoraki, M.R.C.P.; Tom R Kurzawinski, M.D., Ph.D., F.R.C.S.; Jamshed Bomanji, M.B.B.S., Ph.D.; Jean C Reubi, M.D.; Rehman Khan, F.R.C.P.; Pierre Bouloux, F.R.C.P.; Bernard Khoo, M.R.C.P., Ph.D.

Abstract: A case is presented of a patient with an insulinoma and a co-incident lesion in the liver. Cross-sectional imaging and somatostatin receptor imaging were unsuccessful in identifying the location of the insulinoma. GLP-1 receptor imaging identified the position of the tumour and was used to guide its successful surgical resection.

Suggested Reviewers: Karim Meeran F.R.C.P.
Professor of Endocrinology, Diabetes, Endocrinology and Metabolism, Imperial College London
k.meeran@imperial.ac.uk
One of the world's experts on neuroendocrine tumours.

Jens J Holst
Professor, Biochemical Sciences, The Panum Institute
holst@fi.ku.dk
Prof Holst is one of the world's recognised experts on GLP-1.

Giuliano Mariani
Professor, Regional Centre of Nuclear Medicine, University of Pisa Medical School
g.mariani@do.med.unipi.it
Prof Mariani is a recognised expert on imaging of neuroendocrine tumours.

Ashley B Grossman F.R.C.P.
Professor of Neuroendocrinology, Endocrinology, Barts and the Royal London NHS Trust
a.b.grossman@qmul.ac.uk
Prof Grossman is a world expert on neuroendocrine tumours.

Opposed Reviewers: Martin Gotthardt
Professor, Nuclear Medicine, Radbound University Nijmegen Medical Centre

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[1] Damian Wild, M.D.
[2] Aikaterini Theodoraki, M.R.C.P.
[3] Tom R. Kurzawinski, M.D., Ph.D., F.R.C.S.
[1] Jamshed Bomanji, M.B.B.S., Ph.D.
[4] Jean Claude Reubi, M.D.
[5] Rehman Khan, F.R.C.P.
[2] Pierre Bouloux, F.R.C.P.
[2]* Bernard Khoo, Ph.D., M.R.C.P.

[1] Institute of Nuclear Medicine, University College London Hospitals NHS Trust, London NW1 2BU, UK.
[2] Department of Endocrinology, Royal Free Hampstead NHS Trust, London NW3 2QG, UK.
[3] Centre for Endocrine Surgery, University College London Hospitals NHS Trust, London NW1 2PG, UK.
[4] Institute of Pathology, Division of Cell Biology and Experimental Cancer Research, University of Bern, Bern, Switzerland
[5] Department of Endocrinology, Basildon and Thurrock NHS Trust, Basildon, Essex, SS16 5NL, UK.

* Corresponding author
Address:
Department of Endocrinology
Royal Free Hampstead NHS Trust
Pond Street
London NW3 2QG.
Tel: +44 20 78302416
Fax: +44 20 74726487

A patient presented with spells of light-headedness, confusion and collapses, improving on eating. During a supervised fast, plasma glucose dropped to 1·7 mmol/L, with inappropriately high insulin, raised C-peptide and no sulphonylurea detectable, diagnostic of an insulinoma [1].

CT, MRI and abdominal ultrasound scanning failed to find any evidence of a lesion in the pancreas and all showed a liver lesion (a: black arrow). Somatostatin subtype 2 (sst_2) receptor imaging with ^{68}Ga-DOTATATE PET/CT was normal (b). The white arrow shows the body of pancreas in each panel.

Glucagon-like peptide-1 (GLP-1) receptor SPECT/CT was performed. This showed strong focal uptake posteriorly within the pancreatic body (c: white arrow). Notably, the liver lesion did not show any uptake. The pancreatic lesion was enucleated and the liver lesion was excised. Histopathology showed a well differentiated insulinoma in the pancreas. The liver lesion proved to be a metastasis from a salivary gland-type lung tumour, previously resected in 2008. The insulinoma was found on autoradiography *in vitro* to express GLP-1 receptors but not sst_2 receptors.

GLP-1 is a gut hormone that stimulates insulin release from beta cells and represses glucagon release from alpha cells. ^{111}In-labeled exendin-4 is a GLP-1 analogue, and can be used to image tissues that express GLP-1 receptors in high density [2-4]. In a prospective study, GLP-1 receptor imaging correctly located all six insulinomas preoperatively [2]. This new imaging modality may therefore be useful in locating small and occult tumours to guide surgery and to distinguish them from co-incident lesions.

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Figure
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