

Cautionary tale: subdural haematoma following frequent hypoglycaemia from insulin-induced lipohypertrophy

Ian S Boon, Mujahid A Saeed

Department of Diabetes,
University Hospital Birmingham
NHS Foundation Trust,
Birmingham, UK

Correspondence to

Dr Ian S Boon,
ianboon@doctors.org.uk

Accepted 17 November 2015

DESCRIPTION

A sixth-decade man presented with left-sided hemiparesis and a low Glasgow Coma Scale score. He had sustained a head injury following a fall attributed to increased frequency of hypoglycaemia. He had type 1 diabetes mellitus of 40 years duration and was managed by his general practitioner with insulin aspart and detemir. He had been injecting insulin into the same area of his abdomen for several years.

A CT scan of the head confirmed an acute-on-chronic right-sided subdural haematoma with midline shift (figure 1). The patient underwent emergency life-saving neurosurgical intervention with complete recovery.

On palpation, a subcutaneous lipomatous mass was felt to the right of his umbilicus, consistent with insulin-induced lipohypertrophy. This would have been missed on mere visual inspection (figure 2).

Subcutaneous insulin exerts anabolic effects locally, resulting in localised protein and fat accumulation, which can become desensitised.¹ These correspond to sites of subcutaneous insulin injections.^{1 2} Lipohypertrophy is palpable but can be missed on mere visual inspection during routine clinical review.² It results in poor and erratic glycaemic control, and hypoglycaemia, by delaying insulin absorption.^{1 2}



Figure 2 Central adiposity masking area of insulin-induced lipohypertrophy on the right of the umbilicus. Thorough clinical examination with palpation is imperative to avoid missing this important sign on mere visual inspection.

Regular patient reviews and education by health professionals to vary the sites of injection, together with a high level of suspicion when someone reports recurrent hypoglycaemia, is imperative in order to prevent and identify lipohypertrophy.³

In summary, this patient had warning signs of increasing frequency of hypoglycaemia as a result of lipohypertrophy, which subsequently contributed to his fall and a subdural haematoma, both of which could have been avoided.



Figure 1 Right-sided acute on chronic subdural haematoma with gross midline shift requiring urgent neurosurgical intervention.

Learning points

- ▶ Lipohypertrophy is a side effect of subcutaneous insulin injections and is preferably identified on palpation. This condition should be recognised by a suspecting healthcare professional, particularly when recurrent hypoglycaemia is reported by the patient.
- ▶ Patients on long-term subcutaneous insulin treatment should be offered at least yearly examination of the injection sites in order to identify this complication of insulin.³
- ▶ Prevention of lipohypertrophy by varying the insulin injection sites should be emphasised to all patients on insulin by way of diabetes education.

Competing interests None declared.

Patient consent Obtained.



To cite: Boon IS, Saeed MA. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2015-212855

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Johansson U-B, Amsberg S, Hannerz L, *et al*. Impaired absorption of injectable therapy Aspart from lipohypertrophic injection sites. *Diabetes Care* 2005;28:2025–7.
- 2 Chowdhury TA, Escudier V. Poor glycaemic control caused by insulin induced lipohypertrophy. *BMJ* 2003;327:383–4.
- 3 Frid A, Hirsch L, Gaspar R, *et al*. New injection recommendations for patients with diabetes. *Diabetes Metab* 2010;36(Suppl 2):S3–18.

Copyright 2015 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow