

# The many faces of hypoglycaemia –Would you recognise all of them?

G Mlawa<sup>1,2</sup>, Y Subramaniam<sup>2</sup>, P Wilson<sup>1</sup>, G Bano<sup>1</sup>

1. Thomas Addison Unit, St Georges Hospital-London,

2. Endocrinology & Diabetes Department, Queen`s Hospital-Romford-London

## Introduction

Hypoglycaemia is a diabetes and medical emergency. It is usually due to excessive dose of insulin or oral anti-diabetic agents. Although rare, hypoglycaemia can be tumour-induced. Other causes include renal and liver failure, hormonal deficiency, antibodies to insulin, infection, starvation, spontaneous hypoglycaemia and reactive hypoglycaemia

## Case report

A 70 year old man presented with 6 months' history of recurrent collapses; progressively worse over the last 3 months. He required frequent hospital admissions with hypoglycaemic seizures. He denied palpitations or chest pain. He was hypoglycaemic during every admission with glucose levels <2mmol/L, requiring treatment with 1mg glucagon and iv dextrose

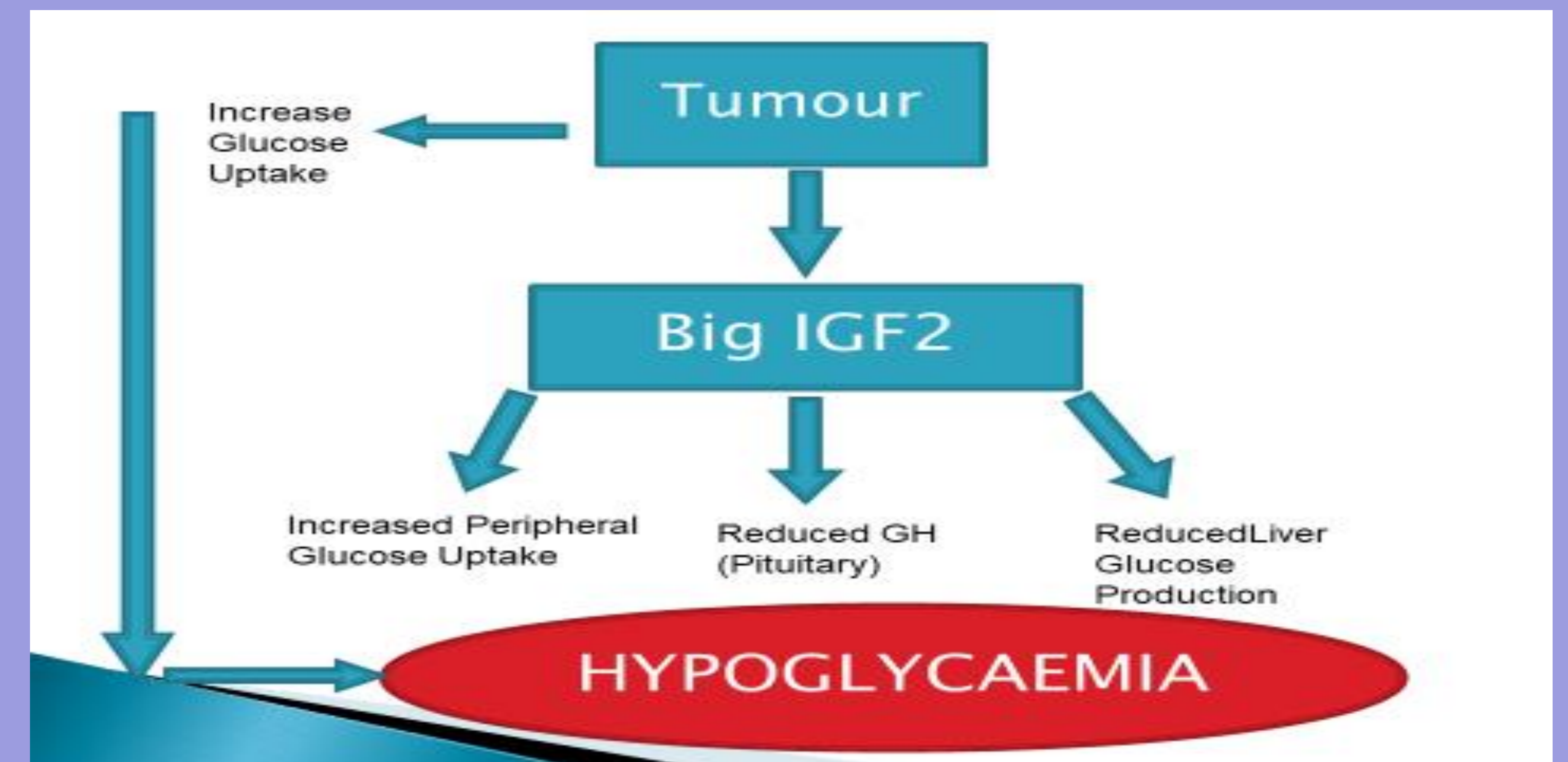
Blood test results showed glucose 3.1mmol/L (<2mmol/L previous admissions), C-peptide<94pmol/L, low insulin level (1pmol/L), GH 0.38mcg/L, ketones (beta hydroxybutyrate) <0.05mmo/L, IGF-1 29.2nmol/L (1.5-35), and IGF-2 134.5nmol/L.

IGF2:IGF-1 4.5(<10); not hypoglycaemic at that time (glucose 5.5mmol/L. Short synacthen test was normal (Cortisol 255, 719).

Urine sulphonylurea screen was negative.

## Discussion

Tumour-induced hypoglycaemia is a rare paraneoplastic process. This can be divided into insulin secreting tumour due to tumour related infiltration of the liver or adrenal glands, and tumours producing substances interfering with glucose metabolism such as IGF-1 and tumours that produce partially processed precursors of IGF-2 ("big IGF-2")



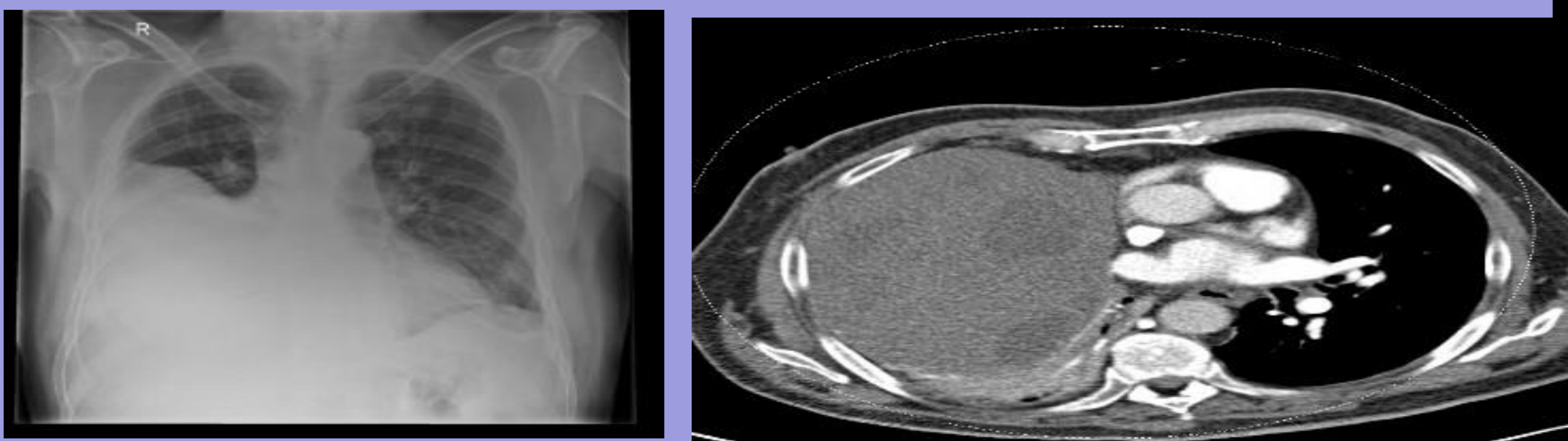
## Mechanism of tumour-induced hypoglycaemia

## Methods-Case report

His background includes right sided pleural effusion, IHD, heart failure (EF 20%), hypertension and right sided lung tumour diagnosed in 2010.

His medications include aspirin, atorvastatin, candesartan, furosemide, omeprazole, paracetamol and eplerenone

He was with prednisolone 30mg od and growth hormone 0.5mg od and radiotherapy to reduce tumour load



## Imaging-thoracic mass 21.8x19cm

## Conclusion

Tumour-induced hypoglycaemia should be considered in the differential diagnosis in patients with active malignancy or past medical history of malignancy presenting with hypoglycaemia.

A combination of GH and prednisolone is most effective therapy in alleviating hypoglycaemia

## References

1. Daughaday WH, Trivedi B, Baxter RC, 1993 Serum 'big' insulin-like growth factor II (IGF II) from patients with tumour hypoglycaemia lacks normal E-domain O-linked glycosylation, a possible determinant of normal peptide processing. Proc Nat Acad Sci 90: 5823-5827.
2. Teale JD, Marks V, 1998 Glucocorticoid therapy suppresses abnormal secretion of big IGF-II by non-islet cell tumours inducing hypoglycaemia (NICTH). Clin Endocrinol 49: 491-498.
4. Drake WM, Miraki F, Siddiqi A, et al, 1998 Dose-related effects of growth hormone on IGF-1 and IGF-binding protein-