

Loperamide induced hypoadrenalism presenting as recurrent hypoglycaemia in a patient with type 1 diabetes

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Case History

A 32 year old female presented with recurrent episodes of severe hypoglycaemia. Type 1 diabetes had been diagnosed 10 years earlier and she had undergone subtotal colectomy/ileostomy 20 months earlier for chronic diarrhoea. Histology was suggestive of eosinophilic colitis. High stoma output (>4 litres/24hours) was causing stomal incontinence with disruption of normal lifestyle. Treatment with combinations of loperamide, codeine, omeprazole and octreotide were ineffective. Examination revealed dehydration, sinus tachycardia (120 bpm) and blood pressure 100/60 mmHg.

Investigations

Initial investigations confirmed AKI and metabolic acidosis.

Sodium	125 mmol/L
Potassium	4.9 mmol/L
Urea	28 mmol/L
Creatinine	248 µmol/L
pH	7.25
Bicarbonate	9.6 mmol/L
Glucose	3.4 mmol/L
Ketones	1.1 mmol/L
Cortisol	714nmol/L

The admitting team were unaware of the cortisol level of 714 nmol/L prior to the administration of IV fluids and hydrocortisone to cover possible adrenal suppression secondary to previous glucocorticoid treatment. This led to a rapid correction of both AKI and metabolic acidosis.

The coincidental finding of a cortisol level of 39nmol/L coincided with hypoglycaemia of 2.0µmol/L, four hours post 5mg oral morphine sulphate solution led to the suspicion of opiate induced hypoadrenalism. Further investigations confirmed this for both morphine sulphate and loperamide.

Basal Pituitary Function Testing at 09:00h (Off opiates)

TSH	1.39 mU/L
Free T4	9.5 pmol/L
Free T3	4.8 pmol/L
LH	5.6 IU/L
FSH	8.6 IU/L
Prolactin	163 mU/L
IGF-1	21 nmol/L
ACTH	65.6 ng/L
Cortisol	394 nmol/L

6 hours post 5mg morphine sulphate:

09:00 hours ACTH	8.9 ng/L
09:00 hours Cortisol	52 nmol/L

On high dose loperamide:

Time	Cortisol (nmol/L)	ACTH (ng/L)
09:00	67	2.0
11:00	33	1.8
13:00	32	2.6

Discussion

The results demonstrate hypothalamo-pituitary-adrenal axis suppression with both morphine and loperamide. Treatment with high dose loperamide (16mg, 16mg, 32mg, 16mg) reduced her stoma output to <1 litre/24 hours. Hydrocortisone at replacement doses was therefore commenced with dramatic improvement in her quality of life and resolution of hypoglycaemic episodes.

We believe this to be only the second reported case of loperamide induced hypoadrenalism.

References

Napier, C., Gan, E. and Pearce, S. (2016) 'Loperamide-induced hypopituitarism', *BMJ Case Reports*, [online] Available at: <http://casereports.bmj.com/content/2016/bcr-2016-216384.full> (Accessed 7th November 2018)

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