Adrenocortical Insufficiency in a Patient with Stable Liver Cirrhosis

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Case History: A seventy-six year old Caucasian man was admitted with confusion, irritability and lethargy for one week duration. He has stable Child-Pugh Class A chronic liver disease. On Examination, he was mildly confused (AMTS 8/10) , and euvoluameic with a blood pressure 130/78 mmHg and no postural hypotension. Respiratory cardiovascular and abdominal examinations were unremarkable. He was taking spironolactone 150 mg and furosemide 40 mg daily for recurrent ascites.

Investigations:

Haemoglobin 122g/L
White cell 9.8x10^9/L
Platelet 118 x10^9/L
Urea 8.7 mmol/L
Creatinine 85 umol/L
Sodium 111 mmol/L
Potassium 5.66 mmol/L
Albumin 33 g/L
ALT 108 IU/L
Alkaline phosphatase 116 IU/L

Random Cortisol 68 nmmol/L
Plasma Osmolarity 242 mOsom/kg
Urine Osmolarity 361 mOsom/kg
Spot urine sodium 39 mosm/L
TSH 2.94 mIU/L, fT4 17.1 pmol/L
FSH 6.0 IU/L
LH4.5 IU/L
Prolactin 480 mIU/L
IGF1 3.0 mmol/L

CXR: Normal appearances
CT Abdomen: Normal adrenal glands

Although Spironolactone was discontinued the sodium level remained unchanged therefore Standard Short Synacthen test with 250 microgram was performed

	ACTH ng/L	Cortisol nmol/L
Basal	9	65
30 minutes		204
60 minutes		252

Table 1. Short Synacthen test values

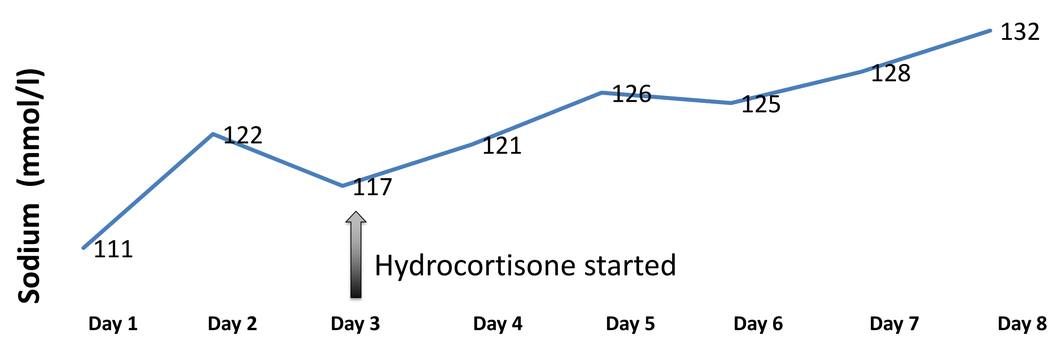

Figure 1. Sodium levels before and after hydrocortisone

Management: As he had a decreased response to Synacthen (Table 1), hydrocortisone 10mg, 5mg, 5mg was commenced which improved his confusion and sodium to 132 mmol/L (Fig 1). Spironolactone was restarted and he was discharged home on hydrocotisone . At two week follow-up ,he was well and his sodium was 136 mmol/l.

Discussion and Learning Points

1. Up to 72% of patients with chronic liver disease have adrenal insufficiency.[1,2]
2. Free cortisol is a better biomarker but is not available for standard clinical use.[1]
3. In CLD, there is reduced synthesis of cortisol bind globulin, which overestimates the incidence of AI.[2]
4. There is no consensus treatment guideline, however in critically-ill patients with AI (also known as hepatoadrenal syndrome), glucocorticoid replacement reduces mortality and vasopressor dependence.[1,3]
5. 1-year survival rates in non-critically ill patients with cirrhosis with and without AI were 69% and 95% respectively. Therefore, although there is controversy, treatment in this group should be considered. [1, 3]

References:

(1) Marik, P; Gayowski, T; Starzl, T et al. The hepatoadrenal syndrome: A common yet unrecognized clinical condition (2005). Crit Care Med; 33 (6), pp. 1254- 1259.
(2) Fede, G; Spadaro, L; Tomaselli, T et al. Adrenocortical dysfunction in liver disease: a systematic review (2012). Hepatology; 55 (4).
(3) Relative adrenal insufficiency in chronic liver disease: its prevalence and effects on long-term mortality. Aliment Pharmacol Ther. 2014 Oct ;40(7):819-26. doi: 10.1111/apt.12891. Epub 2014 Jul 30.