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Prevalence and clinical significance of adrenal insufficiency in cirrhotic patients

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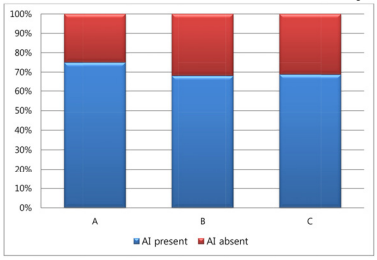
Background/aims: Adrenal insufficiency (AI) is often demonstrated in critically ill patients with liver cirrhosis. But its association between the presence of AI and the severity of the liver disease is not clear. The aim of this study is to evaluate the association with AI and severity of the liver disease and clinical significance of AI in patients with liver cirrhosis. **Methods:** We prospectively enrolled 91 patients diagnosed with liver cirrhosis. AI was as an increase in serum cortisol of ＜9 ug/dL in patients from baseline after stimulation with a basal total cortisol of ＜35 ug/dL. A short stimulation test with 250 ug of corticotrophin was performed to detect AI. **Results:** AI was present in 58 patients (63.7%). Child-Pugh (CP) score (8.4±2.0 vs. 8.6±2.3, p＝0.655), MELD score (13.4±6.6 vs. 15.1±7.5, p＝0.281) were not different between those with and without AI. Prevalence of AI in CP class A, B, and C were 75.0%, 68.1%, and 67.9% respectively (p＝0.859). There were no difference in incidence of AI between stable cirrhosis and acute decompensated patients (65.6% vs. 71.2% p＝0.583). There were no differences in overall survival between the two groups (87.9% vs. 88.4%, p＝0.843). **Conclusions:** Adrenal insufficiency is common in patients with cirrhosis. However, the severity of liver cirrhosis and acute decompensation is not associated with AI. Moreover AI did not affect the mortality. **Key words:** Liver cirrhosis; Adrenal insufficiency

Table 1 Comparison of clinical and laboratory data in cirrhotic patients with and without AI

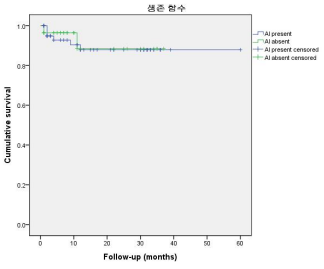
	AI absent (n＝33)	AI present (n＝58)	
Male/Female	21/12	48/10	0.041
Age (years)	54.3±9.7	56.6±11.1	0.324
Etiology			
Alcohol	21	42	0.832
Hepatitis B	8	11	
Hepatitis C	2	2	
others	2	3	
AST (IU/L)	135.8±74.1	168.1±333.4	0.755
ALT (IU/L)	72.0±140.5	74.7±136.6	0.928
Bilirubin (mg/dL)	4.0±4.7	4.6±6.5	0.634
Albumin (g/dL)	2.8±0.7	2.6±0.5	0.133
gGT (IU/L)	324.4±402.2	203.8±213.3	0.123
ALP (IU/L)	402.7±181.3	443.1±272.2	0.499
Hb (g/dL)	11.4±2.5	10.2±2.7	0.055
PT (INR)	1.5±0.4	1.6±0.6	0.466
PLT (x10^3/uL)	127.5±88.7	105.2±61.1	0.162
Na (mEq/L)	136.4±5.8	135.5±6.0	0.429
K (mEq/L)	3.7±0.6	4.0±0.7	0.084
Creatinine (mg/dL)	0.9±0.3	1.1±0.5	0.281
BMI (kg/m^2)	24.1±4.4	23.3±3.6	0.358
CP score	8.4±2.0	8.6±2.3	0.655
MELD score	13.4±6.6	15.1±7.5	0.281
ACTH (pg/mL)	37.0±17.6	51.4±24.6	0.004
Basal cortisol (ug/dL)	9.0±3.6	9.5±5.3	＜0.001
Peak cortisol (ug/dL)	20.0±4.5	14.1±4.7	＜0.001
Cortisol increment (ug/dL)	10.9±2.7	4.6±3.4	＜0.001
Hospital stay (days)	11.7±7.8	9.4±5.6	0.120

AST, Aspartate transaminase, ALT, Alanine transaminase, gGT, Gamma-glutamyltransferase, ALP, Alkaline phosphatase, Hb, Hemoglobin, PT, Prothrombin time, PLT, Platelet, CP score, Child-Pugh score, MELD score, Model for End-Stage Liver Disease score



Prevalence of AI child class A, B, and C: 75.0%, 68.1% and 67.9% respectively (P = 0.859)

Figure 1. Adrenal insufficiency according to CP class



Overall survival of AI present and AI absent were 87.9% and 88.4%, respectively (P = 0.843).

Figure 2. Cumulative survival rates according to the presence and absence of AI in cirrhotic patients.

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Predictors of multidrug-resistance pathogen in hospital acquired SBP in liver cirrhosis patients

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Background and Aims: Appropriate and timely antibiotics therapy is a key factor in successful management of hospital acquired spontaneous bacterial peritonitis (HA-SBP). We aimed to identify risk factors associated with multidrug-resistance (MDR) pathogen among patients diagnosed with HA-SBP, to guide clinical empirical antibiotics choice. **Methods:** A total of 86 patients diagnosed with HA-SBP between 2013 and 2016 were analyzed. HA-SBP was defined for those diagnosed with SBP after 48 hours from hospital admission. MDR pathogen was defined for extended-spectrum beta-lactamase-producing bacteria, Pseudomonas aeruginosa, Stenotrophomonas maltophilia, Acinetobacter baumanii, Achromobacter spp., methicillin-resistant Staphylococus aureus, and Enterococcus faecium. **Results:** Most common isolated pathogen was Enterococcus faecium (n＝13), followed by Echerichia coli (n＝9, 3 case with ESBL(+)), and Pseudomonas aeruginosa (n＝5). MDR pathogen was isolated in 27 of 86 patients (31%). When MDR pathogen was isolated, empirical antibiotics were inappropriate for 59% of the patients. CRP levels and previous admission within 30 days were independent factors associated with MRP pathogen. When stratified according to the CRP levels and previous admission history, proportion of MDR was 0%, 14%, 54 % for CRP＜3 mg/dl, 3-10 mg/dl, ≥ 10 mg/dl among patients without previous admission history, and was 22%, 42% and 58% for CRP＜3 mg/dl, 3-10 mg/dl, ≥ 10 mg/dl among patients with previous admission history, respectively (p＜0.001). **Conclusion:** CRP and previous admission history were factors associated with MDR among HA-SBP patients, indicating these factors should be considered in choosing antibiotics in HA-SBP setting. **Keyword:** Hospital acquired spontaneous bacterial peritonitis, Multidrug resistance pathogen, CRP, previous admission history