HYPONATREMIA AND MORTALITY IN PATIENTS WITH VISCERAL LEISHMANIASIS AND ACUTE KIDNEY INJURY

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Introduction and Aims

Hyponatremia is rarely described in visceral leishmaniasis and it is linked to persistent antidiuretic hormone secretion. The aim of this study is to investigate the occurrence of hyponatremia among patients with visceral leishmaniasis and acute kidney injury (AKI).

Methods

This is a retrospective study conducted with 286 consecutive patients with confirmed diagnosis of visceral leishmaniasis admitted to a tertiary hospital in Fortaleza, Ceara, Brazil, from January 2002 to December 2009. Hyponatremia was defined as serum sodium <135mEq/L, and severe hyponatremia as sodium <130mEq/L AKI was defined according to the RIFLE criteria. A comparison between patients with and without hyponatremia was done. Statistical analysis was done with the program SPSS 20.0.

Results

Patients` mean age was 37±15 years, and 77.6% were male. Hyponatremia was found in 133 cases at hospital admission (46.5%), and developed in 14 cases (4.8%) during hospital stay. Severe hyponatremia was found in 42 patients at admission (14.6%), and in 65 cases during hospital stay (22.7%). Patients with hyponatremia were older (42±16 years vs. 35±14 years, p=0.001), had a higher length of hospital stay (23±13 vs.19±18 days, p=0.002), higher levels of maximum urea (68±50 vs. 47±32mg/dL, p=0.0007), creatinine at admission (1.4±1.6 vs. 1.0±0.8mg/dL, p=0.03), maximum creatinine (2.0±2.0 vs. 1.3±1.1mg/dL, p=0.001), LDH at admission (1504±1314 vs. 1016±1019IU/L, p=0.03), and lower levels of sodium at admission (128±4.1 vs. 134±3.0mEq/L, p<0.0001), potassium (3.1±0.6 vs. 3.6±0.7mg/dL, p<0.0001) and hemoglobin (7.0±1.7 vs. 7.5±1.5g/dL, p=0.03).

Table 1. Clinical characteristics of patients admitted with visceral leishmaniasis.

	Total (n = 286)
Age (years)	37±15
Gender	
Male	222 (77.6%)
Female	64 (22.4%)
AKI	93 (32.5%)
Oliguria	19 (6.7%)
Hyponatremia (Na^+ <135 mEqL) – admission	133 (46.5%)
Hyponatremia (Na^+ <135 mEqL) – hospital stay	14 (4.8%)
Severe Hyponatremia (Na^+ <130 mEqL) – admission	42 (14.6%)
Severe Hyponatremia (Na^+ <130 mEqL) – hospital stay	65 (22.7%)

Results

AKI was observed in 93 patients (32.5%), being classified as Risk (17.2%), Injury (44.1%) and Failure (38.7%). Oliguria occurred in 19 cases (6.7%). AKI was more frequent in patients with hyponatremia (53.8% vs. 26.2%, p<0.0001). Mortality was higher in patients with hyponatremia (20% vs. 9.5%, p=0.02). Severe hyponatremia at admission was also associated with higher mortality (23.8% vs. 8.4%, p=0.004).

Table 2. Comparison of clinical data of patients admitted with visceral leishmaniasis according to the development of hyponatremia.

	Hyponatremia (n=147)	No-Hyponatremia (n= 139)	*P*
Age (years)	42±16	35±14	0.001
Lenght of Hospital Stay (days)	23±13	19±18	0.002
AKI	79 (53.8%)	36 (26.2%)	<0.0001
Death	30 (20%)	13 (9.5%)	0.02

Tablae3. Comparison of laboratory data of patients admitted with visceral leishmaniasis according to the development of hyponatremia.

	Hyponatremia (n=147)	No-Hyponatremia (n= 139)	*P*
Creatinine, admission (mg/dL)	1.4±1.6	1.0±0.8	0.03
Creatinine, maximum (mg/dL)	2.0±2.0	1.3±1.1	0.001
Urea, admission (mg/dL)	68± 50	47±32	0.0007
Sodium, admission (mEq/L)	128±4.1	134±3.0	<0.0001
Potasium, admission (mEq/L)	3.1±0.6	3.6±0.7	<0.0001
Hemoglobin (g/dL)	7.0±1.7	7.5±1.5	0.03
LDH, admission (IU/L)	1504±1314	1016±1019	0.03

Conclusions

Hyponatremia was present in a significant proportion of patients (>50%) and was associated with AKI and mortality. Hyponatremia might represent an accessible and reliable marker for an increased risk of AKI and death in visceral leishmaniasis.

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