Decreased Magnesium Levels in Chronic Liver Disease

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The objective of this study is to evaluate the Magnesium levels in patients with chronic liver disease. This study was carried out in Medical Unit of Mayo Hospital, Lahore from October 2001 to May 2002. Fifty patients admitted in medical ward due to advanced liver disease were randomly selected. The serum Magnesium estimation was done in all cases on the first admission day. Serum Magnesium levels are found to be low in patients with chronic liver disease.

Key words: Magnesium, deficiency – chronic liver disease

Magnesium plays an important role in body metabolism. It is present in all body cells and acts as a controlling agent. It is associated with oxidation of food. It is en enzyme activator for energy production and building tissue proteins. It plays an important role in muscular and neuromuscular activity. The diet rich in vegetables and unrefined grains are rich in Magnesium. The good food sources are nuts, cocoa, seafood, soybeans, green vegetables, whole grains, beans and peas. It is a major mineral requiring intake over 100mg/day[4].

It is excessively lost in alcoholics[5]. Decreased levels are seen in alcoholic hepatitis[1]. In alcoholic cirrhosis magnesium supplements with other vitamins and minerals are often required[1,3].

Material and methods

Fifty patients with advanced chronic liver disease were admitted in North Medical Ward, Mayo Hospital, Lahore. The purpose of admission was variable in different patients i.e., resistant ascites, haematemesis, malena, weakness etc. They were fully evaluated for signs of chronic liver disease and for the presence of portal hypertension. Complete clinical examination was done with especial emphasis on muscular and neuromuscular activity. The treatment record was maintained. Serum magnesium levels were estimated in each case.

Results and observations

Table 1. Sex distribution

Sex	n=50	%age
Male	32	64
Female	18	36

Table 2. Age distribution

Age in year	n=	%age
20-30	02	4
31-40	20	40
40-50	28	56

Table 3.Aetiology of chronic liver disease

	n=	%age
HBV reactive cases	10	20
Anti HCV reactive cases	30	60
Non HBV +non HCV cases	2	4
HBV + HCV cases	04	8
Other causes	04	8

Table 4. Alcoholic consumption (n=4)

	n=	%age
Alcohol intake for more than 10 years'	01	25
Alcohol intake for less than 10 years	01	25
Occasional intake of alcohol	02	50

Table 5. CNS examination (n=50)

		n=	%age
Higher mental function			
Irritability present		04	08
Insomnia		10	20
Normal		36	72
Motor system			
Bulk			
	Normal	46	92
	Decreased	04	08
Tone			
	Normal	42	84
	Increased	08	26
Jerks			
	Normal	42	84
	Increased	08	16
Power			
	Normal	48	96
	Decreased	02	04

Sensory system was intact in all fifty patients.

Table 6. Treatment history (n=50)

	n=	%age
Patients using diuretics	46	92
Patients using laxatives	12	24
No diuretics	04	08
Vitamin and mineral supplements	10	20
I/v fluid therapy	01	02

Table 7. Signs of chronic liver disease

	n=	%age
Palmer erythema	44	88
Gynecomastia	26	52
Ascites	42	84
Leuconychia	31	62
Splenomegaly	49	98
Clubbing	33	66

Table 8. Status of serum Magnesium (n=50)

	n=	%age
Decreased	38	76
Normal	12	24

Discussion

Magnesium is an important mineral for cell function. The recommended dietary allowances revised in 1980 by food and nutrition boar, National Academy of Sciences, National Research Council, USA is as follows[6].

Adult male – 350 mg/day
Adult female - 300mg/day

Magnesium deficiency is quite common. The important causes are use of loop diuretics, alcohol consumption, intravenous fluid therapy, volume expanded states, primary hyper aldosternoism, vomiting and nasogastric suction[2]. The magnesium deficiency can be either due to renal and intestinal losses or due to decreased absorption.

The patients with chronic liver disease may be having one or the other cause for magnesium deficiency, which may be attributing to their irritability, insomnia or hyper reflexia. So estimation of serum magnesium levels should be included in the work up of such cases.

References

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