Nutritional Aspects of Hepatic Coma

Pages with reference to book, From 162 To 165

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Abstract

Oral and parenteral coloric intake varied from starvation to 800 calories in 90% of 55 patients with hepatic coma. Their preexisting dietary history indicated that most of them had poor dietary intake from one month to more than one year. Fat and animal protein had been restricted drastically. Most of them had been on boiled foods. Therefore in hepatitis group the average caloric intake was 1100 and 655 in male and female, respectively, while in the cirrhotic group it was again lower than those of hepatitis group because prolonged illness affects the appetite of these patients. Serum albumin level also supports this finding. Prolonged under-nutrition might, therefore, be one of the contributing factors for encephalopathy (raised blood ammonia) of these patients rather than meat toxicity as most of them were not taking meat prior to going into coma (JPMA 33 162, 1983).

Introduction

Traditional practices in our country, regarding the management of hepatic diseases, has been the restriction of fat and animal protein intake in patients due to which they could not get adequate nutrition. Therefore, a study has been carried out to assess the effect of nutrition on patients of hepatic coma.

Methodology

Nutritional evaluation of 55 patients with hepatic coma and 68 normals of both sexes irrespective of socioeconomic groups, have been taken in the study. Patients were selected from different hospitals in Karachi while normals were selected from the relatives of these patients as well as from the staff of PMRC Research Centre, Karachi.

Daily dietary intake during coma was taken from the case records and from the attending doctors and nurses while the dietary intake prior to going into coma was taken from their close relatives. Serum protein and albumin levels were determined to assess the nutritional status of these determined to assess the nutritional status of these patients. Dietary consumption per week from both groups was taken by recall method and then calculated from the"Food composition tables" (Nasset, 1958). All calculations indicate the average daily intake of different nutrients. Previous dietary history was not available in 4 patients.

Results

Oral and parenteral caloric intake in patients is shown in Tables I and Il respectively. It varied from starvation to 800 calories in 90% of patients whereas the basal requirement for an adult is 1500-1600 calories daily (Table I).

Table I

Caloric Intake during Coma.

Caloric Intake	No. of Patients	Percentage
Starvation	4	7.3
200 - 400	32	58
500 - 800	14	25.4
9 - 1200	4	7.3
1500	1	1.8

Most of the patients were getting 5% Dextrose in water, 1000ml of which contains only 200 calories. 100-400m1 of 25% Dextrose in water was given with 5% or 10% Dextrose in water only in 14% of these patients. 100-400ml fruit juice was given through Ryles tube in 21% of the patients (Table II).

Table II

Type of Food given in Different Hospitals during Coma.

Foods	No. of Patients	Total Volume (ml)
5% D/W	27 (53%)	1000 - 3000
10% D/W	22 (43%)	1000 - 2000
25% D/W	7 (14%)	100 - 400
Fruit Juices	11 (21%)	100 - 400

Their pre-existing dietary history also indicates that most of them had poor dietary intake from one month to more than one year. Patients were divided in 2 groups, i.e., hepatitis and cirrhosis.

Table III

Nutrient Intake in Pre-coma (Hepatitis).

Sex	No.of Patients	Age	Protein (Gm)	Fat (Gm)	CHO (Gm)	Calories
		Mean (Range)	Total Mean (Range)	Mean (Range)	Mean (Range)	Mean (Range)
Male	12	39 (14-65)	35 (26-72)	21.8 (1-43)	203 (73-578)	1100 (310-2400)
Female	12	38 (25-60)	17.3 (4-62)	9.3 (1-25)	132 (61-281)	655 (306-1443)

Table III indicates that fat was drastically restricted in both sexes of patients of hepatitis. Protein intake was also low, due to which average caloric intake in males was only 1100 ranging from 310-2400. Nutrient intake in females was again half of those consumed by males.

The average caloric intake in cirrhosis was only 966 and 620 in male and female, respectively, which is lower than those with hepatitis because prolonged illness (as well as unpalatable boiled food) affects the appetite in these patients (Table IV).

Table IV

Nutrient Intake in Pre-coma (Cirrhosis).

Sex	No. of Pts.	Age	Protein(Gm)	Fat (Gm)	CHO(Gm)	Calorics
		Mean(Range)	Total Mean (Range)	Mean(Range)	Mean(Range)	Mean(Range)
Male	12	40 (25-64)	29 (7-76)	15 (1.5-58)	183 (62-325)	960 (202-1856)
Female	15	38 (12-65)	16 (2-44)	11.4 (.3-16)	128 (40-292)	620 (250-1266)

Most of the proteins and fat shown in table III and IV were of cereal and vegetable origin. Intake of animal protein was inadequate in all patients as shown in table V.

Table V

Animal Protein and Fat Intake in Pre-coma.

Foods	Hepatitis		Cirrhosis		Normal	
	Male (12)	Female (12)	Male (12)	Female (15)	Male (39)	Female(29)
Protein (Gm) Mean(Range)	12.6 (2-30)	9.8 (2-36)	10.6 (1.8-36)	15 (1.5-58)	17 (4-47)	18 (2-45)
Meat	4 (33%)	1 (8%)	4 (33%)	6 (40%)	39 (100)	29 (100%)
Milk	2 (16.6%)	5 (41.6%)	4 (33%)	9 (60)	15 (38.4%)	13 (455)
Egg	1(8%)	1 (8%)	3 (25%)	0	10 (25.6)	13 (45%)
Cooking fat	4(33%)	2(16%)	5(41%)	3(20%)	39(10%)	29(10%)

Milk consumption was better in females of all patients in comparison to meat and egg. Except few patients most of them had been on boileu foods.

Table VI

Nutrient Intake in Normal Subjects.

Sex	No. of Pts.	Age	Protein (Gm)	Fat (Gm)	CHO (Gm)	Calories
		Mean(Range)	Total Mean (Range)	Mean(Range)	Mean (Range)	Mean (Range)
Male	39	32 (16-70)	65 (35-103)	44 (12-106)	362 (160-500)	2100 (1300-3400)
Female	29	34 (15-65)	44 (21-66)	48 (14-130)	212 (107-270)	1500 (1100-2300)

Table VI shows that normal subjects of the same age, sex and socioeconomic group consumed more than double that consumed by the patients.

Discussion

This study confirms the earlier report that inadequate nutrition increases severity, and prolongs convalescence (Witts, 1947) because pre-existing nutrient intake of those patients who recovered was evaluated against those who could not recover. TableVi! shows that patients who recovered were taking over 50% of nutrients more than those who could not recover.

Table VII

Pre Existing Nutrient Intake of Coma Patients Who Recovered.

Sex	No. of Patients	Calories	Proteins	Fat	Carbohydrates
Male	9	1640	49	27	300
Female	6	1050	26	12	210

Serum albumin level (Table VII) also supports this finding.Though duration of hepatic dysfunction is responsible for low albumin level to some extent, under nutrition is also an important contributing factor for lower albumin level (White head et al., 1973).

Meat contains maximum amount of ammonia as compared to egg, milk and vegetables (Rudman et al., 1973). Most of these patients not taking meat prior to going into coma, it can be assumed that raised blood ammonia, which has been found to be responsible for encephalopathy of these cases, might be due to catabolism of body proteins which the damaged liver could not metabolise properly.

Table VIII Serum Protein and Albumin Level of Patients.

	CIRRHOSIS				HEPATITIS			
	Recovered		Not recovered		Recovered		Not Recovered	
	Male	Female	Male	Female	Male	Female	Male	Female
Total protein	8.3	6.9	6.4	5.9	6.4	5.2	5.4	5.8
Albumin	3.6	3.1	3.1	2.6	3.60	2.6	3.3	2.7

Because it has been studied if low caloric intake continues for more than few weeks, than about 3.5kg of lean body tissues would be catabolised/10 days (Elwyn, 1980) to provide basal energy requirement. Therefore, prolonged under nutrition might be one of the contributing factors for encephalopathy of these patients.

References

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