

**NUTRITIONAL CONSIDERATIONS IN
ALCOHOLIC LIVER DISEASE**

Annabelle Micallef

Alcohol is a cumulative and direct toxin which the liver is obliged to metabolize causing a variety of metabolic effects (James, 1989). Alcohol is a direct hepatic toxin, impairs glucose synthesis by the liver, accentuates glycogen breakdown and exhausts muscle glycogen. Alcohol provides empty calories, suppresses appetite and increases sensitivity to drugs. Patients with alcoholic cirrhosis appear to develop state of starvation more rapidly.

Nutrient abnormalities and malnutrition with multiple causes are common in the alcoholic. There are many reasons why alcoholics become malnourished (Morgan, 1982). The severity of malnutrition may be related to the degree of liver damage and clinical manifestations (Mendenhall et al., 1986). One of the major reasons is inadequate food intake and poor choice of meals predominating in carbohydrates, with inadequate protein and vitamin content. Malabsorption and maldigestion occur directly as a result of ethanol toxicity causing pancreatic insufficiency. Hyperexcretion and malutilization of nutrients may occur - metabolism of nutrients especially fat-soluble vitamins is severely impaired while protein synthesis and amino acid metabolism are deranged. Nutrient requirements may be increased, especially for vitamin-dependant metabolic reactions.

Nutritional therapy plays a major role in clinical management and the pharmacist must assume a major role in the team support. In order to initiate nutritional support in patients with alcoholic liver disease (ALD), a thorough nutritional assessment is advisable. Ongoing evaluation is necessary to monitor the effects of dietary intervention (Blackburn et al., 1977). The components of a complete nutritional assessment include dietary history, weight, nitrogen balance, anthropometric measurements and liver function tests.

A study, carried out in St Luke's Hospital, involved assessing the nutrition of seven patients with ALD. In the study, the patient was asked to recall everything eaten on a typical day out of hospital and on a day at hospital. The food and their quantities were listed and were analyzed with a computer by a programme called "Food Tables". The calculated dietary intakes were then compared with recommended daily intakes.

Since one of the patients was in a coma, his management plan was considered instead.

The limitations of this study were:

1. Patients were few and were not admitted to any one particular ward;
2. Such patients are underreported so that the few patients admitted with ALD as a primary condition had severe liver failure. When patient is admitted with another condition the alcohol problems tend to be overlooked;
3. The patient may have found it difficult to remember all the day's food intake;
4. The patient may have not been telling the truth for a variety of reasons, especially when asked about alcohol intake. In the study no patient admitted to have continued drinking but it is a known fact that some patients will be drinking alcohol in the ward disguised in squash and fruit juices;
5. The patient may have overestimated areas that are deficient and to underestimate those that are excessive.

Results

1. When including alcohol intake 3 out of 6 patients were not reaching the minimum daily requirements of kilocalories (kcal) - 2200 kcal. Not including alcohol, 4 out of the 6 patients were not reaching the minimum daily requirements. Thus, when assessing the patient's nutrition out of hospital it is important to note that although the number of kilocalories may be high, a good fraction may be provided by alcohol as "empty calories".
2. Intake of protein and carbohydrates in hospital improved for 6 patients (seventh patient was in a coma). Fat intake improved in 4 out of 6 patients. However, overall, total daily intake (measured in kilocalories) decreased in 4 out of 6 patients while the seventh patient, who was comatose, was receiving only 84 calories as carbohydrate.

3. Intake of fat-soluble vitamins -

- a) although vitamin A intake increased in 4 out of 6 patients all the patients were deficient. The required daily level of 1000 retinol equivalents was not being reached.
- b) intake of vitamin D was almost nil in and out of hospital.
- c) intake of vitamin E was very low in and out of hospital.
- d) vitamin K was being administered at a dose of 10mg daily in 4 out of 7 patients at hospital.

4. Intake of water-soluble vitamins -

- a) vitamin C intake was low in 2 out of the 7 patients. These two patients were of the group of three patients who were not receiving any vitamin supplementation.
- b) intake of vitamins B₁ B₂, and B₆ was high in the 4 patients receiving supplements but low in the other patients.
- c) intake of vitamin B₃ increased in 6 out of 7 patients.
- d) vitamin B₁₂ intake was low in 6 out of 7 patients.
- e) folate intake was very low. In hospital intake improved only in one patient and it was much less than the recommended requirement of 400 micrograms daily. However, there was a substantial percentage of foods where folate content was unknown.

5. Mineral intake -

- a) potassium intake decreased in 6 out of 7 patients in hospital resulting in 5 out of 7 patients receiving less than the recommended daily range of 1875-5625 mg.
- b) sodium intake was found to be within range for 6 out of the 7 patients.
- c) calcium intake was found to be very low in 6 out of 7 patients.

- d) iron intake decreased in all the 7 patients at hospital. Only one patient was getting the recommended daily intake of 10 mg.
- e) zinc intake decreased in 6 out of 7 patients in hospital. All the patients were deficient in zinc. However, there was a percentage of food in which zinc content was unknown.

Discussion

1. Nutrition must be assessed routinely in patients with ALD, in and out of hospital. This information must be analyzed together with liver function tests and other investigations which also must be considered.
2. Each diet and supplementation recommended should be tailor-made to suit the individual patient's needs.
3. In severe vitamin and mineral deficiency supplements must be given in amounts much higher than the recommended daily intake. All the vitamins and minerals must be taken into consideration. Sodium must be restricted in patients with ascites.
4. The patient should be encouraged to eat healthy food so as to provide adequate energy and decrease the necessity of giving supplementations. It must be noted that these patients are often anorexic, vomiting, withdrawing from alcohol and one has to compromise between formal dietary restrictions, yet encouraging them to eat.
5. Patients with ALD should be under the supervision of a qualified health care team including the doctor, the nurse, the pharmacist, the dietician and also the social worker to monitor the patient when he or she is discharged.
6. Out-patients should be encouraged to keep a food diary so that their progress may be monitored in terms of alcohol intake, the type of foods and quantities eaten. Also, the need for supplements and their intake may be monitored.

References

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