

Letter to the editor

Long-term nutritional assessment and quality of life in patients with cirrhosis taking a late evening snack

To the Editor: Protein-energy malnutrition (PEM) frequently occurs in patients with cirrhosis.^{1,2} Recently, it has been reported that a late evening snack (LES) improves PEM,¹⁻³ but there have been no studies on its long-term efficacy. We therefore studied the long-term efficacy of a LES in cirrhotic patients.

Two women with type C cirrhosis were studied, with approval by our ethics committee, after both had given their full written informed consent. Patient 1 was aged 76 years (140 cm, 57 kg) and patient 2 was aged 70 years (151 cm, 51 kg); both had liver function categorized as Child A.

The LES, which consisted of either a regular meal (200 kcal) or one pack (50 g; 210 kcal) of an enteral nutritional product enriched with branched-chain amino acids (BCAA; enteral nutrition product, Aminoleban EN; Otsuka Pharmaceutical, Tokyo, Japan), was given for 24 months to both patients. Patient 1 took the regular meal LES for the first 3 months but changed to the enteral nutrition product LES thereafter due to poor compliance. Her compliance with the enteral nutrition product was good. Patient 2 took the enteral nutrition product LES with good compliance.

Non-protein respiratory quotient and energy substrate oxidation rate were measured, using an indirect calorimeter (Delta-track II; Datex Instrumentation, Helsinki, Finland), for the first 9 months in patient 1 and for the first 12 months in patient 2.

Clinical symptoms and quality of life (QOL) were evaluated for 24 months in both patients.

In patient 1, although energy expenditure had deteriorated somewhat after 3 months of the regular meal LES, it had greatly improved at 9 months after she had changed to the enteral nutrition product LES. In patient 2, energy expenditure gradually improved until 12 months with the enteral nutrition product LES (Fig. 1a).

The frequency of muscle cramps decreased in both patients and the cramps disappeared after 16 and 18 months, respectively. Insomnia and early morning fatigue also improved in patient 2.

According to subscale analysis of the SF-36, for the evaluation of QOL,⁴ the mental component summary (MCS) score gradually improved until 24 months in both patients, but there were no changes in the physical component summary (PCS) score (Fig. 1b).

The alleviation of the muscle cramps may have been an effect on the skeletal muscle conferred by improved protein synthesis and reduced protein catabolism related to the alleviation of nocturnal starvation by the LES.⁵

The analysis of MCS and PCS (each of which consists of four subscales) can comprehensively evaluate mental and physical aspects of QOL in a quantitative fashion. An average healthy individual has a summary score of 50,⁴ and both patients showed an improvement in the mental aspects of QOL, which was probably the effect of the LES.

In conclusion, long-term administration of a LES supplemented with BCAA to cirrhotic patients improved not only their energy expenditure but also their clinical symptoms and mental

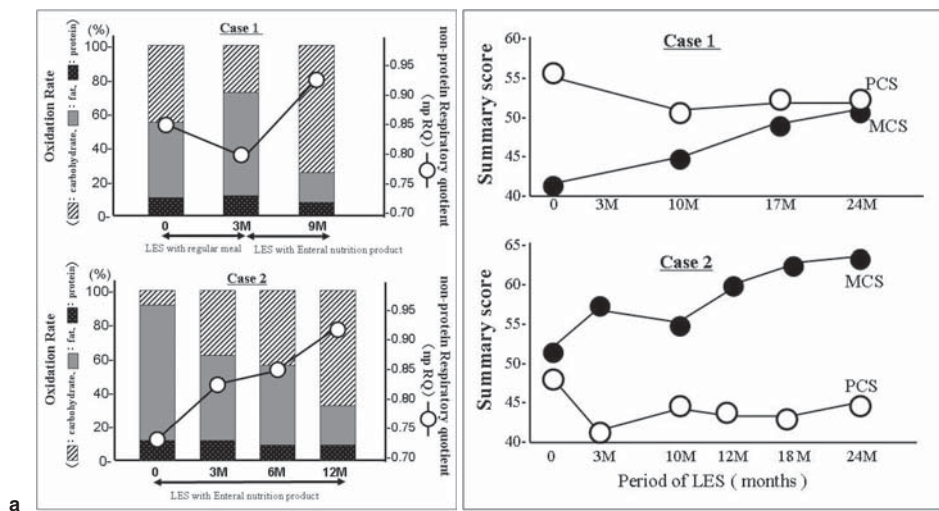


Fig. 1. a Changes in the energy expenditure of the two patients after late evening snack (LES) and b changes in summary scores after LES in the two patients. M, Months; npRQ, non-protein respiratory quotient. Open circles in b, physical component summary (PCS); closed circles in b, mental component summary (MCS)

aspects of QOL. The LES supplemented with BCAA was superior to the regular meal LES in terms of both efficacy and compliance.

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References

1. Tajika M, Kato M, Mohri H, Miwa Y, Kato T, Ohnishi H, et al. Prognostic value of energy metabolism in patients with liver cirrhosis. *Nutrition* 2002;18:229–34.
2. Miwa Y, Shiraki M, Kato M, Mohri N, Murakami T, Kato H, et al. Improvement of fuel metabolism by nocturnal energy supplementation in patients with liver cirrhosis. *Hepato Res* 2000;18:184–9.
3. Swart GR, Zilikens MC, van Vuure JK, van den Berg JWO. Effect of a late evening meal on nitrogen balance in patients with cirrhosis of the liver. *BMJ* 1989;299:1202–3.
4. Fukuhara S, Suzukamo Y, Bito S. Manual of SF-36 Japanese version 1.2. Tokyo: Public Health Research Foundation, 2001.
5. Sako K, Imamura Y, Nishimata H, Tahara K, Kubozono O, Tsubouchi H. Branched-chain amino acids supplements in the late evening decrease the frequency of muscle cramps with advanced hepatic cirrhosis. *Hepato Res* 2003;26:327–9.

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