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Original article

Short term nasogastric versus oral feeding in hospitalised patients with advanced cirrhosis: A randomised trial

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SUMMARY

Background & aims: The benefit of short term nasogastric (NG) feeding over oral supplementation in advanced cirrhosis remains uncertain. A randomized controlled trial (RCT) was designed to ascertain this information.

Methods: A randomized trial of NG versus oral feeding was conducted in patients with decompensated liver cirrhosis. Nutritional parameters and Child-Pugh score changes at 2 weeks, with follow up measurements in 6 weeks, were assessed.

Results: 52 patients (mean age 58.9 years ± 12.2 years, 38.5% females) with similar baseline parameters were randomized to NG ($n = 28$) or oral feeding ($n = 24$) between August 2007 and May 2010. At 2 weeks, there was a higher caloric intake in the NG group (1721 ± 599 kCal vs 1346 ± 448 kCal, $p = 0.015$), but no significant improvement in anthropometry (MAMC mean difference 0.35 ± 1.82 NG vs −0.60 ± 1.88 oral), biochemistry (serum transferrin mean difference 0.81 ± 3.55 NG vs 0.04 ± 0.30 oral) or CP scores (mean difference −0.68 ± 1.14 NG vs −0.43 ± 1.29 oral), and this was maintained at 6 weeks' follow up. 12/28 (42.9%) patients had poor tolerance (VAS score < 50) to the NG tube placement. Nine patients (four NG, five oral) suffered mortality prior to the 6 weeks follow up.

Conclusion: Short term NG feeding is poorly tolerated and confers little benefit over oral feeding in hospitalized patients with advanced cirrhosis.

1. Introduction

Decompensated liver cirrhosis is a significant burden to healthcare resources and represents one of the commonest causes of hospital admissions to gastroenterology units worldwide.[1,2] Hospitalization rates for liver cirrhosis have not only increased over time, but so has its' associated morbidity and mortality.[2,3] Malnutrition, a well recognized association with hospitalized cirrhotics,[4,5] has been reported to be a significant contributing factor towards the poor prognosis of the disease.[6] Causes of malnutrition in liver cirrhosis are multi-factorial, but generally include a reduction in oral intake, increased protein catabolism and insufficient synthesis, and malabsorption associated with portal hypertension.[4]

As most patients with decompensated cirrhosis do not satisfy their nutritional requirements,[7] intervention in the form of enteral supplementation is now recommended as the standard of care.[8,9] Long term (up to 12 months) oral feeding in patients with cirrhosis has been shown to result in an increased caloric intake,[10] improvements in liver function[11] and even a reduction in the incidence of hepatic encephalopathy.[12] Although oral feeding is the preferred route of enteral supplementation, many patients with advanced cirrhosis, particularly those who have been hospitalised, are known to have an insufficient dietary intake.[13]

In cirrhotic patients with an inadequate oral intake, it is suggested that tube feeding, usually with a nasogastric (NG) tube, should be used to deliver enteral nutrition.[9] A single centre study previously compared in-patient enteral feeding via an NG tube to oral supplementation in 35 patients with advanced cirrhosis over a 6 week period. 6 weeks of NG feeding in patients with cirrhosis, in

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contrast to orally fed patients, resulted in an increase in serum albumin, Child-Pugh score and in-hospital survival.[14] Although this study demonstrated a clear advantage of NG over oral feeding, the clinical relevance of this finding is somewhat questionable. Most patients who get admitted for decompensated cirrhosis do not stay in hospital for more than a month. Furthermore, it is uncertain if patients with cirrhosis are willing to continue with NG feeding in the community for prolonged periods of time. From a practical perspective, it is of greater relevance to determine if short-term NG feeding, i.e. while the patient is still in hospital, has any advantages over oral supplementation. We designed a randomized clinical trial in an attempt to answer this query.

2. Methods

2.1. Study design

A prospective, randomized study was conducted in 2 large teaching institutions. Local institutional ethics committee approval was obtained before commencement of the study and the study was registered with Clinical Trials. Gov, an international registry of clinical trials. Randomisation was performed according to a computer-generated numbering system. Sequential numbers with random generation of either NG feeding or oral feeding, done by an independent investigator (SR) blinded to the patients, were sealed in an envelope. Following informed consent, consecutive patients recruited for the study would then be allocated to either NG feeding group or the oral feeding group after removing the sealed envelope. The process of recruitment and allocation were conducted by two of the main principal investigators, MLST and HR.

The period of nutritional intervention was decided for two weeks, as this was the maximum practical period most patients could remain as in-patients and the minimum period for any nutritional benefit. Patients would subsequently be assessed after another four weeks (i.e. week six) to determine any lasting effects from the initial intervention. Nutritional and clinical parameters (see below) were obtained at baseline (day 0), two weeks after and at week six – see study protocol flow chart (Fig. 1). The total calorie intake of patients in each group was assessed during the period of nutritional intervention. The primary outcome for this study was to compare the mean changes of nutritional parameters at 2 and 6 weeks between the NG and orally fed groups of patients. A secondary outcome was to assess for changes in liver function and subsequent complication rates between the 2 groups.

2.2. Patients

Patients were recruited from the adult gastroenterology wards in both institutions between August 2007 and May 2010. All patients with decompensated liver cirrhosis admitted to the ward for any reason during the period of study were screened for eligibility. The diagnosis of cirrhosis was based on a combination of clinical features, blood profile and radiological imaging results. Clinical features were those of portal hypertension, particularly abdominal ascites and/or gastro-esophageal varices. Blood profile included evidence of thrombocythemia and/or coagulopathy.

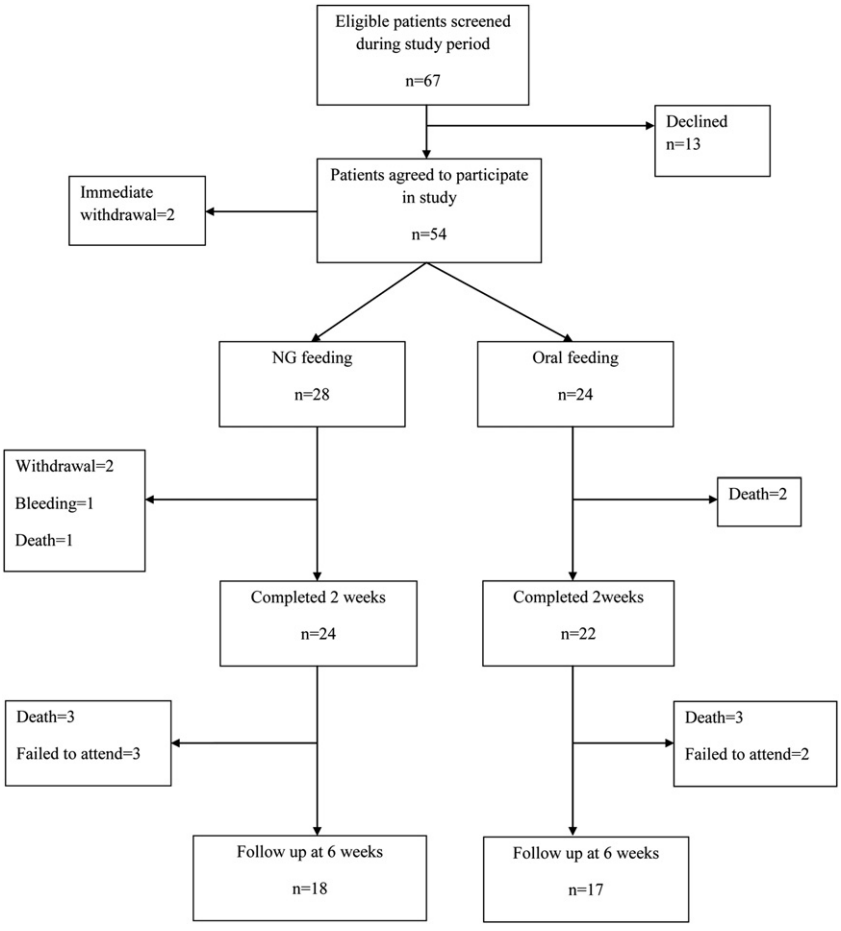

Fig. 1. Flow of patients in the study.