

## Issue 76

### In a nutshell

Glutamine has been shown in a number of studies to offer various benefits in relation to epithelial integrity and immune function.

However, in these four studies of glutamine supplementation in bone marrow transplantation subjects, results were not consistently positive.

## Glutamine in nutrition support

Arbor Clinical Nutrition Updates 1999 (Nov.);76:1-2  
ISSN 1446-5450

### ARCHIVES

The full list of archived issues can be found at [www.arborcom.com/archives/](http://www.arborcom.com/archives/). Some issues of our translated language editions are also available in archive, for Spanish, Portuguese and French.

### COPYRIGHT, disclaimer and terms of use

This copy from our archives is for your private use only, and is NOT to be forwarded to any other party. Your use of these Updates constitutes your agreement to our disclaimer and terms of use: see section at the end of this publication.

## NUTRITION RESEARCH REVIEW

### Study one: overall impact

No overall benefit from giving glutamine to bone marrow transplantation (BMT) patients could be proven in a recently published American study.

**Subjects:** 66 patients with both blood and solid tissue malignancy requiring BMT.

**Method:** A double-blind study in which patients were randomised to initially receive either glutamine (10g tds) or glycine as control, orally. Once TPN was initiated, the two groups were switched to glutamine (0.57g/kg) or iso-caloric/nitrogenous standard TPN solution.

**Results:** There were no significant differences between groups in mortality, hospital stay, number of days of TPN required, neutrophil recovery, incidence of septicaemia or other sepsis, mucositis, or diarrhea, although there were non-significant trends suggesting a possible reduction in need for TPN improved and in long-term survival in the glutamine group.

Ref: Schloerb PR, Skikne BS. Oral and parenteral glutamine in bone marrow transplantation: a randomized, double-blind study. *J Parenter Enteral Nutr* 1999;23:117-22

### Study two: GIT mucosal benefit

Another recent American study found mixed results from giving glutamine to lessen the problem of stomatitis as a side effect of BMT.

**Subjects:** 193 BMT patients.

**Method:** Randomized, double-blind, placebo-controlled intervention trial in which patients were given oral glutamine (4.0 g amino acid/sq m in 4 divided doses). The solution was swished and then swallowed.

**Results:** There was a different impact in autologous compared to allogeneic transplantation. In autologous transplant patients, there was significantly less mouth pain, both as self reported and as measured by the amount of opiate analgesia used (glutamine: 5.0+/- 6.2 days vs placebo: 10.3+/-9.8 days of use, p= 0.005).

In matched sibling transplants, there was no significant difference in self-report of mouth pain, and an increased rather than decreased use of opiates for the active vs placebo patients (glutamine: 23.2+/-5.7 days vs placebo: 16.3+/-8.3 days, p = 0.002).

There were no significant differences in other measures of outcome, such as: TPN use, rate of relapse or progression of malignancy, parenteral antibiotic use, or days of hospitalization in either autologous or allogeneic recipients.

Ref: Anderson PM et al. Effect of low-dose oral glutamine on painful stomatitis during bone marrow transplantation. *Bone Marrow Transplant* 1998;22:339-44

### Study three: Hepatic function

A Welsh study found that hepatic function is improved when BMT patients are given glutamine.

**Subjects:** 34 BMT patients

**Method:** Randomised to receive either glyci-L-glutamine or isonitrogenous mixed non-essential amino acids.

**Results:** There was a significantly greater preservation of protein C levels (days 4 and 7,  $p < 0.05$ ) and albumin (days 0 and 4,  $p < 0.02$ ) in the glutamine treated group.

There was no impact on thrombin and plasmin generation levels.

Ref: Brown SA et al. Parenteral glutamine protects hepatic function during bone marrow transplantation. Bone Marrow Transplant 1998;22:281-4

### Study four: Lymphocyte recovery

BMT patients given parenteral glutamine had significantly higher lymphocyte recovery than controls given standard parenteral support, according to a recent study from Atlanta.

In the first fortnight after discharge from hospital, flow cytometry studies showed a higher total lymphocyte count ( $p = 0.01$ ), and total T-lymphocyte count ( $p = 0.03$ ) in the active vs control patients, as well as higher CD4+ and CD8+ T-lymphocyte counts in peripheral blood.

Ref: Ziegler TR et al. Effects of glutamine supplementation on circulating lymphocytes after bone marrow transplantation: a pilot study. Am J Med Sci 1998;315:4-10

## Comments

The story of glutamine as an important component in nutrient support is slowly unfolding, but these are still early days. A flurry of studies over recent times has shown various benefits related to epithelial integrity and immune function, amongst other things, and in various patient groups who are at high nutritional and/or immune-compromise risk.

But what we are seeing are more 'trends' rather than a single, consistent picture.

BMT patients are certainly good examples of immunological compromise, and the four studies above are typical of what has been published. They tended to find some benefit in some parameters, for example in stomatitis and hepatic function.

But there was really no consistent benefit demonstrated, and indeed in one sub-group there was a negative impact on oral pain. Study one, which looked at the broadest measures of overall outcome, found no significant benefit, only some 'suggestion'. A similar lack of broad-based benefit was reported in study two.

The following two issues (#77 and #78) consider studies in which glutamine was given in chemotherapy and in acutely and seriously ill patients.

## Disclaimer, copyright and terms of use

Your use of these Updates constitutes your agreement to our disclaimer and terms of use which can be found on our web site at: <http://arborcom.com/disclaim3.htm>. You can also obtain the disclaimer and terms of use by emailing us at: [upD@arborcom.com](mailto:upD@arborcom.com).

© Copyright Arbor Communications PTL 1999. All rights reserved. This publication may NOT be forwarded onto others without our written permission.

If you want to receive the Clinical Nutrition Updates on an ongoing basis, please send us a request email to [upD@arborcom.com](mailto:upD@arborcom.com). This is a FREE service to health professionals and students. Include details of your name, email address, which country you live in, institution you are associated with (if relevant) and professional background. The Updates are available in English, Spanish, Portuguese, Italian, French, Korean and Russian