

## **Summary**

**Background** Intensive chemotherapy and radiotherapy preceding bone marrow transplantation in haematologic malignancies, as well as the transplantation itself, usually leads to functional and metabolic disturbances, with a risk of malnutrition. Therefore, supportive care, including metabolic and nutritional support, is indicated.

Glutamine (gln) is essential for malnourished patients in the critical state. That opens a question about the role of gln in patients (pts) undergoing stem cells transplantation (SCT), which is typically complicated by immunosuppression, damaged intestinal mucosa and hypermetabolism. The gln supplementation during SCT in the Czech Republic is rarely used, because of controversial data about its efficiency. Standards of nutritional support in SCT have recently been questioned due to advent of newer techniques of supportive care that shorten the critical post – transplant period.

**Aim** Our aim was to evaluate the possible significance of prophylactic parenteral nutrition (PN) in SCT and the suggested advantage of gln supplementation.

**Patients and methods** Since 2000 we have conducted randomized, double blind comparative study of prophylactic PN with or without gln in autologous SCT for hematologic malignancies. 44 adult pts (15 with non – Hodgkin's lymphoma, 14 with multiple myeloma, 8 with Hodgkin's disease and 7 with acute leukemia) were randomized to receive either prophylactic PN starting with the cytoreductive regimen (P group, n=21), or PN given ad hoc (C group, n=23). In each group, they were further randomized to receive standard PN (B group, n=20), or PN with 0.5g glutamine/kg as L-Ala-L-Gln (A group, n=24). The groups (groups C vs. P and A vs. B) were evaluated during hospital stay and during follow-up with median 38 months.

**Statistical analysis** The results were expressed as medians, quartils and proportions. Statistical significance was tested using Mann Whitney, Wilcoxon and Fisher exact tests, as appropriate. For survival analysis, Kaplan-Meier method was used and survival differences were analyzed with log-rank test.

**Results Hospital stay:** The higher cost in the P group was not compensated for by better outcome. There was no significant difference in the length of hospital stay, time to leucocyte engraftment, G-CSF consumption, or in the nutritional markers in the P and C groups. On the contrary, in the P group there were significantly ( $p < 0.05$ ) higher ATB consumption (16 vs.

8.5 ATB days in C group) and higher decrease of prealbumin in the hospital stay. Gln – supplemented patients (in both C and P groups) did not better in any of the parameters tested.

*Follow –up:* The final outcome rates in C/P/A/B groups, respectively /overall survival (OS) 65/81/63/85%, event-free survival (EFS) 45/53/33/65% and disease-free survival (DFS) 56/50/35/77%/, were not significantly different, apart from A<B in DFS rate (p=0.03, Fisher’s exact test). Also in survival analysis (logrank test), no significant difference between groups C and P was found but generally worse parameters were observed for A vs B group: for DFS (p=0.04) and EFS (p=0.01). the difference was significant and for OS (p=0.09) it was borderline.

**Conclusions** In three years’ follow up, no clinically useful benefit of prophylactic PN in autologous transplant patients was proven. Also, glutamine supplementation was not helpful, and was even connected with apparently worse long-term outcome.

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