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Quantitative calprotectin: a new potentially valuable biomarker of gastrointestinal graft-versus-host disease after allogeneic hematopoietic stem cell transplantation

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Abstract

Background. The gastrointestinal form of graft-versus-host disease (GI-GVHD) is one of the most dangerous complications after allogeneic hematopoietic stem cell transplantation (HSCT). Its diagnosis is usually confirmed by biopsy, nevertheless it is very veritable to find biomarkers of early damage of gastrointestinal mucosa at levels which could also reflect treatment efficacy.

Objective. The aim of our study was to determine the value of fecal calprotectin levels for diagnostics of GI-GVHD.

Material and methods. Fecal calprotectin levels were studied in 27 patients after allogeneic HSCT with acute enterocolitis. All patients underwent a colonoscopy with biopsy. The diagnosis of GI-GVHD was confirmed histologically in 11 patients. The fecal calprotectin level was noted in the first 48 hours after the beginning of diarrhea and then monitored weekly.

Results: We observed significantly higher ($p < 0.005$) levels of calprotectin in patients with GI-GVHD ($n = 24$, mean: 5468 ng/mL, range 224–10000 ng/mL), compared with patients without GI-GVHD ($n = 24$, undetectable level, range 0–50 ng/mL). This also correlates with the results of histopathological study and was more specific than macroscopic results. In patients with a positive response to immunosuppressive treatment a statistically significant decrease of the calprotectin level was observed during first two weeks of therapy.

Conclusion: We propose that fecal calprotectin levels are a potentially valuable marker for rapid diagnostic of GI-GVHD with high sensitivity and specificity. This could be useful for immunosuppressive treatment efficacy monitoring.

Keywords: allogeneic HSCT, graft-versus-host-disease, calprotectin

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