Glutamine Supplementation As a Nutritional Support for Severe Acute Pancreatitis: A Systematic Review of Randomized Controlled Trials

Somayeh Sadat Rajaei[1*], Vajiheh Arabshahi[2], Gholamreza Askari[2], Omid Sadeghi[3]

[1]Isfahan University of Medical Sciences, Isfahan, Iran
[2]Nutrition and Food Security Research Center, Isfahan University of Medical Sciences, Isfahan, Iran
[3]Department of Community Nutrition, School of Nutrition and Food Science, Isfahan University of Medical Sciences, Isfahan, Iran

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***Corresponding Author:**
Isfahan University of Medical Sciences, Isfahan, Iran

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ABSTRACT

Introduction: Severe acute pancreatitis (SAP) is an essential gastrointestinal disease with or without organic failure. Hence, fluid resuscitation and adequate nutritional support as early as 48 hours after admission is necessary. According to the anti-inflammatory potential of glutamine, as the most abundant amino acid in the human body, we conducted this systematic review to evaluate the effect of glutamine supplementation o SAP.

Search Strategy: The systematic searches on four online databases (PubMed, Web of Science, Scopus, and Google Scholar) were conducted for relevant studies published up to May 2024. Randomized controlled trials (RCTs), which evaluated the effects of glutamine supplements on SAP, were included. Non-RCTs, animal experiments, cancer, and all non-SAP pancreatic disorders were excluded. The quality of studies was assessed using the Newcastle-Ottawa scale.

Results: A total of 36 human RCTs with 1,778 SAP patients were retrieved. According to these studies, glutamine supplementation significantly reduced the APACHE II score in nine trials, but not in three trials. ICU stay and total length of hospital stay were significantly shortened in eight studies, while nine studies found no significant effects. Glutamine supplementation was more effective for abdominal infection (all five studies) and bloating (all six studies) treatment than drug therapy alone. Liver and kidney function indicators (AST, ALT, total bilirubin, and serum creatinine) were significantly improved in all studies that evaluated these outcomes. The inflammatory biomarkers such as C-reactive protein, interleukin-6, interleukin-8, and tumor necrosis factor-α were significantly decreased in 7, 11, 6, and 10 studies, respectively, and four studies found no effects. IgG as an immune indicator increased in all four studies, but IgA was elevated in only two. The other two studies had no significant effect on IgA levels.

Conclusion and Discussion: Glutamine supplementation can be recommended as an adequate nutritional support for SAP treatment. However, further dose-response meta-analysis is proposed to confirm and complete these findings.

Keywords: Glutamine, Pancreatitis, Therapy

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