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Effect of Plasma Therapy on Wound Characteristics and Inflammatory Markers in Patients with Chronic Wounds: An Interventional Study

Zeinab Siami[1], Fatemeh Bahramnezhad[2*]

[1]Department of Infectious Diseases, School of Medicine, Ziaeian Hospital, Tehran University of Medical Sciences, Tehran, Iran
[2]Nursing and Midwifery Care Research Center, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran

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ABSTRACT

Introduction: Chronic wounds in patients with diabetes and vascular diseases pose significant therapeutic challenges due to delayed healing and a high risk of complications. Plasma therapy has emerged as a promising adjunctive treatment to enhance wound repair and reduce infection rates. This study aimed to assess the effects of plasma therapy on wound characteristics, inflammatory markers, and patient-reported symptoms. Outcomes were evaluated by comparing measurements taken before and after the intervention.

Materials and Methods: This before-and-after study included 55 patients with chronic wounds. Data on demographics, comorbidities, wound characteristics, the number of plasma therapy and debridement sessions, inflammatory markers (ESR and CRP), and patient-reported symptoms were collected before and after the intervention. Descriptive statistics were used, and pre- and post-treatment outcomes were compared using paired t-tests or Wilcoxon tests according to data distribution.

Results and Discussion: After plasma therapy, the mean wound size decreased from 12.4 ± 8.7 to 6.8 ± 5.3 cm², and wound depth was reduced from 5.2 ± 3.1 to 2.7 ± 1.9 mm. The proportion of infected wounds declined from 33% to 11%, and the incidence of pruritus decreased from 36% to 14%. Inflammatory markers (ESR and CRP) showed notable reductions, and patients reported fewer adverse symptoms after treatment. These findings indicate significant improvement in wound characteristics and treatment-related outcomes following plasma therapy.

Conclusion: Plasma therapy appears to be a safe and effective adjunctive treatment for chronic wounds, leading to reductions in wound size, depth, infection, inflammation, and patient discomfort. Further controlled studies with larger populations are recommended to confirm its efficacy and optimize treatment protocols.

Keywords: Before-and-after, Chronic wounds, Inflammatory markers, Plasma therapy, Wound healing

Corresponding Author: Fatemeh Bahramnezhad
Nursing and Midwifery Care Research Center, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran;
E-mail: Bahramnezhad.f@gmail.com