

ABSTRACT

Effect of Albumin Infusion on Changes of Serum Albumin Levels, Proinflammation Cytokines (Tnf α , Il1, Il6), Crp, Mmp8 And Expression of Wound Tissues Egfr, Erk1, Erk2, Tgf β , Collagen, Mmp8 on the Acceleration of Wound Healing

(Experimental Study on Sprague Dawley Rats)

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This study aims to explain the mechanism and to prove the role of albumin in the process of wound healing with the administering of preoperative or postoperative albumin infusion or normal protein diet during the state of hypoalbuminemia.

Twenty five Sprague Dawley Rats of known age and weight after being kept in standardized environment and feeding for 7 days, were divided into two groups. In the first group (A) 5 Rats were given normal protein casein 20% and served as control. The other group were fed with casein 2% for 14 days to induce the state of hypoalbuminemia, and then were divided into four groups: group (B) to be given preoperative albumin infusion, group (C) to be given preoperative and postoperative diet casein 20%, group (D) with postoperative albumin infusion and group (E) to continue being fed with casein 2%.

Four incisions 2cm each were made on the back of the rat, to expose the muscles and or fasciae. The wound were then kept in sterile dressing. Scheduled evaluation were made on day 1, 3, 5, 7. Elisa method was used to measure plasma TNF α , IL1, IL6, CRP and MMP8. Immunohistochemistry was used to measure wound tissue EGFR, ERK1, ERK2, TGF β , Collagen and MMP8. Statistic analysis used ANOVA and MANOVA methods accordingly.

Significant decrease of TNF α , IL-1, CRP were demonstrated as the result of the administration of albumin infusion or feeding with casein 20% ($p < 0.05$). detailed microscopy analyses on the wound tissue healing process of all groups show the significant effect of albumin infusion and casein 20% feeding on the increase of EGFR, ERK1, ERK2, TGF β , and Collagen ($p < 0.05$) and the decrease of MMP8 expressions ($p < 0.05$) when compared to the hypoalbumin group. This may indicate an increase in the signaling activity of transduction and transcription of NF κ B.

Conclusion: the administration of albumin infusion and normal protein diet are important factors to accelerate wound healing process by correcting hypoalbuminemic state show by the positive changes in the abovementioned indicators.

Keyword: hypoalbuminemia, albumin infusion, nutrition, wound healing