The Use of a Rabbit Model to Evaluate the Influence of Age on Excision Wound Healing

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Abstract : Background: The wound healing involves a highly coordinated cascade of cellular and immunological response over a period including coagulation, inflammation, granulation tissue formation, epithelialization, collagen synthesis and tissue remodeling. Wounds in aged heal more slowly than those in younger, mainly because of comorbidities that occur as one age. The present study is about the influence of age on wound healing. $1 \times 1 cm^2$ (100 mm) wounds were created on the back of the animal. The animals were divided into two groups; one group had animals in the age group of 3-9 months while another group had animals in the age group of 15-21 months. Materials and Methods: 24 clinically healthy rabbits in the age group of 3-21 months were used as experimental animals and divided into two groups viz A and B. All experimental parameters, i.e., Excision wound model, Measurement of wound area, Protein extraction and estimation, Protein extraction and estimation and DNA extraction and estimation were done by standard methods. Results: The parameters studied were wound contraction, hydroxyproline, glucosamine, protein, and DNA. A significant increase ($p < 0.005$) in the hydroxyproline, glucosamine, protein and DNA and a significant decrease in wound area ($p < 0.005$) was observed in the age group of 3-9 months when compared to animals of an age group of 15-21 months. Wound contraction together with hydroxyproline, glucosamine, protein and DNA estimations suggest that advanced age results in retarded wound healing. Conclusion: The decrease wound contraction and accumulation of hydroxyproline, glucosamine, protein and DNA in group B animals may be associated with the reduction or delay in growth factors because of the advancing age.

Keywords : age, wound healing, excision wound, hydroxyproline, glucosamine