EVALUATION OF THE EFFECTS OF SPERMI DINE ON BURN WOUND PROGRESSION IN RATS. (104)

*Tuca A.1, Parvizi D.1, Wurzer P.1,2, Schintler M.1, Prandl E.1, Stacher-Priehse E.3, Smolle C.1, Madeo F.4, Eisenberg T.4, Harger A.4, Trop M.5, Kamolz L.- P.1

1 Division of Plastic, Aesthetic and Reconstructive Surgery, Medical University of Graz, Department of Surgery, Graz, Austria
2 University of Texas Medical Branch and Shriners Hospitals for Children, Department of Surgery, Galveston, United States
3 Institute of Pathology, Medical University of Graz, Graz, Austria
4 Institute of Molecular Biosciences, University of Graz, Graz, Austria
5 Medical University of Graz, Department of Paediatrics and Adolescence Medicine, Graz, Austria

Introduction: Spermidine is a naturally occurring polyamine involved in multiple biological processes, including DNA metabolism, autophagy and aging. Spermidine induces autophagy in cultured yeast and mammalian cells, as well as in nematodes and flies. Genetic inactivation of genes essential for autophagy abolishes the life span-prolonging effect. These findings complement expanding evidence that autophagy mediates cytoprotection and can confer longevity when induced at the whole-organism level. In this experimental study, we hypothesized that autophagy, induced by spermidine affects burn wound progression positively.

Material and Methods: Healthy adult male Sprague Dawley rats (300-350 g, n=50) were divided into five groups. A well described and reliable “scald burn model with dressing protector” was employed to evaluate the roles of autophagy and apoptosis in burn wound. In one group spermidine was injected intraperitoneally after burn injury. Furthermore one group was treated with a silicone foam dressing, where spermidine was injected, over the burnt area. Animals in the control group were treated with saline solution. The animals were euthanized five days after burn injury and burn depth was assessed by haematoxylin and eosin staining.

Results: In both treated groups (intraperitoneally and topical) less swelling collagen and oedema in the deep dermal and muscular layer was found than in the control group.

Conclusion: Histological results of this study confirm that spermidine treatment has a benefit for in burn wound progression and survival of the stasis zone in an acute burn injury.