Efficacy of a 0.01% silver nitrate solution used for wound irrigation

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Background:

•Normal Saline (NS) is commonly used for irrigation of chronic wounds.

•Other irrigation solutions are available, but there is limited evidence supporting their clinical effectiveness.¹

•We sought to investigate the efficacy of a topical wound irrigation product containing 0.01% silver nitrate solution (SNS).²

Methods:

•The study methodology was approved by the hospital's IRB.

•Four adult patients who had venous leg ulcers (VLU) with slough tissue present and who made twice weekly visits to our outpatient wound center (OWC) were enrolled.

•3 females, 1 male

•Average patient age was 59 years old (range 45-79 years old)

•All ulcers were chronic (average duration of 41 months' presence (range 9-97 months)

•At each OWC visit, the VLU was irrigated with 35-50 cc of 0.01% SNS using a 35 cc syringe; then a piece of 0.01% SNS-soaked gauze was applied to the wound for ten minutes.

•Traditional wound care products (topical antimicrobial agents and compression therapy) were then applied to the VLU as per the treating physician's order.

•Outcome measures included total wound area measurements and the amounts of slough and/or granulation tissue present.

•Patients and OWC staff were also asked to note whether pain or other adverse events occurred.



Prior to treatment with 0.01% SNS, this VLU had 25% slough tissue and 75% granulation tissue present. Wound (which had been present for 97 months) area measured 20.1 cm².

After four applications of 0.01% SNS to the wound, the VLU had no visible slough tissue present. The wound was assessed as having 75% granulation tissue and 25% epithelial tissue present. Wound area was 14.9 cm² (a 25.9% decrease in wound area).

Results:

•Three of the four patients experienced decreases in total wound area.

•Wound areas decreased by an average of 47% (range 25.9%-88.5%)

•All patients enrolled were found to have a subjective increase in granulation tissue and a reduction in the amount of slough tissue in their wounds.

•The reduction in slough tissue translated into a decreased need for sharp debridements.

•Subjective reductions in wound odor and periwound erythema were also noted.

•Wound irrigation with 0.01% SNS was associated with only mild side effects such as pruritis and a mild-tomoderate burning sensation.

•Argyria was not reported to occur.

Discussion:

•The mechanical debridement effect of the 0.01% SNSsoaked gauze on the wounds may have contributed to the reduction in slough tissue.

•Several patients reported that the burning sensation associated with the use of 0.01% SNS was minimal compared with the sensations they experienced after use of ¹/₄-strength Dakins' solution for wound irrigation.

Conclusion:

•0.01% SNS appears to be a reasonable alternative to NS as a wound irrigation agent.

•The use of 0.01% SNS is associated with a reduction in wound slough tissue and a decreased need for sharp debridement.

•Adverse events are minimal after use of 0.01% SNS for irrigation of sloughy VLU's.

 ¹ Horrocks A. Prontosan wound irrigation and gel: management of chronic wounds. British Journal of Nursing 2006;15(22):1222-1228.
² SilverStream® by EnzySurge, Ltd

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