



Research Paper

Effect of Silver Sulfadiazine Cream in the Treatment of Superficial Partial Thickness Burn in Children.

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ABSTRACT

Introduction: Burns have aroused extensive public health concern especially among children. The aim of treatment in superficial burn injury is to control infection and promote early healing with good aesthetic results. To achieve these goals, a wide variety of wound care products are currently available. But the best method of treatment is yet to be determined.

Objective: To assess the efficacy of silver sulfadiazine cream in burn wound management.

Methods: Prospective interventional study was carried out at the Department of Burn and Reconstructive Surgery, faculty of Paediatric Surgery, Bangladesh Shishu Hospital & Institute. A total 20 patients were included in this study after fulfillment of all selection criteria during the study period.

Result: The mean pain relief time, wound healing and hospital stay were 4.8 ± 0.4 days, 10.3 ± 1.8 days and 6.8 ± 0.7 days respectively.

Conclusion: Application of silver sulfadiazine cream is safe and effective in the treatment of superficial partial thickness burn in children.

Keywords: Silver sulfadiazine cream, Superficial Partial thickness burn, wound healing.

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I. INTRODUCTION

Burns have aroused extensive public health concern and constitute a global public health problem [1]. Burn injuries are common in children as thinner skin tolerates less heat at a shorter duration before full-thickness injury occurs [2]. Burns have been identified as one of the most devastating causes of child injury in terms of functional, social and psychological impairment [1]. The aim of treatment in burn injury is to control infection and promote healing with good aesthetic results. To achieve these goals, a wide variety of wound care products are currently available [3]. But the best method of treatment is yet to be determined. Silver has remained the preferred topical agent for burn dressings for over the past 200 years [4] and its antimicrobial properties have been known since ancient times [3]. Silver sulphadiazine (SSD) was introduced in the 1970s, when silver was complexed to propylene glycol, stearyl alcohol, and isopropylmyristate [1]. Antibiotic sulfadiazine was added to this complex; hence the inhibitory action of silver and anti-bacterial effect of

sulfadiazine was combined into a single product. This reduced the frequency of application of the drug to twice daily. This silver complex acted on the bacterial wall in contrast to the silver ions which acted on the bacterial energy system [5]. However, various side effects such as tissue irritation, inactivation by wound fluid and pseudoeschar formation has led to the decreasing popularity of the conventional products such as Silver sulphadiazine (SSD) cream [6]. But, SSD is still considered the standard antimicrobial treatment for burn wounds in many parts of the world [3].

II. METHODOLOGY

This was a prospective interventional study carried out at the department of Burn & Reconstructive Surgery, Faculty of Paediatric Surgery, Bangladesh Shishu Hospital & Institute. Total 20 patients were included in this study from March 2021 to December 2021 after admission within 24 hours of burn upto 20% body surface area. The exclusion criteria were any comorbidity, allergy to SSD and electric and chemical burns. After admission each patient was thoroughly examined, investigated and all relevant information were noted. The guardian of the patient was informed about the treatment and informed written consent was obtained. Burn wound was washed out with sterile normal saline and application of 1% silver sulfadiazine cream twice daily till complete healing. After discharge each patient was followed up weekly upto 4 weeks. On each followed up healing, scar and itching were monitored. The statistical analysis was conducted using SPSS (Statistical Package for Social Science) version 26 statistical software.

III. RESULT

At the end of follow up, a total of 20 participants were include in the final data analysis. After completion of the data analysis, the results were organized in the tabular form and figures. Figures (4-6) showed the effect of pre and post results of application of SSD cream.

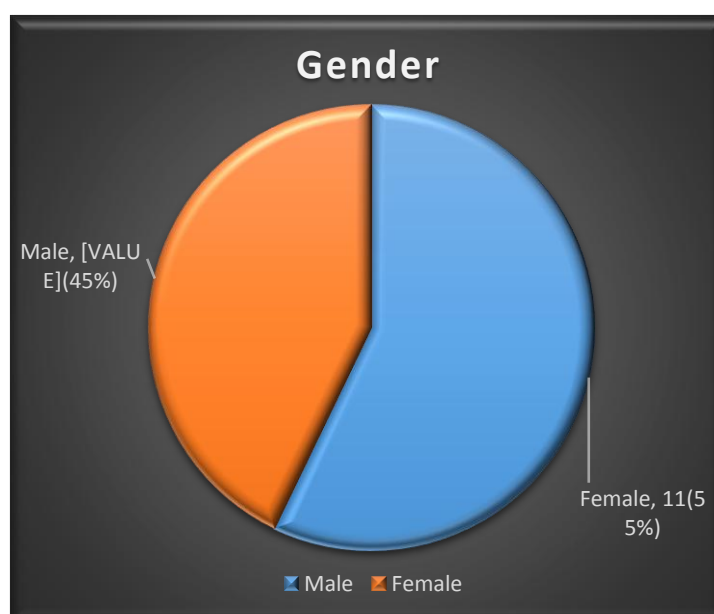


Fig. 1: Gender distribution of the participants (n=20).

Table I: Characteristics of the participants (n=20).

Characteristics	Mean±SD	Rang
Age (in months)	29.3±22.1	6-96
Weight (in kilograms)	13.6±6.6	6.5 – 39.0
Percentage of burn	10.8±3.1	5.0 – 18.0

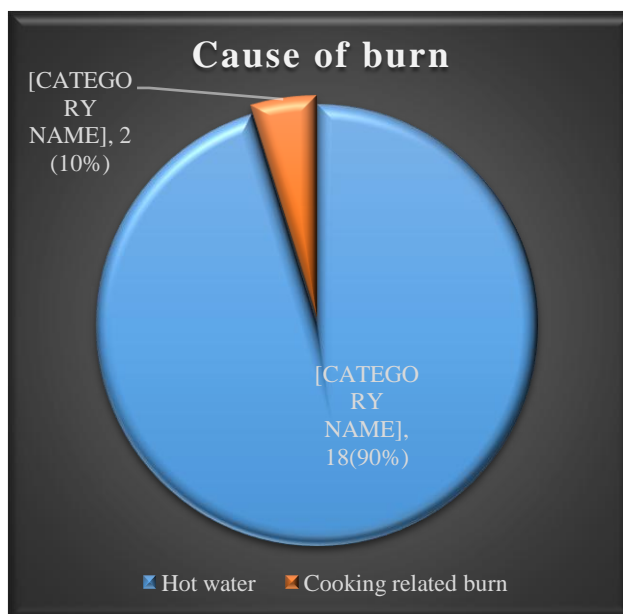


Fig. 2: Causes of the burn (n=20).

Table II: Outcome of variables (n=20)

Variables	Mean±SD	Range
Pain relief time (days)	4.8±0.4	4.0-5.0
Wound healing time (days)	10.3±1.8	6.0-13.0
Hospital stay (days)	6.8±0.7	5.0 – 8.0

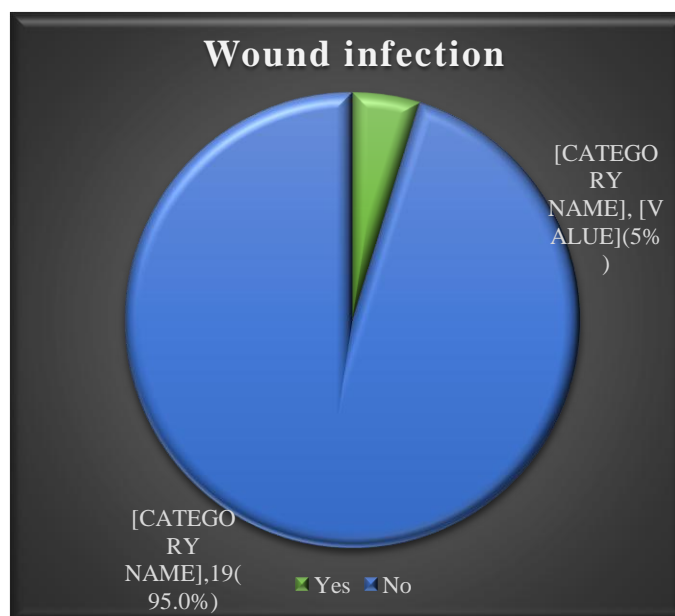


Fig. 3: Wound infection of the participants (n=20)



Fig. 4: Superficial Partial Thickness burn with SSD application



Fig. 5: After 12 days of SSD application

IV. DISCUSSION

Silver sulfadiazine has received wide-spread acceptance as a topical agent to control bacterial infection, especially in burn wounds and is now approved by the Food and Drug Administration, its mechanism of action is uncertain. This compound was prepared to combine the oligodynamic action of silver with the antibacterial effect of sulfadiazine. In our study the mean pain relief was 4.8 ± 0.4 days. Jajra et al [8] found that the mean pain relief time was 16.70 ± 7.83 days. It is more than the present study. It is due to more body surface area of burn. In the current study the mean wound healing time was 10.3 ± 1.8 days. Manzoor et al observed that the mean wound healing time was 20 ± 4 days [9]. SSD accelerates the normal healing process through the inhibition of matrix metalloproteinases and increases the epithelialization [10-12]. In the present study 1(5%) patient was found wound infection. SSD has preventive effect by terminating most of the microorganism, even fungi [13]. Wound infection was caused by staphylococcus aureus and treated according to the culture sensitivity report. In this study, the mean hospital stay was 6.8 ± 0.7 days. Vijayakumar et al found mean hospital stay 6 days [12,15]. It is nearer to the present study. But Masoud et al found the average hospital stay was 18.3 days which was more than the present study [2]. The study sample was small since it was undertaken during the COVID-19 pandemic. After discharge from the hospital, patients were followed up on weekly basis up to 4 weeks. No patient had any sign of abnormal scar formation, itching, wound contracture or cosmetic disfiguration.

Limitations of the study: The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

V. CONCLUSION

Silver sulfadiazine cream is safe and effective in the treatment of superficial partial thickness burn in children.

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Conflict of interest: None declared

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