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Salvage Therapy of Infected Wounds of the Extremities Using 5% Acetic Acid and Povidone Iodine

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Abstract

Aim: Infected surgical wounds of extremities increase patient mortality and morbidity, with extended hospital stay and significant economic burden. Bone and joint infections pose a formidable challenge to the orthopedic surgeon. Salvage therapy of infected wounds of the extremities using 5% acetic acid and povidone iodine.

Objective: To determine outcome of infected surgical wounds treated with 5% acetic acid and povidone iodine, and to reduce burden of costly systemic antibiotic therapy and find out an alternate way of infected wound management.

Method: 20 patients 16 male and 4 female average age 45 years range 25 to 65 years with infected extremities wounds were treated in which half of the patients were treated by 5% acetic acid (Group A) and half were treated with povidone iodine (Group B).

Results: The average age of patients was 45 years with male to female ratio 4:1. In-group A the wound healing was 76% and in-group B it was 54% after three weeks. But at the end of 6th week 98% healing was seen in group A while 83% healing was seen in group B.

Conclusion: Surgical infected wounds of extremities treated with 5% acetic acid reduce patient morbidity, hospital stay and economic burden.

Abbreviation: CDC: Centers for Disease Control

Introduction

Infected surgical wounds of extremities increase patient mortality and morbidity, with extended hospital stay and significant economic burden. Bone and joint infections pose a formidable challenge to the orthopedic surgeon [1]. The high success rate obtained with antibiotic therapy in most bacterial diseases has not been obtained in bone and joint infections because of the physiological and anatomical characteristics of bone. The overall surgical site infection rate has been estimated by the U.S. Centers for Disease Control and Prevention (CDC) to be 2.8% in the United States [2].

We evaluate the risk of infection in each patient by considering patient-dependent and surgeon-dependent factors. Patient-dependent factors include nutrition, immunological status, and infection at a remote site. By physical and lab investigation. Surgeon-dependent factors include prophylactic antibiotics, skin and wound care, operating environment, surgical technique, and treatment of impending infections such as in open fractures. Simply stated, it is much easier to prevent an infection than it is to treat it. Most common pathogens responsible for wound infection in extremities

are *Staphylococcus aureus*. *Pseudomonas aeruginosa* is a classic opportunistic pathogen with innate resistance to many antibiotics and disinfectants. It is the most difficult nosocomial pathogen to be eliminated from infection site [3]. The management of wound requires proper attention including medicinal and antiseptic dressings. This study was designed to see the role of 5% acetic acid and povidone iodine in extremities infected wounds.

Material and Methods

For this study total 20 hospitalized patients with wound infection in extremities not responding to traditional therapy for more than 10 days were selected for the study. We equally divided our sample randomize in selection, and first half group A and second half group B. Group A were treated by 3%-5% acetic acid and Group B were treated by povidone iodine for 6 (six) weeks, and observe the healing. We used the Outcome parameters were as:

- patient morbidity and mortality
- wound healing
- number of debridements

- iv. wound culture results
- v. white blood cell count > 10,000 cells/ dl)
- vi. pyrexia > 100°F
- vii. Infection site pain

a. Study Design: Prospective comparative study design was used.

b. Setting: Department of Orthopedic surgery and Traumatology International Medical College and Hospital, Gushulia, Tongi, Gazipure. Bangladesh [4] (Table 1).

Table 1: Details of patients.

Age /Sex	Particulars	Acetic acid 3-5% / Povidone Iodine	3 weeks % heal	6 weeks %heal
5 yr/M	infected wound right leg	yes / No	80	99
40yr/M	post op wound infection	Yes / No	85	100
25yr/F	Infected forearm left.	Yes / No	80	95
70yr/M	Infected right arm	No / yes	40	70
62yr/M	Diabetic Left foot	Yes / No	65	98
55 yr/M	infected wound right leg	No / yes	60	80
50yr/M	post op. wound infection	No / yes	55	75
45yr/F	infected thigh right.	No / yes	60	75
60yr/M	Infected right elbow	No / yes	50	85
72yr/M	Diabetic Left foot	No / yes	65	80
56 yr/M	infected wound right leg	Yes / No	70	99
40yr/M	post op wound infection	Yes / No	80	100
25yr/F	Infected left foot.	Yes / No	75	95
60yr/M	Infected right wrist.	No / yes	60	75
52yr/M	Diabetic Left foot	Yes / No	85	98
65 yr/M	infected wound right leg	Yes / No	70	99
40yr/M	Wound infection leg.	Yes / No	80	100
25yr/F	infected leg right.	No / yes	55	85
50yr/M	Infected right arm.	No / yes	50	70
42yr/M	Diabetic Left foot	No / yes	65	85

Results

The average age of patients was 45 years with male to female ratio 4:1. In-group A the wound healing was 76% and in-group B it was 54% after three weeks. But at the end of 6th week 98% healing was seen in group a while 83% healing was seen in group B. Wounds were healed or were closed or were granulating follow-up. Number of debridements, wound cultures, white-blood-cells, and fever decreased after treatment began with 5% acetic acid [5-8].

Discussion

Wound infection in extremities in hospitalized patients has always been problem to the clinicians. Traditional therapies with anti microbial agents have their own limitations because of multiple antibiotic resistances. The use of acetic acid and providone iodine has been reported from time to time as a topical agent for the treatment of extremity wound infection. Topical use of acetic acid at concentrations between 0.5 to 5% eliminated microorganism responsible for extremity wound infection. From the result of this study it is concluded that 5% acetic acid is non-toxic and superior to providone iodine. It is the best alternative when infection is caused by multiple antibiotic resistant strains and where there is shortage of therapeutic options [9-11].

Conclusion

Dressings with 5% acetic acid for infected wounds of the extremities yield good results.

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