Original Research Article

DOI: http://dx.doi.org/10.18203/2349-2902.isj20180989

Comparison between dressing of cellulitis with normal saline and Magnesium sulphate

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Received: 18 February 2018 Received: 21 February 2018 Accepted: 24 February 2018

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ABSTRACT

Background: Cellulitis is an acute inflammatory condition of the skin that is characterized by localized pain, erythema, swelling and heat. Cellulitis may be caused by indigenous flora colonies of the skin appendages.

Methods: This study comprises of patients attending MNR Medical College and Hospital between February 2015 to January 2018. After proper history taking, examination and investigations patients were admitted or treated as outpatients.

Results: Patients treated with normal saline dressing responded better than Magnesium sulfate dressing. No complication was observed, and healing was faster.

Conclusions: In this study, author have observed patients treated with normal saline dressing responded better than Magnesium sulfate dressing. No complication was observed, and healing was faster.

Keywords: Cellulitis, Dressing, Normal saline, Patients

INTRODUCTION

Cellulitis is an acute inflammatory condition of the skin that is characterized by localized pain, erythema, swelling and heat. Cellulitis may be caused by indigenous flora colonies of the skin appendages eg., *S. aureus* and *S. pyogenes* or by a wide variety of exogenous bacteria.¹

Relatively, low number of bacteria may cause cellulitis and that the expanding area of erythema within the skin may be a direct effect of extra cellular toxins or of the soluble mediators of inflammation elicited by the host.²

Erysipelas is the more superficial infection of dermis and upper subcutaneous layer. The distinctive features of erysipelas are well-defined in duration, rapid progression and intense pain. Erysipelas and cellulitis often co-exist.³

Cellulitis is the non-suppurative invasive infection of tissue. Cellulitis occur as bacteria gain access to the epidermis through cracks in the skin, abrasion, cuts, burns, insect bites, surgical incision and intravenous cathedral. There is poor localization in addition to cardinal sign of inflammation, spreading infection typically caused by bacteria such as β -haemolytic staphylococcus tissue destruction and ulceration follows.⁴

Lymphangitis is a part of similar process and presents as painful red streaks in affected area. If not treated leads to toxaemia chills fever and rigors. Treatment includes antibiotic, anti-inflammatory best to the part along with the treatment of associated problems like diabetes. Dressing of cellulitic part is important part of treatment. Dressing was usually done with Magnesium sulfate. It has been

observed that many patient's inflammation and pain aggravated after Magnesium sulfate dressing.⁵

For erysipelas and atrophic rhinitis saline compression is used. After observing pain and inflammation of Magnesium sulfate dressing, normal saline dressing is considered to be used in place of Magnesium sulfate.⁶

METHODS

This study comprises of patients attending MNR Medical College and Hospital between February 2015 to January 2018. After proper history taking, examination and investigations patients were admitted or treated as outpatients.

Inclusion and exclusion criteria

Patients who suffered cellulites due to injury or infection were included in the study. Whereas patients having chronic illness and co morbid condition were not included in the study

After cleaning the area of cellulitis with betadine solution, open wounds covered by sufra-tulle, rest of inflamed area is covered by Ganzi pads, soaked with normal saline. Bandage applied over it and patient is advised rest with the elevation of the affected area.

First dressing was changed after 48 hours and subsequent dressings on alternate days. In case of un-healthy ulcer, dressing was done daily.

Patients were given antibiotic anti-inflammatory along with treatment for associated problems.

RESULTS

This study includes 112 patients treated at BHEL Hospital during the period of 3 years, June 2009 to May

2012. Out of 112 patients, 76 patients were admitted whereas 36 patients were treated in OPD (Table 1).

Table 1: Sex ratio of in-patients and out-patients.

| | Inpatient | | Outpatient | | |
|-----------------|-----------|--------|------------|--------|--|
| | Male | Female | Male | Female | |
| No. of patients | 56 | 20 | 22 | 14 | |
| Total | 76 | | 36 | | |

Table 2: Age wise distribution of patients.

| Age group | Male | Male | | Female | | |
|-----------|------|------|----|--------|--|--|
| (yrs) | IP | OP | IP | OP | | |
| 35-45 | 4 | 7 | - | 2 | | |
| 45-55 | 18 | 8 | 5 | 6 | | |
| 55-65 | 20 | 5 | 8 | 4 | | |
| 65-75 | 8 | 2 | 5 | 2 | | |
| 75-85 | 6 | - | 4 | - | | |

After excluding patients with D86.8 and D86.9 ICD codes and those who lacked sufficient laboratory parameters, 112 patients remained (Table 2). Of these patients, 36 were female and 56 were male. The mean age was 50.9±13.6; the age distribution of all patients of all age groups including their age in ranges is shown in the following table.

Table 3: Patients undergoing different kinds of dressing.

| | Normal saline dressing | | | Magnesium sulfate dressing | | | |
|--------|---------------------------|----|----|----------------------------|--|--|--|
| | IP | OP | IP | OP | | | |
| Male | 53 | 12 | 3 | 10 | | | |
| Female | 5 | 8 | 15 | 6 | | | |
| Total | | 78 | | 34 | | | |

Table 4: Signs of improvement on dressing with normal saline.

| Findings | 1st dressing /3rd day | | 2 nd dressing/5 th day | | 3 rd dressing/7 th day | | After 7 days | |
|--|-----------------------|-------|--|-------|---|----------|-----------------|------|
| Findings | No. of Patients | % | No. of Patients | % | No. of patients | % | No. of patients | % |
| Decrease in oedema | 42 | 53.8% | 20 | 25.6% | 12 | 15.3% | 4 | 5.1% |
| Decrease in erythema | 52 | 66.6% | 16 | 20.5% | 10 | 12.8% | - | - |
| Decrease In pain | 60 | 76.9% | 5 | 6.4% | 6 | 7.6% | 7 | 8.9% |
| Decrease in glistening of skin | 65 | 83.3% | 13 | 16.6% | - | - | - | - |
| Appearance of blisters and burning sensation | - | - | - | - | - | - | - | - |

Out of 112 patients of these patients, underwent normal saline dressing were 78, in that 11 were males; underwent

normal saline dressing, and 4 were females who underwent Magnesium sulfate dressing (Table 3). The

female patients underwent Magnesium sulfate dressing were 13 and 12 were underwent Magnesium sulfate dressing.

In this study 78 patients were treated with normal saline dressing. First dressing was changed after 48hrs which revealed a decrease in oedema and redness in 76% of patients. Pain reduced in maximum no. of patients. Glistening of skin which is a very important sign of cellulitis decreased in all patients by 2nd dressing. Seven patients did not show remarkable improvement by 3rd dressing. Blisters over skin and burning did not appear in any patient who underwent normal saline dressing (Table 4). In this study 78 patients were treated with normal saline dressing. First dressing was changed after 48hrs which revealed a decrease in oedema and redness in 76% of patients. Pain reduced in maximum no. of patients.

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Table 5: Signs of improvement on dressing with Magnesium sulfate.

| | 1 st dressing/3 rd day | | 2 nd dressing/5 th day | | 3 rd dressing/7 th day | | After 7 days | |
|--|--|-------|--|-------|--|-------|-----------------|-------|
| Findings | No. of Patients | % | No. of Patients | % | No. of patients | % | No. of patients | % |
| Decrease in oedema | 4 | 11.7% | 12 | 35.2% | 12 | 35.2% | 6 | 17.6% |
| Decrease in erythema | - | - | 10 | 29.4% | 18 | 52.9% | 6 | 17.6% |
| Decrease in Pain | 2 | 5.8% | 6 | 17.6% | 20 | 58.8% | 6 | 17.6% |
| Decrease in glistening of skin | - | - | 4 | 11.7% | 22 | 64.7% | 8 | 23.5% |
| Appearance of blisters and burning sensation | 8 | 23.5% | 10 | 29.4% | - | - | - | - |

Thirty-four patients were treated with Magnesium sulfate dressing. Only 4 patients had shown improvement by first dressing where as more number of patients improved by 3rd dressing, 6-8 patients did not recover even after 7 days. Out of all, 8 patients (23.5%) were developed blisters and burning sensation by first dressing and 10 other patients developed by 5 days (Table 5).

DISCUSSION

On comparing the results after normal saline and Magnesium sulfate dressing, it was observed that after first dressing patients with normal saline dressing improved better. This was followed by fast recovery of pain, swelling and infection.⁷

Edema reduced in 53.8% and pain relived in 76.9% patients after First dressing with normal saline. None of the patients in this group developed blisters. Healing of Open wound was better and faster in this group. The practice of continuous infusion is supported by 1 retrospective study in children, as well as some case reports in adult patients.⁸

Patients undergoing Magnesium sulfate dressing did not show much improvement after first dressing.

Table 6: The comparison of signs of improvement after first dressing.

| Signs of improvement | Normal saline dressing (%) | Mag Sulf dressing (%) |
|------------------------|-------------------------------|-----------------------------|
| Decrease in oedema | 53.8% | 11.7% |
| Decrease in pain | 76.9% | 5.8% |
| Decrease in erythema | 66.6% | - |
| Appearance of blisters | - | 23.5% |

Gua H et al, pain was not relieved even after 3rd dressing. 9 Improvement in swelling and erythema was observed after 2nd dressing, 17.6% of cases improved after 7 days. 64.7% of cases developed blisters and open wounds in this group did not heal quickly. 9 Bridie O Sullivan manage cellulitis by hydrofibre dressing which maintained the moist wound environment and promoted autolytic debridement. Acc to St Louis children hospital wet dressing may be ordered to help treat the cellulitis. 3 Cool water soaks or compresses causes vessels to constrict, get small which helps lessens inflammation that is swelling, pain and redness. 10

According to Dr Axe, when antibacterials and antibiotics prevent the immune system from learning how to defend

against invaders, the immune system can remain highly reactive throughout the adult years. This makes it harder to prevent bacterial infection.⁷

Antibiotics and other associated treatment were remained same:

- Patients with normal saline dressing improved early.
- Pain relieved earlier than patients with Magnesium sulfate dressing.
- Open wounds healed faster in patients with normal saline dressing.
- Hospital stay is less in patients with normal saline dressing.
- None of the patients developed blisters and burning sensation on dressing with normal saline.
- Economically normal saline dressing is cheaper than any other dressing.

CONCLUSION

In this study, author have observed patients treated with normal saline dressing responded better than Magnesium sulfate dressing. No complication was observed and responded better than Magnesium sulfate dressing. No complication was observed, and healing was faster. This study demonstrates that weight-based dosage, as well as time of administration of magnesium sulfate for patients with an acute asthma exacerbation, varies across different institutions in western countries. Magnesium sulfate use was safe in this patient population.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

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Cite this article as: Singh R, Sreenivasa P. Comparison between dressing of cellulitis with normal saline and Magnesium sulfate. Int Surg J 2018;5:1255-8.