ORIGINAL ARTICLE

Evaluation of the Role of Short Term Application of Topical Steroids in wound healing

ZULFIQAR SALEEM[1], MUHAMMAD JAMIL AZHAR[2], MUHAMMAD NADEEM[3], *ZAHID AKBER CHOHAN[4]*

ABSTRACT

Aim: To evaluate the role of short term application of topical steroids in wound healing by suppression of over granulation, prevention of excessive inflammation and thus promotion of quick epithelialization and healing.

Methods: This descriptive study was conducted on 30 patients from April, 2014 to August 2016at Avicenna Medical College, Laser Looks PMC Lahore. Patients were included in the studywho presented with slow or non-healing skin loss lesions after trauma or after burn. The skin loss lesions were between 1.5x 1.5 to 3.5 x3.5 cm size and less than 6 weeks old.

Results: Out of 30 patients 21(70%) healed completely in two weeks' time with steroid cream dressings while 5(16.6%) healed in 4 weeks. In 2(6.6%) patients some debridement and skin grafting had to be done and 3(7.5%) developed thinning of the skin which got better after cessation of the treatment. Out of 30 patients 5(16.6%) developed atrophy of granulation and depression in the wound due to application of steroid cream on non exuberant granulation.

Conclusion: 70% of the patients healed completely within two weeks of the commencement of the steroid application and 16.6% healed with a further two weeks application of the steroid cream**.** 6.6% patients needed some debridement and skin grafting. 7.5% patients developed thinning of the skin with prolonged application of the steroid cream. 16.6% developed atrophy of granulation.

Keywords: Topical steroids, Wound healing, Granulation, Inflammation

INTRODUCTION

Granulation tissue is mostly composed of newly growing capillaries (angiogenesis) andit is called granulation because thecapillaries looping together on the wound surface give the appearance of red lumps (or granules) throughout paler pink normal matrix**[1].**

Over granulation and inflammation is one of the factors that can delay the wound healing process and can lead to a chronic wound**.[2]**Chronic wounds present tremendous challenges to the wound healing unlike acute wounds that usually progress neatly in a timely manner through the inflammation, proliferation and maturation phases of the healing process**[3,4].**

Chronic wounds deviate from this predictable sequence of regeneration and repair**[5]** The healing process associated with an acute wound is a dynamic one which can be divided into three phases (i) Inflammation (ii) proliferation and (iii) maturation.**[6]**If chronic inflammation occurs, then there is a potential for future over granulation. Certainly chronic inflammation will prevent the second stage (proliferation) from occurring**[7]**

When granulation is achieved, the wound bed changes and becomes less 'wet' and less 'bumpy' with a smoother wound surface. This is the final stage of wound healing and the epithelial cells can now grow into the center of the wound and the wound fibers will contract the surface of the wound until it reaches closure. If this happens quickly there will be less scarring**[8].**

The collagen that is laid down during the granulation period is now removed and replaced by a stronger collagen and the tissue beneath the scar and the scar itself, will go on remodeling for up to two years**[6].**

Topical corticosteroids reduce the cell division and production of granulation tissue**[3,4]**

Therefore a highly successful method of treatment would be a short term application of a topical steroid to suppress the inflammatory process and thus over granulation. Therefore surgical excision undertaken in theatre must be a last resort. Other methods of managing over granulation can cause more inflammation and thus delay the healing process.

The study is based on these facts to evaluate the role of short term application of topical steroids in wound healing by suppression of over granulation, prevention of excessive inflammation and thus promotion of quick epithelialization and healing.

MATERIALS AND METHODS

Thirty patients of both gender and all ages reporting

[1,2]Assistant Professor, [3]Assistant Professor of Surgery, Sialkot Medical College Sialkot,
[4]Prodessor of Surgery, Avicenna Medical College Lahore,
Correspondence: doctorzulfqar@hotmail.com

to emergency and OPD department of AvicennaMedical College Lahore between a period of April 2015 to January 2017 who presented with h/o slow or non-healing skin loss lesions after trauma or after burn or after skin grafting in whom the skin loss lesions were patches of about 1.5x1.5 cm to 3.5x3.5 cm size and less than 6 weeks old were included in the study. In these patients with strong history, clinical examination and required investigations forany specific infection, varicose veins or any malignancy and autoimmune disorder as cause of the non-healing lesion was ruled out. Detailed history including the cause of the skin loss lesion, its duration and treatment done so far was taken. Thorough clinical examination was done to rule out any other hidden cause other than the trauma, burn or post-operative (such as skin grafting) skin loss. Culture sensitivity, wedge biopsy of the lesions and any other specific investigation as required was done to rule out any other cause of the skin loss. With the help of routine and specific investigations an attempt was made to rule out other causes of the skin loss lesion. And patients were divided into four groups

Group I(good response group) Out of 30 patients21 (70%) which healed completely in two weeks' time with steroid cream dressings every day.

Group II (Delayed healing group) Out of 30 patients 5(16.6%) healed in 4 weeks with continued application of the steroid cream.

Group III(Surgical Intervention group) Out of 30 patients 2(6.6%) needed some debridement or skin grafting for complete healing

Group IV (Complication group 1) Out of 30 patients 3(10%) developed thinning of the skin due to continued application of steroid cream over skin even after healing which got better after cessation of the treatment and

Group V 5 patients (16.6%) developed atrophy of granulation and depression in the wound due to application of steroid cream on non-exuberant granulation.

The steroid with gentamycin cream was applied over the exuberant granulation and over that a tulle gauze dressing made. Every day it was washed with normal saline, dried and cream applied again. The patients were advised tostop application on healed skin or on atrophied granulation.

RESULTS

70% of the patients healed completely within two weeks of the commencement ofthe steroidapplication and 16.6% healed with a further two weeks application of the steroid cream**.** 6.6% patients needed some debridement and skin grafting. 7.5% patients developed thinning of the skin with prolonged application of the steroid cream. 16.6% developed atrophy of granulation tissue (Table 1, Fig. 1).

Table1: Outcome of results

Group	No.	%	
GroupI	21	70.0	Good response group
GroupII	5	16.6	Delayed healing group
GroupIII	2	6.6	Surgical intervention group
Group IV	3	10.0	Complication group 1
GroupV	5	16.6	Complication group 2

Fig.1: Thinning of epithelium by continued application of steroid cream for longer duration

DISCUSSION

The healing process associated with an acute wound is a dynamic process and if a chronic inflammation develops then there is a potential for future over granulation. Therefore chronic inflammation will certainly prevent the second stage (proliferation) from occurring.[4,5]

The formation of exuberant granulation tissue almost inevitably occurs during healing of wounds by second-intention.[7,9] It can be described as an aberrant prolongation of the phase of inflammation and granulation tissue formation therefore preventing the epithelialization and wound contraction to occur. The formation of exuberant granulation tissue is affected by several factors including post traumatic inflammation, infection, foreign body and malignancy and auto immune processes. Uncommonly a neoplastic transformation may also occur in a chronic wound. [10,11]

Among all the factors, the presence of post traumatic chronic inflammation may be the most important and often not recognized cause for exuberant granulation tissue. Treatment depends on the age of the exuberant granulation tissue and the

cause. The cause should be identified and treated.[12,13]

Many agents have been used to treat or prevent exuberant granulation tissue including debridement, cauterization, silver nitrate crystals, caustics and cryotherapy . However mostly these methodsprolong inflammation and cause more delay in the healing process.[14,15]

Once the chronic inflammation subsides, the wound will resume healing by contraction and epithelialization.[5]

CONCLUSION

We conclude that exuberant granulation can be managed with the topical steroid application without prolonging the inflammatory phase of wound healing, and thus chronic inflammation can be prevented to develop.

REFERENCES

1. Bates-Jenson, B Wound care products: A guide to choice. Nursing Homes (USA). 1997; November/December 47-54.
2. Borkowski, L Gtube care: managing hypergranulation tissue. Nursing 2005; . 35(8):24.
3. Carter, K Treating and managing pilonidal sinus disease JCommunNurs2003; 17 (7) 28-33.
4. Cooper, R Steroid therapy in wound healing. Free Paper. EWMA Conference. Glasgow 2007.
5. Krasner, D Minimizing factors that impair wound healing: a nursing approach. Ostomy Wound Management. 1995; 41(1):22-6.
6. Dealey, C. The Care of Wounds: a guide for nurses 3rd edition. Wiley-Blackwell, Oxford.2007.
7. Enoch, S. ABC of wound healing: Wound assessment BMJ; 2006; 14(89) 128– 132.
8. Lyon, C., Smith, AJ. Abdominal stomas and their skin disorders – An atlas of diagnosis and management.Martin Dunitz Ltd, London 2001.
9. Dunford, C.Overgranulation tissue. JWoundcare 1999; 8 (10) p506-7
10. Forrest, LCurrent concepts in soft connective tissue wound healing. British Journal of Surgery 1982; 70(3) 133-140.
11. Hampton, S., Collins, F Tissue Viability a comprehensive guide. Whurr publications.London.2003.
12. Hampton, S. Understanding overgranulation in tissue viability practice. BrJCommunNurs 2007, 12/9(S24-30).
13. Hanlon, M., Heximer, B. Excess granulation tissue around a gastrostomy tube exit site with peritubular skin irritation. J Wound OstomContinNurs1994; 21(2) 76-77.
14. Harris, A., Rolstad, BS. Hypergranulation tissue: a non-traumatic method of management. Ostom Wound Manag1994;40(5): 20-30
15. HaelanJS. Tape for the treatment of overgranulation tissue. Wounds UK. 2007; 3(3)12-15.