Evaluation Of Two Medium-Depth Peels: Glycolic Acid 70% Versus Trichloroacetic Acid 35%. A Histological And Immunohistochemichal Study On Rat Skin

Thesis
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ABSTRACT

The effects of TCA (35%) & GA (70 %) on rat skin were evaluated & compared using light microscopy& immunohistochemichal technique. Skin biopsies were taken from the dorsal side of rats (n=40, 5 groups) one & three weeks after peeling session. Sections were stained with hematoxylin and eosin, Masson's trichrome, orcein and immunohistochemichal stain for CD34. The epidermal thicknesses, dermal thickness, mean area percent of collagen& elastic fibers and mean area percent & optical density of immunopositive cells were done. There were increases in epidermal &dermal thickness, reorganization of the dermal structural elements, collagen, and elastic fibres and increase in CD34 immunopositive cells at the end of the third week with statistically non significant difference between the two peeling agents.

Key words: Chemical peel - Glycolic acid - Trichloroacetic acid - Hair follicles - CD34 - Skin.

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LIST OF ABBREVIATIONS

Abbreviations	Words
ACTH	Adrenocorticotropic Hormone.
AHA	Alpha-Hydroxy-Acids.
ASG	Apocrine Sweat Glands.
CD	Cluster Designation.
CD34SC	CD34 stromal cells.
CROSS	Chemical Reconstruction Of Skin Scars.
D	Dermis.
DEJ	The Dermal-Epidermal Junction.
E	Epidermis.
ESG	Eccrine Sweat Glands.
F	Hair Follicles.
FACITs	Fibril-Associated Collagen With Interrupted Triple Helixes.
GA	Glycolic Acid.
H	Hypodermis.
HS	Highly Significant.
H&E	Hematoxylin And Eosin.
IL	Inter leukin.
k	Keratins.
KCs	Keratinocytes.
KSCs	Keratinocytes Stem Cells.
LCs	Langerhans Cells.
MCs	Merkel Cells.
MSH	Melanocyte-Stimulating Hormone.
MW	Molecular Weight.
ORS	Outer Root Sheath.
PBS	Phosphate buffered saline.
PDGF-B	Platlets derived growth factor B.
S	Sebaceous Glands.
SC	Stratum Corneum.
SCP	Superficial Chemical Peeling.
SCs	Stem Cells.
SD	Standered Deviation.
TA	Transit Amplifying.
TCA	Trichloroacetic Acid.
TEWL	Transepidermal Water Loss.
TRPV1	Transient Receptor Potential Vanilloid-1.
W/V	Weight By Volume.

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Errata

Page	Line	wrong	correction
Aknowledgement	١٢ & 19	Photographing	photographing
i	6	CD34 stromal cells	CD34 Stromal Cells
i	27	Phosphate buffered saline	Phosphate Buffered Saline
i	28	Platlets derived growth factor B	Platlets Derived Growth Factor B
Partition 2		Review of literatur	Review of literature
11	10	MCs	Merkel cells
30	6	and could	which could
30	8	of	in
37	7	inorganic compound	inorganic compound,
47	last	***(Blanpain et al., 2004)***.	***(Bancroft and Cook, 1994).***
55	Fig 8	with non immune serum	in the same way but with omitting of primary antibody.
59	Header	*aterials And Methods*	***M****aterials And Methods*
116	8	Stratum Adiposum	stratum adiposum
130	22	dermis.more	dermis. More

INTRODUCTION

AND

AIM OF THE WORK

Introduction

And Aim Of The Work

Introduction:

Chemical peeling is a method by which concentrated chemicals are applied to the skin to peel off the epidermis and dermis. This results in regeneration of the dermis and epidermis with synthesis of new collagen and elastic fibers in the dermis ***(Bukvić Mokos& Lipozencić, 2009).***

Chemical peeling can be used to enhance treatment within a variety of conditions, including acne, melasma, dyschromias, photodamage and actinic keratoses. In addition, peels can be combined with other in-office procedures to optimize outcomes and enhance patient satisfaction ***(Berson et al., 2009).***

The explosion of interest in chemical peeling on the part of dermatologists has paralleled the general public's interest in acquiring a youthful appearance ***(Monheit, 2004).***

Chemical peeling agents were classified as very superficial (exfoliation), superficial (epidermal), medium (papillary dermal) and deep (reticular dermal) ***(Wiest, 2004)***.

Medium-depth chemical peeling is defined as controlled damage to the epidermis and papillary dermis ***((Bukvić Mokos& Lipozencić, 2009).***

Medium-depth chemical peeling can be achieved by using glycolic acid (GA) 70% applied for 5 to 30 minutes, trichloroacetic acid (TCA) 35% applied alone or augmented with Jessner's' solution (a combination of resorcinol 14%, salicylic acid 14% and lactic acid 14% with ethanol to make 100 ml) ***(Mendlson, 2002).***

Trichloroacetic acid is one of the commonly utilized agents for chemical resurfacing of the face ***(Herbig et al., 2009)***. Glycolic acid is a member of the α-hydroxy acids (AHA) family, which occurs naturally in foods and has been used for a long time as a cutaneous rejuvenation treatment. It is used in many cosmetic products as an exfoliant and moisturizer ***(Yener and Baitokova, 2006 &Bhattacharyya et al., 2009).***

The epidermis is a continuously renewing tissue that is replenished and repaired by epithelial stem cells (SCs). Several lines of evidence indicate that during high proliferative need, an important source of the proliferating cells in the epidermis are follicular epithelial SCs that reside within a specialized permanent segment of the outer root sheath of hair follicle known as the bulge ***(Lavker and Sun, 2000& Ito et al., 2005).***

Epithelial SCs have been viewed for years as the major source of cells not only for the regeneration of hair follicles but also for regeneration and repair of epidermis. These follicular epithelial SCs play an important role in the epidermal regeneration after physical or chemical removal of epidermis, superficial and full thickness skin wounding, or burns ***(Taylor et al., 2000& Ito et al., 2005& Levy et al., 2005).***

Cluster designation (CD34) glycoprotein is expressed on hair follicle bulge keratinocytes stem cells. It represents the best marker for mouse hair follicle bulge cells and provides a valuable tool for studying bulge cell biology ***(Trempus et al., 2003& Cotsarelis, 2006& Amici et al., 2009& Huang et al., 2009).***

Aim Of The Work:

This study was carried out to compare the histological effects of GA 70% and TCA 35% in Medium-depth chemical peeling on rat skin.

CD34 was used as a specific marker for hair follicle bulge cells to detect and compare between the abilities of TCA & GA to stimulate stem cells during wound healing.

REVIEW OF LITERATURE