RESEARCH

COMPARATIVE STUDY OF VARIOUS TOPICAL AND SURGICAL TREATMENT MODALITIES IN KELOID

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Abstract

Background: The evolution and production of keloids and hypertrophic scars is a complicated process that is not well understood. On the other hand, there is a growing body of research suggesting that keloid formation may be caused by a combination of various systemic and local variables, which can either act in concert or independently to maintain inflammation in the site and lead to scar formation. **Materials and Methods:** At the beginning of therapy, a full physical, a systemic examination, and fundamental investigations such as a complete haemogram, blood sugar, liver function test, renal function test, HIV I and II, and HbsAg were carried out. The images of the keloid were taken both before starting therapy and at subsequent sessions while treatment was being administered. Information gathered during the standard clinical history, including the patient's age, sex, occupation, length, and location of the lesion, as well as the number of lesions, family history, and treatment received in the past. **Result:** A total of eighty patients with clinically confirmed cases of keloid were included in a study that compared and contrasted four distinct treatment protocols. Patients were assigned to one of four treatment regimens using a random number generator. Each regimen had a total of 20 patients. The first regimen involved intralesional triamcinolone acetonide, the second regimen involved intralesional 5-fluorouracil, the third regimen involved a combination of cryotherapy and intralesional triamcinolone acetonide, and the fourth regimen involved a combination of surgical excision and topical 5% imiquimod. **Conclusion:** Due to the fact that practically all housewives get their ears pierced prior to being married, at the time of getting married, or even as children, female students were more prevalent than housewives. Due to the itching and cosmetic impairment, more than half of the patients had keloid lesions that lasted less than a year. This causes the patients to seek therapy early. The most frequent site of involvement overall was the chest, which is a known area for keloid occurrence. The most prevalent symptom in keloid patients is itching, which was observed in more than half of the patients. The best response was shown with regimen IV, followed by regimen III, demonstrating the value of combination therapy in the treatment of keloid.

INTRODUCTION

The word "crab claw" is whence we get the word "chele," which is where we get the term "keloid," which was first described in the 1800s as "cheloid." Keloids and hypertrophic scars are two types of dermal fibro proliferative diseases.[1,2,3,4] These scars are caused by aberrant wound healing and are distinguished by an excessive deposition of collagen. Keloids are more common than hypertrophic scars.[5] A disruption of the equilibrium that normally exists between collagen production and collagen degradation can lead to the formation of hypertrophic and keloid scars. Collagen synthesis and degradation occur in a state of rigorous control when normal conditions are present.[6,7,8,9] Scars can

be divided into two categories: keloids and hypertrophic scars. Keloids are scars that develop into the surrounding normal skin, while hypertrophic scars do not spread beyond the confines of the original incision. In the case of keloid scars specifically, these scars are associated with pain, hyperaesthesia, and pruritus, all of which can have a significant impact on the patient's quality of life.[10] The evolution and production of keloids and hypertrophic scars is a complicated process that is not well understood. On the other hand, there is a growing body of research suggesting that keloid formation may be caused by a combination of various systemic and local variables, which can either act in concert or independently to maintain inflammation in the site and lead to scar formation (keloid and hypertrophic scar).[11,12,13]

The most important of the local components are the mechanical forces, such as the skin tension, which are caused by stretching. These mechanical forces play an important role. This is proven by the fact that keloids exhibit a strong inclination to arise on body parts with a strong predisposition to occur on body areas with significant and/or repetitive stretching of the skin, such as the anterior chest, shoulder, deltoid, etc. Keloids, on the other hand, are uncommon in places where there is little opportunity for the skin to stretch, such as the scalp and the front of the tibiae.[14] Keloids on dominant sites frequently exhibit distinctive growth patterns, such as the butterfly and crab's claw on the chest and the dumbbell on the shoulder. Another possible explanation for this is that skin tension causes these patterns.[15,16]

There is no treatment that is generally recognised that will result in the ablation of hypertrophic or keloid scars in a lasting manner. The use of a variety of therapeutic approaches has been pushed for. As a result of the fact that the majority of these therapy modalities have a variable and fleeting success rate, it was decided to conduct the study with the purpose of comparing various treatment modalities.[17,18]

MATERIALS AND METHODS

The source of data for the 18-month period from January 2019 to June 2020 consisted of 80 patients with keloid who visited the outpatient department of dermatology, venereology, and leprology at MGM Hospital affiliated with Kakatiya Medical College, Warangal, Telangana. This study featured four distinct treatment plans, each with 20 participants.

At the start of treatment, a thorough physical examination, a systemic evaluation, and fundamental investigations including a full haemogram, blood sugar, liver function test, renal function test, HIV I and II, and HbsAg were performed. The keloid was photographed both before the treatment began and at future visits as it was being administered.

Information gathered during a typical clinical history, including the patient's age, sex, occupation, the number of lesions, the number of lesions' duration and location, and past treatments. All of the patients received information on the type, progression, and prognosis of their illnesses. Additionally, the necessity of a constant and protracted course of treatment was stressed. The regional ethical committee granted approval for the study's conduct.

Inclusion Criteria

1. The onset of keloid following trauma, inflammation and other miscellaneous cause and recurrence / persistence of the same.
2. Patients were willing for follow up.
3. Patients of age group 10-50 years.
4. Duration of lesion less than 5 years

Exclusion Criteria

1. Pregnancy and lactation
2. Patients on immunosuppressive therapy
3. Patients with systemic illness like uncontrolled DM, HT, mental disorders and malignancy
4. Patients with extensive keloid following burn
5. Patients unsure about attending treatment schedule regularly
6. Patients lost to follow up after initial visit.

Regimen I: Intralesional triamcinoloneacetonide: Triamcinolone acetonide (10mg/ml) given intralesionaly and repeated every 3 weeks till the lesion completely flattened and follow up for the period of 6 months.

Regimen II: Intralesional 5-fluorouracil (50 mg/ml) given intralesionaly and repeated every 3 weeks till the lesion completely flattened and follow up for the period of 6 months.

Regimen III: Combination of cryotherapy with intraregional triamcinolone acetonide Two freeze-thaw cycles of each lasting for 20 seconds followed by intralesional triamcinolone acetonide (10mg/ml) injection was given in each session. This treatment was repeated once in every 3 weeks till the lesion flattened and followed up or observed for the period of 6 months

In regimen I, II & III: all patients were evaluated at the end of each session for improvement of lesion and for any side effect.

The treatment was stopped before 6 months if the desired therapeutic response were achieved.

Regimen IV: Combination of surgical excision with topical 5% imiquimod

The patients were directed to administer imiquimod 5% cream once a day at night to the surgical location for 8 weeks after the keloid was removed with primary bilayered closure. Every week, all patients underwent evaluations. Patients provided feedback about the positive and negative impacts of their treatment throughout the trial. On the first day of treatment and at each consecutive visit until the end of the course of treatment, photographs were

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taken. Improvement was assessed in all patients based on the lesion's flattening and size regression. Patient satisfaction, a photographic record, and assessments of the lesion made during the 6-month follow-up period were used to evaluate the treatment's effectiveness. The patient was evaluated primarily for recurrence and side effects in Regimen IV because the lesions were removed in a single session.

The response was graded on a 4 point scale as follows:

Poor response: Upto 25% improvement Fair response: 26% to 50%improvement Good response: 51% to 75%improvement

Excellent response: 76% to 100% improvement.

Improvement was assessed with respect to symptoms, size, height and indurations. In all regimens (I, II, III & IV) after completion of therapy patients were followed up monthly for six months to check recurrence.

The efficacy /safety /predictors of response of different treatment modalities were analyzed by evaluation of

1. Response to treatment
2. Side effects
3. Recurrence.

Statistical Analysis

Results are expressed as number and percentage for each category. Categorical data was analysed by chi-square test to correlate between the groups. p-Value of

0.05 or less was considered for statistical significance. P-value of more than 0.05 was considered for statistical non-significance.

RESULTS

A comparative study of four different treatment regimens in eighty patients of clinically diagnosed cases of keloid was done. Patients were randomly divided into four regimens, each consisting of 20 patients. Regimen I was with intralesional triamcinoloneacetonide, regimen II- intralesional 5-fluorouracil, and regimen III- combination of cryotherapy with intralesional triamcinolone acetonide and regimen IV- combination of surgical excision with topical 5% imiquimod.

Table 1: Age wise distribution

Age group (years)	Regimen I	II	III	IV	Total	%
11-20	4	4	1	3	12	15.0
21-30	13	11	16	15	55	68.75
31-40	2	2	3	1	8	10.0
41-50	1	3	0	1	5	6.25
Total	20	20	20	20	80	100
Chi-Square Tests						
Chi-Square				df		P value
7.87[a]				9		>0.05, ns

Non-significant

Majority of the patients in this study were in the age group of 21-30 years. The total age range was 11-50 years and the least of patients were in the age group of 41-50 years. Age wise distribution in all five regimens was almost equal. The difference was found to be non-significant (P>0.05, ns).

Table 2: Sex wise distribution

Sex	Regimen I	II	III	IV	Total	%
Female	12	10	11	12	45	56.25
Male	08	10	09	08	35	43.75
Total	20	20	20	20	80	100
Chi-Square Tests						
Chi-Square				df		P value
0.556[a]				3		>0.05, ns

Non-significant

The study showed that the incidence among females was slightly higher than that of the males. Out of 100 reported cases, 45(56.25%) were females and 35(43.75%) were males. Female to male ratio was found to be 1:1.28. Analysis revealed that there was no significant difference in gender wise distribution between regimens (p>0.05).

Table 3: Occupational status

Occupation	Regimen I	II	III	IV	Total	%
Business	1	1	3	0	5	6.25
Farmer	2	3	3	4	12	15.0
Housewife	5	2	3	4	14	17.5
Professional	2	1	3	1	7	8.75
Skilled	1	3	1	1	6	7.5

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Student	8	9	6	9	32	40.0
Unskilled	1	1	1	1	4	5.0
Total	20	20	20	20	80	100
Chi-Square Tests						
Chi-Square			df		P value	
10.295a			18		>0.05,ns	

Non-significant

Among the occupational groups, students constituted the maximum number of cases i.e., 32(40%) followed by 14(17.5%) housewives, 12(15%) farmers, 7(8.75%) professional, 6 (7.5%) skilled, 5(6.25%) businessmen and 4(5%) unskilled.

Table 4: Duration of lesion

Duration (years)	**Regime n**				**Total**	**%**
	I	**II**	**III**	**IV**		
Upto 1Year	12	8	11	11	42	52.5
1 – 2 Year	4	5	4	3	16	20.0
>2 Year	4	7	5	6	22	27.5
Total	20	20	20	20	80	100
Chi-Square Tests						
Chi-Square			df		P value	
2.22[a]			6		>0.05, ns	

Non-significant

In majority of patients the duration of lesion was 1 year (52.5%) followed by > 2years (27.5%). Minimum number of patients was in 1-2 years of duration. The range of duration of lesions was 3 months to 5 years. The difference in duration wise distribution of patients among 4 regimes was non-significant indicating random distribution (>0.05).

Table 5: Site of lesion

Site	**Total**	**%**
Back	2	2.5
Chest	38	47.5
Ear lobe	16	20.0
Face	1	1.25
Lower extremity (leg)	2	0.5
Shoulder	11	13.75
Upper extremity (arm, forearm, hand)	10	12.75
Total	80	100

In this study it was observed that majority of keloids were seen over the Chest in 38(47.5%), followed by ear lobe in 16 (20%) and shoulder in 11 (13.75%). Least number of cases reported over face in1 (1.25%) patient.

Table 6: Presenting symptoms and sign

Symptoms & sign	**Total**	**Percentage**
Pruritis	36	45.0
Pain	10	12.5
Cosmetic disfigurement	22	27.5
Skin discoloration	08	10.0
Restriction of movement	04	5.0
Total	80	100

Out of 80 patients, 36 (45%) patients had complaint of pruritis, which was mild, moderate and severe. Other symptoms and signs, that patients presented are cosmetic disfiurement in 22(27.5 %), pain in 10(12.5%) and skin discoloration in 08(10%) and restriction of movement in 04(5.0%) patients.

Table 7: Predisposing factor

Predisposing factor	**Total**	**Percentage**
Acne	4	5.0
Burn	4	5.0
Ear piercing	16	20.0
Infection	12	15.0
Post-surgical	4	5.0
Spontaneous	14	17.5
Trauma	26	32.5
Total	80	100

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In this study trauma was the commonest cause seen in 26(32.5%) patients, followed by ear piercing in 16(20%) and spontaneous in 14(17.5%) patients. Other causes are acne, burn, infection and post-surgical scar.

Table 8: Family history

Family history	Total	Percentage
Positive	6	7.5
Negative	74	92.5
Total	80	100

Majority of patients had no family history (92.5%), only 6(7.5%) patients had positive family history.

Table 9: response in regimen- I (intra-lesional triamcinolone acetonide)

Response	No. of cases	Percentage
ER	12	60.0
GR	06	30.0
FR	02	10.0
PR	0	0
Total	20	100

In this regimen, 20 patients were treated with intralesional triamcinolone acetonide (10mg/ml). Out of 20 patients, 12 (60%) patients showed excellent response. Good response was seen in 6 (30%) and fair response in 2 (10%) patients. None of the patients showed poor response.

Table 10: Response in regimen-II (Intralesional 5- fluorouracil)

Response	No. of cases	Percentage
ER	5	25.0
GR	7	35.0
FR	5	25.0
PR	3	15.0
Total	20	100

In this regimen, 20 patients were treated with intralesional 5-fluorouracil (50mg/ml). Out of 20 patients, excellent response was seen only in 5 (25%) patients, 7(35%) patients showed good response, followed by fair response in 5 (25%) and poor response in 3 (15%) patients.

Table 11: Response in regimen-III (combination of cryotherapy and intralesional triamcinolone acetonide)

Response	No. of cases	Percentage
ER	16	80.0
GR	04	20.0
FR	0	0.0
PR	0	0.0
Total	20	100

In regimen III, all patients were treated with combination of cryotherapy and intralesional triamcinolone acetonide. Majority of patients in this regimen showed excellent response i.e, 16 (80%), followed by good response in 4 (20%) patients. None of them showed fair/poor response.

Table 12: Response in regimen-IV (combination of surgical excision and topical imiquimod)

Response	No. of cases	Percentage
ER	19	95.0
GR	01	5.0
FR	0	0.0
PR	0	0.0
Total	20	100

Combination of surgical excision followed by topical imiquimod 5% cream was used to treat the keloid in regimen IV. Almost all patients 19 (95%) in this regimen showed excellent response and 1(5%) patient showed good response with better cosmetic results.

Table 13: Treatment outcome in all regimens

Response	Regimens								Total	
	I		II		III		IV			
	No.	%	No.	%	No.	%	No.	%	No.	%
ER	12	60.0	5	25.0	16	80.0	19	95.0	52	65.0
GR	6	30.0	7	35.0	4	20.0	01	5.0	18	22.5
FR	2	10.0	5	25.0	0	0.0	0	0.0	7	8.75

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PR	0	0.0	3	15.0	0	0.0	0	0.0	3	3.75
Total	20	100	20	100	20	100	20	100	80	100
Chi-Square Tests										
Chi-Square						df			P value	
31.65[a]						9			<0.05, s	

Significant

The above table shows the response of all 80 patients treated under four regimens. According to the table, 52(65.0%) patients showed excellent response (ER), 18(22.5%) showed good response (GR), 7(8.75%) fair response (FR) and least number i.e., 3(3.75%) pateints showed poor response (PR). The results were significantly different among the four treatment regimens ($p<0.05$). Regimen IV showed best results, with all 19 (95%) patients showing excellent response followed by regimen III, in which 17 (85%) patients showed excellent response.

Table 14: Duration of lesion and outcome

Outcome	**Upto 2 years**		**> 2 years**		**Total**	
	No.	**%**	**No.**	**%**	**No.**	**%**
ER	42	72.4	10	45.4	52	65.0
GR	14	24.1	4	18.1	18	22.5
FR	1	1.72	6	27.2	7	8.75
PR	1	1.72	2	9.09	3	3.75
Total	58	100	22	100	80	100
Chi-Square Tests						
Chi-Square			df		P value	
16.225[a]			3		<0.05,s	

Significant

Patients with < 2years duration of lesion showed excellent response in 42(72.4%) patients with only 1(1.72%) poor response. Poor response seen in 2(9.09%) patients with keloid of > 2years duration. The difference in overall response depending on duration of lesion was found to be significant ($p < 0.05$).

Table 15: Site of lesion and outcome

Site		**Outcome**				**Total**
		ER	**GR**	**FR**	**PR**	
Back	No	2	-	-	-	2
	%	100	-	-	-	100
Chest	No	14	16	6	2	38
	%	36.8	42.1	15.8	5.3	100
Ear lobe	No	16	-	-	-	16
	%	100	-	-	-	100
Face	No	1	-	-	-	1
	%	100	-	-	-	100
Lower extremity	No	2	-	-	-	2
	%	100	-	-	-	100
Shoulder	No	08	1	1	1	11
	%	72.7	9.1	9.1	9.1	100
Upper extremity	No	09	1	-	-	10
	%	90	10	-	-	100
Chi-Square Tests						
Chi-Square				df		P value
29.49[a]				18		<0.05, s

Significant

Excellent response was seen in all patients who had the lesions over the earlobes. Similar response was also seen over the face and back. Poor response was seen in 3 patients i.e., 2(5.3%) out of 38 patients involving chest and 1(9.1%) out of 11 patients involving shoulder. The difference in overall outcome depending on site of lesion was found to be significant (<0.05).

Table 16: Side effects

Side effects	**I**		**II**		**III**		**IV**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Yes	8	40.0	20	100	5	25.0	7	35.0
No	12	60.0	0	0.0	15	75.0	13	65.0
Total	20	100	20	100	20	100	20	100
Chi-Square Tests								
Chi-Square				Df			P value	
27.6[a]				3			<0.05, s	

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Significant

Maximum side effects were seen in regimen II (100%). Side effects were least in regimen III (25%), followed by Regimen IV (35%) and Regimen I(40%). All these side effects were mild and did not preclude the treatment early. Difference in proportion of side effects in different regimens was significant ($p<0.05$)

Table 17: Side effects according to treatment regimens

Side effects	Regimen									
	I		II		III		IV		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
None	12	60	0	0	15	75	13	65	40	50.0
Atrophy	4	20	0	0	1	5	0	0	5	6.25
Depigmentation	0	0	0	0	1	5	0	0	1	1.25
Erythema+ Erosion	0	0	0	0	0	0	2	10	2	2.5
Hyperpigmentation	0	0	0	0	0	0	3	15	3	3.75
Hypopigmentation	1	5	0	0	0	0	0	0	1	1.25
Hypopigmentation+ Atrophy	1	5	0	0	0	0	0	0	1	1.25
Hypopigmentation + Telengectasia	1	5	0	0	0	0	0	0	1	1.25
Pain	1	0	3	15	2	10	0	0	6	7.5
Pain+ Depigmentation	0	0	0	0	1	5	0	0	1	1.25
Pain+ Hyperpigmentation	0	0	15	75	0	0	0	0	15	18.75

Out of 80 patients 40(50%) patients did not have any side effects. It was seen that in regimen I, out of 20 patients, 4 (20%) patients developed atrophy and 1(5%) patient had hypopigmentation, 1(5%) patient had hypopigmentation + atrophy, 1(5%) patient had hypopigmentation + telengiectasia and 1(5%) had pain. In regimen II, out of 20 patients 15(75%) patients had pain at injection site +hyperpigmentation,3(15%) patients had pain at injection site and 2(10%) had pain +hyperpigmentation+ulcer. Ulceration healed with the use of topical antibiotics without discontinuation of treatment. In regimen III, out of 20 patients 2 (10%) patients had local pain during freezing and/or shortly after treatment and 1 (5%) patient each had depigmentation, pain + depigmentation and atrophy. In regimen IV, out of 20 patients 3 (15%) patients had hyperpigmentaton, 2 (10%) patients developed erythema+erosion and 2 (10%) patient complaint of pruritis.

Table 18: Recurrence

Recurrence	Regimen							
	I		II		III		IV	
	No.	%	No.	%	No.	%	No.	%
Yes	5	25.0	9	45.0	2	10.0	1	5.0
No	15	75.0	11	55.0	18	90.0	19	95.0
Total	20	100	20	100	20	100	20	100
Chi-Square Tests								
Chi-Square					Df		P value	
11.57[a]					3		<0.05, s	

Significant

The table above shows the incidence of recurrence during the follow up period after the completion of treatment in four different regimen. Least number of recurrences seen in Regimen IV, in 1(5%) patient followed by Regimen III, in 2(10%) patients and Regimen I, in 5(25%) patients. Maximum number of recurrences seen in Regimen II in 9(45%) patients. Difference in proportion of recurrence in different regimens was significant ($p<0.05$).

DISCUSSION

According to Darzi et al., out of 17 patients with a 10-year follow-up, 71% of patients had fully flattened keloids, whereas 29% had partially flattened keloids. 71% of keloid scars that were treated showed symptom improvement [7]. In this study, 68.75% of patients were between the ages of 21 and 30; 15% were between the ages of 11 and 20. The range of ages was 11 to 50. Over 80% of the patients were under the age of 30. 80 patients were treated, with 56.25 percent of those being female and 43.75 percent being male (a ratio of 1.22:1). (F: M). In this study, 40 patients out of 80 were students. This might be explained by the fact that they and their parents are more aware of and concerned about the illness. The condition was present for less than a year in 52.5% of patients, for more than two years in 27.5%, and for one to two years in 20%. The difference in how long lesions lasted among the four regimens was not statistically significant ($p>0.05$). In this study, the chest was the area where keloid cases were most frequently recorded (47.5%), followed by the ear lobes (20%),

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shoulders (13.75%), and the face (1.25%). According to reports, keloids are more prevalent in the parasternal, ear lobe, and deltoid regions of the body. This study closely matches the findings of the preceding studies. Pruritis was reported by 45% of the 80 patients, followed by cosmetic deformity (27.5%), discomfort (12.5%), skin discoloration (10%), and movement restriction in 5% of patients. In this study, trauma was the most frequently observed aetiology in patients (32.5%), followed by ear piercing (20%) and spontaneous occurrence (17.5%). Acne, burns, infections, and surgical scars are additional causes. 7.5% of the participants in the current study had a favourable family history. The percentages of flattening as well as the regression in keloid size were the main efficacy parameters in the current investigation. According to Griffith et al., out of 61 patients, 42 (69%) patients had completely flattened lesions (an exceptional response), and 13 (21%) patients had softened lesions. Each patient's symptoms were dramatically reduced [19]. Regarding age, sex, the location and length of the lesion, there was statistically no statistically significant difference between the four treatment regimens ($p>0.05$). Only five (20%) of the twenty patients had an excellent response, seven (35%) showed a good response, five (25%) a fair response, and three (15%) a bad response. 16 (80%) of the patients on this regimen demonstrated excellent response, with 4 (20%) patients coming in second. None of them responded fairly or poorly. In regimen IV, 19 patients (or nearly all of them) shown outstanding responses, while one patient (or about 5%) displayed good responses with superior cosmetic outcomes. Out of 20 patients, 12 (60%) patients showed excellent response. Good response was seen in 6 (30%) and fair response in 2 (10%) patients. None of the patients showed poor response. Relief of symptoms were seen in all patients. 19 (95%) of the patients in regimen IV had the best good response, followed by 16 (80%) in regimen III, and 5 (20%) in regimen II. A total of 65% of responses were outstanding. Only three (15%) of the 20 participants in this study's regimen II showed a poor response. There was a statistically significant difference in the responses between the four regimens (p 0.05). The lesions in regimen IV had the earliest great response since they were surgically removed in a single session (0 visits). Regimen IV produced a great response in 95% (19/20 patients). Regimen III produced the second-best results, with 16 (80%) of the patients exhibiting outstanding response. Griffith et al. In his study, he found that 10 (or 16.4%) of 61 patients who used intralesional triamcinolone acetonide for keloid therapy experienced atrophy, while 2 (or 3.2%) experienced peripheral depigmentation [20]. Regimen II had the fewest patients, or 5 (or 25%), out of 20, who had an outstanding response. Between the four regimens, there was a statistically significant difference in how long it took for an excellent response (p 0.05). According to this study, patients with keloids that had been present for under two years displayed exceptional results at a rate of maximal 72.4%, followed by a good response (24.1%). Excellent response was observed in 45.4% of patients, and good response was shown in 18.1% of patients with lesions older than two years. All of the patients in this trial who had lesions over their ear lobes responded quite well, whereas just 36.8% of patients who had lesions over their chest did. Only patients with lesions across the chest and shoulders had poor and fair responses. Keloid lesions improved in 9 (15.5%) of patients following initial regression, and in these individuals, the keloid returned to its previous size.

CONCLUSION

As the third decade of life is when most trauma occurs during working hours, more than two thirds of the patients were in this decade. This is the time for girls to get their ears pierced. Due to the fact that practically all housewives get their ears pierced prior to being married, at the time of getting married, or even as children, female students were more prevalent than housewives. Due to the itching and cosmetic impairment, more than half of the patients had keloid lesions that lasted less than a year. This causes the patients to seek therapy early. The most frequent site of involvement overall was the chest, which is a known area for keloid occurrence. The most prevalent symptom in keloid patients is itching, which was observed in more than half of the patients. The best response was shown with regimen IV, followed by regimen III, demonstrating the value of combination therapy in the treatment of keloid. As these lesions will be smaller in size, making therapy much more convenient, the response to the treatment was great in those patients who had keloids of less than two years length. Patients who had keloid over the ear lobe responded well because the keloid will be relatively less in size and the site will be easier to cure. It is important to choose a safer regimen because side effects were more prevalent in regimen II. Again demonstrating the efficacy of these combination regimens in selecting the various therapeutic alternatives, the most recurrence of the lesion was observed in patients who adhered to regimen II, and the minimal recurrence of the lesion was observed in regimens IV and III. Keloids are therefore more prevalent in younger age groups. Given that keloids in females are extremely irritating and unattractive visually, combined therapy can considerably help.

REFERENCES

1. Liu EK, Cohen RF, Chiu ES. Radiation therapy modalities for keloid management: A critical review. J Plast Reconstr Aesthet Surg. 2022;75(8):2455-2465. doi: 10.1016/j.bjps.2022.04.099.
2. Al-Attar A, Mess S, Thomassen JM, Kauffman CL, Davison SP. Keloid pathogenesis and treatment. Plast Reconstr Surg.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

2006;117(1):286-300. doi: 10.1097/01.prs.0000195073.73580.46.
3. Butler PD, Longaker MT, Yang GP. Current progress in keloid research and treatment. J Am Coll Surg. 2008;206(4):731-41. doi: 10.1016/j.jamcollsurg.2007.12.001.
4. Xia Y, Wang Y, Shan M, Hao Y, Liu H, Chen Q, et al. Advances in the pathogenesis and clinical application prospects of tumor biomolecules in keloid. Burns Trauma. 2022;10:tkac025. doi: 10.1093/burnst/tkac025.
5. Durani P, Bayat A. Levels of evidence for the treatment of keloid disease. J Plast Reconstr Aesthet Surg. 2008;61(1):4-17. doi: 10.1016/j.bjps.2007.05.007.
6. Aköz T, Gideroğlu K, Akan M. Combination of different techniques for the treatment of earlobe keloids. Aesthetic Plast Surg. 2002;26(3):184-8. doi: 10.1007/s00266-002-1490-3.
7. Darzi MA, Chowdri NA, Kaul SK, Khan M. Evaluation of various methods of treating keloids and hypertrophic scars: a 10-year follow-up study. Br J Plast Surg. 1992;45(5):374-9. doi: 10.1016/0007-1226(92)90008-l.
8. Leventhal D, Furr M, Reiter D. Treatment of keloids and hypertrophic scars: a meta-analysis and review of the literature. Arch Facial Plast Surg. 2006;8(6):362-8. doi: 10.1001/archfaci.8.6.362.
9. Aggarwal A, Ravikumar BC, Vinay KN, Raghukumar S, Yashovardhana DP. A comparative study of various modalities in the treatment of keloids. Int J Dermatol. 2018;57(10):1192-1200. doi: 10.1111/ijd.14069.
10. Elazhary EA, Al-Salam A, El-Hafiz A, Hala S, Maghraby HM. Updates on keloid scar pathogenesis, assessment and treatment modalities. J Rec Adv Med. 2022;3(1):75-86.
11. Morelli Coppola M, Salzillo R, Segreto F, Persichetti P. Triamcinolone acetonide intralesional injection for the treatment of keloid scars: patient selection and perspectives. Clin Cosmet Investig Dermatol. 2018;11:387-396. doi: 10.2147/CCID.S133672.
12. Zhuang Z, Li Y, Wei X. The safety and efficacy of intralesional triamcinolone acetonide for keloids and hypertrophic scars: A systematic review and meta-analysis. Burns. 2021;47(5):987-998. doi: 10.1016/j.burns.2021.02.013.
13. Akaa P, Ahachi NC, Vhriterhire AR, Agada E, Jenrola AA, Dzuachii D. Five year retrospective study on keloid management. J Adv Med Med Res. 2017;23:1-8.
14. Wang R, Mao Y, Zhang Z, Li Z, Chen J, Cen Y. Role of verapamil in preventing and treating hypertrophic scars and keloids. Int Wound J. 2016;13(4):461-8. doi: 10.1111/iwj.12455.
15. Aggarwal A, Ravikumar BC, Vinay KN, Raghukumar S, Yashovardhana DP. A comparative study of various modalities in the treatment of keloids. Int J Dermatol. 2018;57(10):1192-1200. doi: 10.1111/ijd.14069.
16. Gauglitz GG. Management of keloids and hypertrophic scars: current and emerging options. Clin Cosmet Investig Dermatol. 2013;6:103-14. doi: 10.2147/CCID.S35252.
17. Viera MH, Caperton CV, Berman B. Advances in the treatment of keloids. J Drugs Dermatol. 2011;10(5):468-80.
18. Ojeh N, Bharatha A, Gaur U, Forde AL. Keloids: Current and emerging therapies. Scars Burn Heal. 2020;6:2059513120940499. doi: 10.1177/2059513120940499.
19. Griffith, B. H., Monroe, C. W., & Mckinney, P. (1970). A follow-up study on the treatment of keloids with triamcinolone acetonide. *Plastic and Reconstructive Surgery*, *46*(2), 145-150.
20. Griffith et al. In his study, he found that 10 (or 16.4%) of 61 patients who used intralesional triamcinolone acetonide for keloid therapy experienced atrophy, while 2 (or 3.2%) experienced peripheral depigmentation.

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