

Original Research Article

Analysis of risk factors behind keloid

Anbumalar Manoharan, Sowmya Manasa Rao*

Department of Dermatology Venerology and Leprosy, Meenakshi Medical College Hospital and Research Institute, Kanchipuram, Tamil Nadu, India

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*Correspondence:

Dr. Sowmya Manasa Rao,

E-mail: sowmyamanasarao@gmail.com

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ABSTRACT

Background: Keloids are firm, thickened, bosselated tumors with fibrous tissue which expands beyond the original injury with common sites being presternum, shoulder, ear lobes. They are more common in Blacks and Hispanics than Caucasians. As there is paucity of studies from South India, this study is done to identify the epidemiological features and analyse the risk factors involved in keloid formation and compare it with previous studies.

Methods: 60 subjects were included in the study. Keloid was diagnosed clinically and factors such as the age at presentation, gender, site, size, duration, number and predisposing factors to keloid formation were assessed among them for a period of 18 months.

Results: Most of the patients were in the age group of 20-40 years and maximum were females. Majority of patients around 51.67% were affected in chest followed by shoulder (20%). In our study 61.67% patients had keloids of size ≤5 cm and 23 (38.33%) patients had size >5 cm. Most of the patients (41.67%) had keloids of <2 years duration. Maximum number of the patients (68%) had single keloid. 50% of the patients had keloids which occurred after trauma followed by acne (15%), surgery (10%) and herpes zoster (10%), burns (5%). 10% of the patients had spontaneous onset of keloids.

Conclusions: The epidemiological features found in this study were similar to the studies conducted in the different parts of the world. Elimination of exacerbating factors will prevent further keloid formation thereby playing a crucial role in the management.

Keywords: Keloid, Trauma, Acne, Surgery

INTRODUCTION

Keloids are firm, thickened, bosselated tumours with fibrous pink or red excrescence expanding beyond original injury.¹ At times, they become brown and presents with pain, pruritus and burning sensation.^{2,3} Keloids can occur spontaneously or after trauma, burns, acne. Other provoking factors include infection in form of folliculitis, herpes zoster. It may take several years for the keloid to develop following the injury which do not resolve spontaneously.⁴ The common sites of predilection for keloids are presternum, shoulder, ear lobes which may be

due to high density of sebaceous glands and high surface tension causing these sites more predisposed for keloid formation.⁵ They are more common in Blacks and Hispanics and least seen in Caucasians.^{6,7} There is shortage of studies from South India, hence this study is done to identify the epidemiological features and analyse the risk factors involved in the development of keloid and compare it with previous studies.

METHODS

This was an observational, cross-sectional study, done among 60 keloid patients who came to the dermatology

out-patient department at Meenakshi Medical College Hospital and Research Institute from February 2018 to August 2019. Inclusion criteria were patients between 15 to 65 years age group, both males and females, keloid size of 1-10 cm and time of onset to be less than 10 years. With the consent of the patient, thorough history taking was done to assess age of presentation, gender, site, size, duration of onset and predisposing factors to keloid formation.

Statistical analysis

The data were entered into Microsoft excel data sheet and was analysed using SPSS 22 version software. Categorical data was represented in the form of frequencies, mean. Graphical representation of data using bar diagrams, pie charts was done.

RESULTS

Among the 60 patients included in the study, the relation of keloid to the age of presentation, gender, sites of involvement, size, duration, number and predisposing factors were listed below:

Age and sex distribution

In the present study, the maximum number of males and females were seen in the age group 15–25 years followed by 26-35 years. Among 15-25 years age group, males constitute 9 (37.5%) and females include 14 (38.89%). The age of the youngest patient at the time of presentation was 15 years and the eldest was 65 years. The total female to male ratio was 3:2.

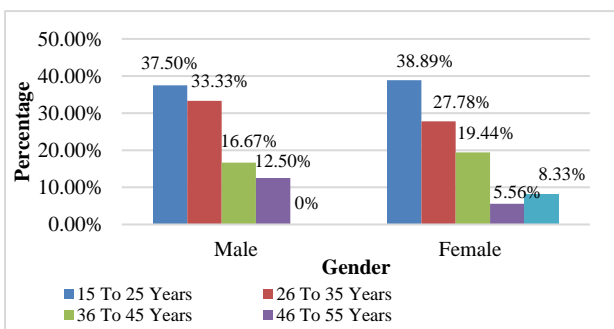


Figure 1: Age and sex distribution.

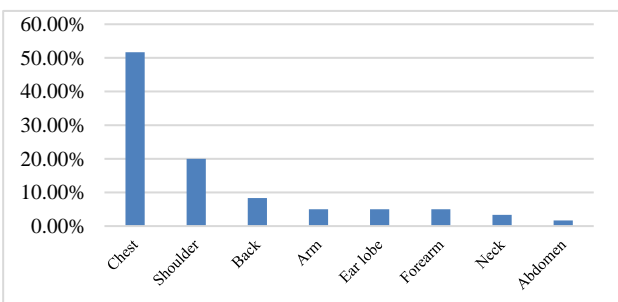


Figure 2: Sites of involvement.

Sites of involvement

Majority of patients i.e., 31 (51.67%) were affected in chest. The proportion of patients with keloid on shoulder, back was 20% and 8.33% and arm, ear lobe, forearm respectively was 5% each. 2% of the patients had keloid on neck and 1% on abdomen.

Size of the keloids

Among the study population, 37 (61.67%) patients had size ≤5 cm with majority of them having on chest and 23 (38.33%) patients had size >5 cm.

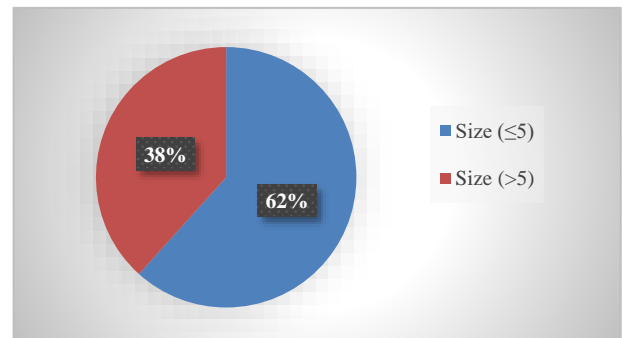


Figure 3: Size of the keloids.

Duration of the keloids

Among the study population, 25 (41.67%) patients had <2 years duration, 15 (25%) patients had 2 to 4 years duration and 20 (33.33%) patients had ≥5 years duration.

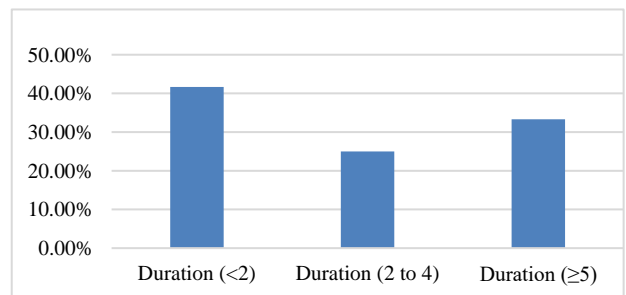


Figure 4: Duration of keloids (in years).

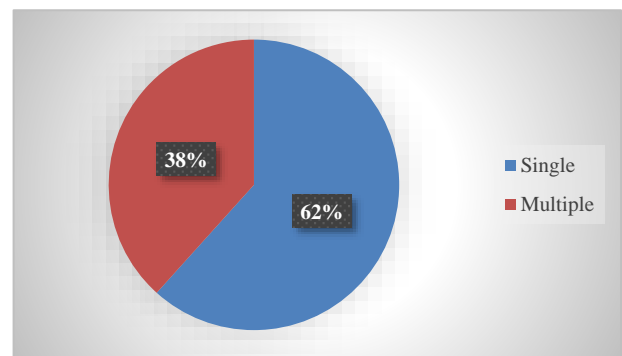


Figure 5: Number of keloids.

Number of keloids

Majority of the patients around 37 had single keloids with maximum occurrence on chest 23 patients had multiple keloids.

Etiology of keloids

In this study, trauma (50%) was found to be the most frequent predisposing factor for keloid formation followed by acne (15%), surgery (10%), herpes zoster (10%), burns (5%). 10% of the patients had spontaneous onset of keloids.

Table 1: Etiology of keloids.

Etiology	Frequency	%
Trauma	30	50
Acne	9	15
Surgery	6	10
Herpes zoster	6	10
Spontaneous	6	10
Burns	3	5



Figure 6: Keloids after burn.



Figure 7: Keloids after acne.

DISCUSSION

In this study, the majority of patients came from the age group of 15-35 years (68%). This was in concordance to the study done by Ketchum et al where maximum number of patients were in the age group below 30 years because younger individuals have more skin tension, collagen synthesis rate and more prone for trauma to occur.⁸

In our study, keloids were more common among females (60%) than males (40%) and the female to male ratio was found to be 3:2 which was similar to the study conducted by Darzi et al in which 61.5% of the patients were females and 38.5% were males.⁹ This female preponderance might be due to more cosmetic concern and ear piercing procedures undergone by them.

In our study, majority around 31 (51.67%) participants had keloids in chest followed by shoulder (20%), back (8.33%), arm, ear lobe, forearm respectively was 5% each. This was in concordance to the study done by Brain et al where maximum keloids were seen in chest, shoulder, ear lobes, arms and upper back.¹⁰

Thirty seven (61.67%) patients had keloid size ≤5 cm and 23 (38.33%) patients had size >5 cm in our study. 25 (41.67%) participants had keloids <2 years duration which was similar to the study done by Cosmon et al where most of patients had keloids which were formed within 1 year of trauma.¹¹ Patient's negligence might be the cause for longer duration of lesions.

Trauma was found to be most common triggering factor in keloid formation (50%) followed by acne (15%), surgery (10%), herpes zoster (10%), burns (5%). 10% of patients had keloids of spontaneous in nature which might be due to initial infection which was forgotten by them. This was in concordance to the study conducted by Murray where trauma was the most common predisposing factor which led to keloid formation. The study done by Kelly also found that trauma was the most frequent triggering factor associated with keloid.^{12,13}

CONCLUSION

Keloids are hypertrophic scars. Management of keloid is challenging for us dermatologists due to difficulty in treatment, variable therapeutic response, discontinuation of treatment, recurrence and psychosocial impact on the patient. The epidemiological features found in this study were similar to the studies which were conducted in the different parts of the world. We found that trauma was an important triggering factor for keloid formation. This was in concordance with many previous studies among Indians as well as in Western population. In this study, females outnumbered males, which was mainly due to more cosmetic concern and ear-piercing procedures done by them. For effective management of keloid, besides therapeutic agents, prevention of further keloid formation in the patients is equally crucial which can be obtained by

avoiding trauma, body piercing or elective cosmetic procedures, proper wound closure with minimal tension.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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