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CLINICAL PATTERN AND MANAGEMENT OF KELOIDS IN BLACK POPULATION

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ABSTRACT

Objective: To present the clinical pattern, treatment approach and outcome of keloid care in our clinical practice.

Design: A retrospective study.

Setting: Obafemi Awolowo University Teaching Hospital, Ile-Ife, Southwestern Nigeria.

Subjects: All patients presenting with keloids during the study period

Intervention: The pattern of presentation, modalities of treatment and outcome of care as well as complications and recurrences were documented.

Results: Seventy – six patients were studied. Equal male to female ratio. Their ages ranged from 1-75 years with a modal age of 24 years. Lesions presented for treatment were most commonly located in the head and neck region. Itching was the most common symptom. Combination therapy by surgical resection, intralesional triamcinolone injection and superficial radiotherapy was the most common modality of treatment and gave the least rate of recurrence.

Conclusions: Combination therapy gave the best outcome in our practice.

INTRODUCTION

Keloids are benign, proliferative dermal collagen growths that represent a pathological wound-healing response to skin injury, in susceptible persons. It is known to affect only human beings and is worse in pigmented races but less common in Caucasians and albinos. The multiplicity of treatment modalities suggests that no single, consistently effective therapy has been found (1).

There are many excellent reviews on the pathophysiology and treatment of Keloids (1-5). Aetiologies proposed for keloids formation include familial predilection, which has no clear pattern of inheritance and hormonal imbalance among others (6-8).

Keloids have been described in all age groups except newborns (1). Trauma is considered the underlying risk factor but spontaneous keloids is reported to account for about one-third of patients in a study from Iraq (9).

Overabundant collagen deposition in keloids results from increased collagen synthesis, due to defective regulatory negative feedback, decreased collagen degradation or a combination of both (3,10). An immune explanation for the pathogenesis of Keloids has also not been clearly defined (11). Several

tumour-related genes were found to be up regulated in keloids fibroblasts, with the greatest increase seen in Ribosomal Protein 18 (RPS18), an important protein for cell growth. Stat-3, another oncogene involved in cell proliferation, has also been linked to keloids pathogenesis (3). A possible viral hypothesis is thought to cause derailment of the normal wound healing during the scar maturation process (12).

Patients often seek treatment for relief of unpleasant symptoms such as pruritus and pain aesthetic disfigurement or functional limitation.

Many therapeutic approaches in the treatment of keloids (3-5) are empirical or based on clinical observations. Non-invasive options include compression therapy, application of a variety of oils, lotions and creams, steroid tapes, antihistamine drugs, psychological counselling and advice. Silicon gel and silicon sheeting are now being used widely. Less commonly, diverse medical therapies are also being used including Tacrolimus, Pentoxifylline, colchicines, topical zinc, cyclosporine, D-penicillamine, relaxin, topical mytomyacin C, and angiotensin converting enzyme (ACE) inhibitors. The mechanisms of action of many of the agents have been summarised by Leventhal, Furr and Reiter (4). Invasive treatments include surgical excision and wound closure. Intralesional corticosteroid injection

is used widely. Others include injection fluorouracil, bleomycin, radiotherapy, laser therapy, cryotherapy, intralesional injection of interferon gamma, and interferon α -2b. Surgery, laser, and cryotherapy are often fraught with recurrence. The direction for the nearest future in keloids treatment and prevention may be the modulation of regulatory growth factor cascades like increasing the ratio of cytokines such as transforming growth factor β 3 compared with factors β 1 and β 2.

This study aims at documenting the clinical pattern of keloids in our practice, highlight the challenges of care and the rationale for our choice of treatment modalities as well as present the outcome of management.

MATERIALS AND METHODS

This is a retrospective study of all the patients who presented with keloids at the Obafemi Awolowo University Teaching Hospital, Ile-Ife, Nigeria over a five-year period from January 2003 to December 2007. Retrieved from the patients' hospital records were the demographic data, ethnic group, the number of keloid lesions, their anatomic locations and size, the predisposing factors, family history, as well as the modality of treatment. The outcome of the treatment was also documented as well as the duration of the follow-up. The measures of outcome were both subjective (abatement of symptoms, patient's satisfaction or otherwise); and objective (change in size compared with initial measurement and pre-treatment picture documentation, recurrence or other

complications). Recurrences, little or no change in size, and persistence of symptoms are taken to be poor outcome. All data were analysed using the Microsoft excel software and the results presented using simple descriptive statistics.

The possible limitations of this retrospective study are possibility of incomplete retrieval of cases, poor documentation of details of keloids for which patients do not complain.

RESULTS

A total of 76 patients' records were retrieved during the study period. Thirty-eight of them were male while the remaining thirty eight were females, giving an equal ratio of 1:1. The age ranged from one year to 75 years with a mean age of 32.1 years, while the median age was 27 years and the modal age was 24 years (Figure 1). Seventy-one (93%) of them were from the Yoruba ethnic group, the predominant tribe in south western Nigeria, while the others were Igbo 3(4%), Hausa 1(1.3%) and Urhobo 1(1.3%) which are ethnic groups from other parts of the country. Twenty-two (28.9%) patients had a definite family history of keloids in the first-degree relatives, but 54(71.1%) had no known family history of keloids in the first-degree or other relatives.

As solitary keloidal lesion was present in 40(52.63%) patients, 11(14.47%) had two lesions, the remaining 25 (32.89%) had three or more keloids. A total of 119 keloids were recorded in the 76 patients. The documented anatomic locations indicated that the head and neck region was affected the most (Table 1).

Figure 1
Age distribution

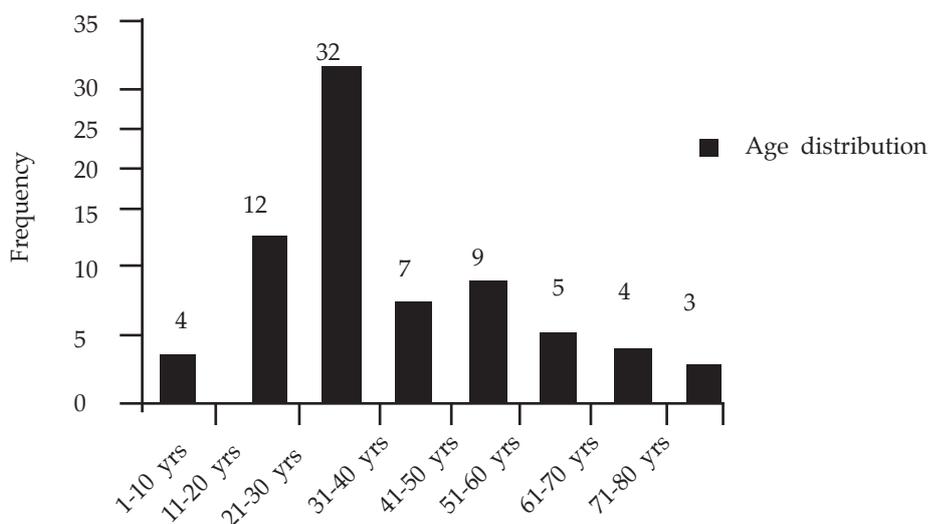


Table 1
Anatomical Distribution of Keloids on the body (n=119)

Location	Site	Number (%)	Total
Head and Neck	Earlobe	14(11.76)	54(45.38%)
	Cheek	12(10.09)	
	Neck	12(10.09)	
	Post auricular	7(5.88)	
	Pre auricular	6(5.04)	
	Scalp	3(2.52)	
Trunk	Presternal	18(15.13)	32(26.89%)
	Abdomen	6(5.04)	
	Back	5(4.20)	
	Breast	3(2.52)	
Limbs	Upper limbs	14(11.76)	33(27.73%)
	Shoulder	12(10.09)	
	Lower limbs	7(5.88)	
Total		119(100)	119(100%)

Table 2
Analysis of Treatment and Outcome

Treatment	Total No of patients (%)	Good satisfactory	Poor result recurrence (%) outcome (%)	No follow-up outcome n/ A+ (%)
*Triple therapy	23(30.26)	18 (23.68)	2(8.70)	3(13.04)
**I/L Triamcinolone	19(25.00)	9(47.36)	5(26.32)	5(26.32)
Excision+ Triamcinolone	18(78.26)	9(50.00)	5(27.78)	4(22.22)
Excision + Silicone	10(13.16)	4(40.00)	4(40.00)	2(20.00)
Topical Steroid	6(7.90)	1(16.67)	4(66.66)	1(16.67)
TOTAL	76(100)	41(53.95)	20(26.31)	15(19.74)

*Triple therapy = Excision with concurrent Injection. Triamcinolone & Radiotherapy

**I/L = intralesional

N/A+= Not available

A previous attempt at treatment of the keloids was noted in 19(25%) patients while the rest had no previous history of treatment.

The various treatment modalities employed and the outcomes are presented in Table 2. The combination of surgical excision, intralesional injections of triamcinolone (intramuscular injections for extensive lesions) and radiotherapy administered concurrently constituted the "triple therapy".

Many patients 15(19.74%) defaulted after completion of treatment and therefore had no record of outcome. The rest 61 (80.26%) were followed up from between 4 to 84 months with a mean duration of 13 months. Overall 'good' or 'satisfactory' outcome was recorded in 41(53.95%) of patients while 20(26.31%) had poor outcomes or recurrences. The triple therapy recorded the best response with (18/23) 78.26 % good or satisfactory outcome; and recurrence or poor outcome in (2/23)9.52% of patients and poorest

responses were observed in patients treated with topical steroids with 16.67% good/satisfactory outcome. Two patients had initial graft loss following treatment with post excision radiotherapy (Table2).

DISCUSSION

Keloids are easily diagnosed by clinical observation and confirmation is by histopathology in doubtful cases. Humans are affected exclusively and the treatment poses many challenges. The propensity to form keloids and the tendency toward recurrence vary considerably in different individuals. Keloids sometimes behave differently even in the same individual and it may assume a rather aggressive, florid growth (13).

The age of our patients ranged from infancy (1 year old) to the elderly. Fifty- eight percent of our patients were aged 11-30 years. This is the age group of

peak incidence in other studies (9,14). These particular age groups are very susceptible to forming keloids, and they may also seek treatment more because of increased consciousness of their body image.

This review showed equal gender distribution which is a fairly consistent pattern though some studies have shown a slight female preponderance that is thought to be due to increased ear piercing in the female gender (15).

Close to half of our subjects (46.05%) had multiple site lesions ranging from two to as many as ten. A smaller percentage of 36.6% of multiple lesions was reported in another study (9). Could it be that there is a tendency to multiplicity of keloids in this black population? Some of the patients also presented with extensive, broad, and widespread keloids (Figure 2).

Figure 2

Multiple keloids post burns



A family history of keloids was obtained in nearly a third of our patients, supporting the notion of genetic inheritance as a factor in aetiology of keloids.

While there is no universally accepted treatment protocol, the location of lesions, and the dosage of therapeutic agent required for treatment determine the applicability or otherwise of modalities of treatment such as steroids and radiotherapy. In intralesional injection of triamcinolone, it is recommended that 10mg of drug be given per linear centimetre of keloid every two to six weeks until clinical resolution (16). This is inadaptable to such clinical types as seen in figure 2, hence the use of intramuscular route as part of 'triple' therapy for such patient.

The treatment employed for our patients are therefore individualised. The smaller lesions in patients who do not have any medical contraindications receive intralesional triamcinolone injection two to four week intervals, and are reviewed after six doses have been administered. Some patients opt for topical

steroids or silicon sheet application. Some of the patients however present with big, grotesque keloids (Fig 3a, 3b,); and sometimes because of the location, they may be associated with deformity and body distortion. These patients invariably require surgical excision and/ or reconstruction or refashioning of the affected parts such as the ear lobes (Fig4). In order to prevent the expected recurrence, and especially in patients with high propensity to form keloids as indicated by the size, rapidity of growth and family history, the combination triple therapy is offered (Fig 5a, 5b).

Figure 3a

Huge neck keloids

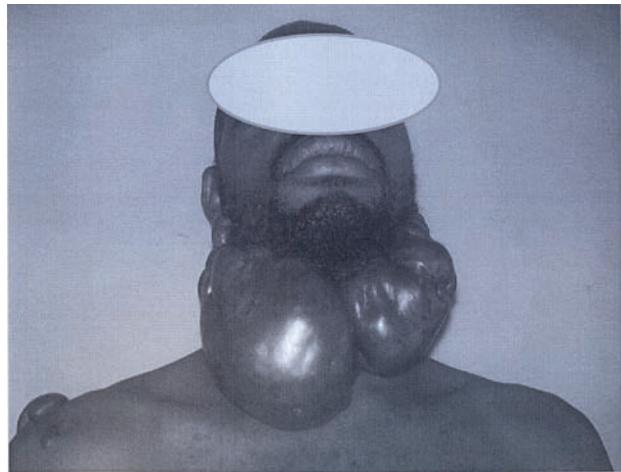


Figure 3b

Huge neck keloids

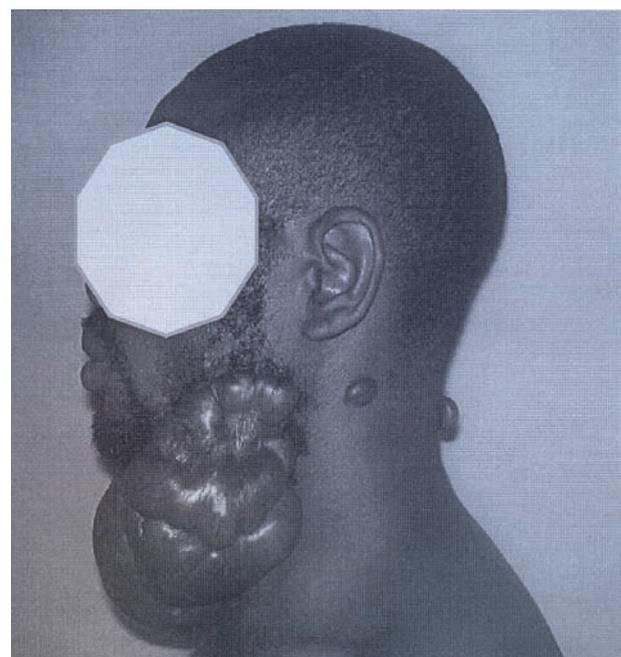


Figure 4

Bilateral ear keloids in 7-year old girl

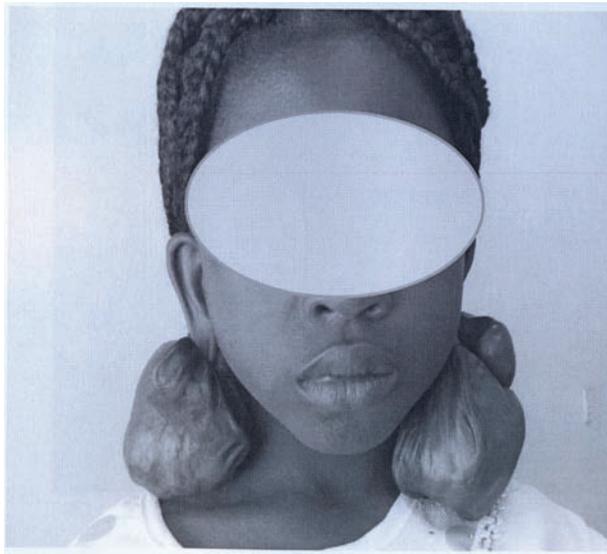


Figure 5a

Post Auricular keloid

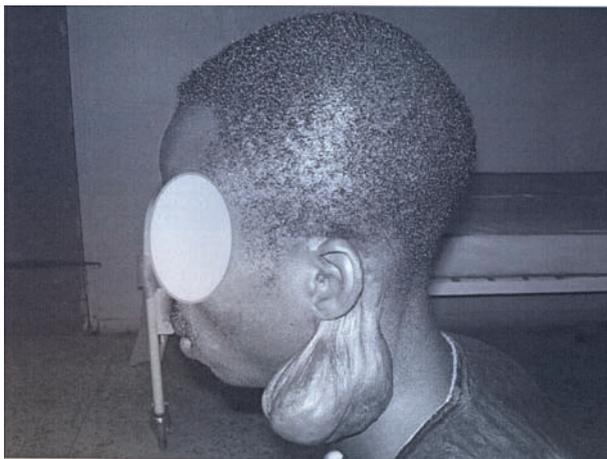
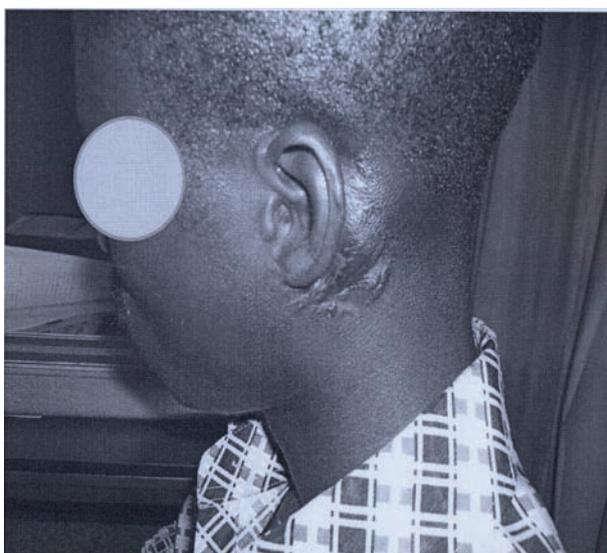


Figure 5b

Post triple therapy



We carry out marginal excision of the keloids which involves reflecting the overlying skin as a local flap to cover the wound, thereby avoiding the risk of creating a secondary wound in adjoining non keloid tissue. However when this is not feasible, the secondary graft site is treated concurrently with the keloids site. Extralesional excision of keloids has also been used as part of combination therapy in lesions that are small enough to be managed as such, with very good outcomes (17). Antibiotics are also administered when indicated for infected keloids, and sometimes in the peri-operative period. The sheer size of some of these lesions (Figs 3 and 4), preclude the use of intralesional steroids and topical agents.

The treatment outcome of these patients gave a good or satisfactory outcome in 54% of cases. Poor results as judged by recurrence, failure to achieve notable or satisfactory reduction in size or non-abatement of symptoms (eg pruritus, pain) occurred in 26.31% of patients. The best response was obtained in patients who had "triple therapy," 78.26% had good or satisfactory outcome, which compares well with success rates 76 to 100% reported with post surgical irradiation (17,18). Only 8.70 % had a recurrence and one of these patients presented seven years after the treatment. Two of these patients suffered full thickness skin graft loss following the radiotherapy but their wounds however healed satisfactorily with dressings. Wound healing difficulties are recognised complications of radiotherapy (16).

A 50%, good or satisfactory outcome with excision and triamcinolone is seen in this study but recurrence rate was 27.78% .

Outcome in the use of intralesional triamcinolone alone or with topical steroids is not often predictable, with fewer than half of the patients eventually having good results in terms of non-recurrence and complete reduction in size in our population. This contrasts a 64 to 100% complete flattening reported in other studies (18,19). This is probably because our patients present with more florid and mature lesions which are associated with poorer response. Many of our patients however, often report improvement in symptoms especially pruritus and pain after commencement of intralesional triamcinolone.

The use of topical steroids gave poor result in 66.66% of cases and is of no established keloids cases.

Excision plus the use of silicone gel or sheet yielded 40% good/satisfactory outcome and 40% poor result. However the number of the patients are fewer and correct application of the sheets is often not guaranteed. About a quarter to one-fifth of our patients on injection triamcinolone and silicone sheeting are soon lost to follow-up, with some discontinuing the treatment before it is completed. This may be due to discomfort of injection, and the inconvenience of continual wearing of silicone gel sheet.

Electron beam has been reported to be well

tolerated and very effective in preventing keloid recurrence when used in place of radiotherapy, and is associated with fewer side effects, including hypopigmentation (20), this modality of treatment is not available in our facility. While our unit has not been fully set up for laser surgery and cryotherapy; laser is associated with a high recurrence rate; while pain, prolonged healing following treatment and the risk of hypopigmentation in darker skinned patients (3-5) are drawbacks of cryotherapy. These modalities may thus record lower success rate in our Negroid population than is found in the Caucasian.

It must also be stated very clearly that not every lesion is treated in all patients. Some patients present with several keloids and request that the conspicuous, aesthetically embarrassing ones, usually in the exposed part(s) of the body are treated. At other times, the lesions are simply too widespread for all of them to be treated effectively and decisions are taken in discussion with the patient as to what is feasible, which lesions to be treated especially the symptomatic ones.

Decisions as to which modality to employ depend on a number of factors including the size, location, patients medical history, patient's preference and symptoms. Various modalities available to us are used, often in combination. Surgery is often indicated because of the sheer size of some of these lesions. While triamcinolone injection often gives symptomatic relief of pruritus, the triple therapy, was noted to have the least rate of recurrence.

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