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Dermatological Care for All: A Perspective

Pragya A. Nair

Author Affiliation:

Professor, Department of
Dermatology and Venereology,
Pramukhswami Medical
College, Karamsad, Anand,
Gujarat -388345.

Reprint Request:

Pragya A. Nair, Professor,
Department of Dermatology
and Venereology
Pramukhswami Medical
College, Karamsad, Anand,
Gujarat -388345.
E-mail:
drpragash2000@yahoo.com

Abstract

Rural India is hardly served by specialist doctors. The country uses enormous resources and finances to educate these doctors. With modernization and shift of focus from clinical dermatology to cosmetic or aesthetic dermatology, young doctors and specialist are driven to cities. Relevant and feasible policies need to drawn and implemented for the services to reach the rural masses. Dermatological societies and the doctors need to understand the social and moral obligations to contribute & support government in providing the service to rural India.

Keywords: Dermatology; Rural Area; Cosmetology.

Across the country the rural masses is very significant in number, and availability of specialist is handful. As skin disease have profound effect on individual and community, the government needs to define and implement, specific target oriented sustainable policies and guidelines to ensure that specialist care reaches rural population. The prevalence of skin disease in rural areas are alarming often can be under reported.

The access to resources and specialist is markedly, skewedly concentrated to urban and semi-urban areas. Majority of rural population in India about 60–70% has no direct or immediate access to

dermatologists. Verma S, in his article “Nonclinical challenges of Indian dermatology.”, compares the rural and cities, addresses the issues of poverty, lack of awareness, and stress on the need of reforms in dermatology [2]. The staffing pattern of CHC's (Table 1) [1], there is no position available for dermatologists, when we know, that skin disease is rampant in the community. Probably, the condition is beyond the awareness of policy makers. It is not that a position should be created, question is even if it is created, how many takers will be there, when for existing post there are no takers, and lying vacant.

Table 1: Staffing pattern of CHC's

Personnel	Essential (No's)	Qualification
BLOCK Health Officer	1	Senior Most Specialist (Experience in Public health)
General Surgeon	1	MS/DNB (General Surgery)
Physician	1	MD/DNB (General Medicine)
Obst. & Gynaecologist	1	DGO/MD/DNB
Paediatrics	1	DCH/MD /DNB
Anaesthetist	1	MD/DNB/DA
Public Health Manager	1	MD(PSM)/DPH
Eye Surgeon	1	MD/MS/DNB
Dental Surgeon	1	BDS
General Duty MO	6	MBBS
General Duty MO of AYUSH	1	Graduate of AYUSH

We need to address this issues and a possible solution can be Teledermatology [3]. Success of Teledermatology depends on :

1. Motivation of the referring physician & the consulting dermatologists.
2. Govt policy and Protocols need to be in place for sending referral and consultation.

Government needs to address this issue by

1. Linking all community centre with tertiary care center or Medical colleges (can be via telemedicine).
2. Attract private practitioners as a means of expansion
3. As a compulsion of social professional responsibility, giving service to community, as the Government spends lakhs of Rupees and National resources in educating a MBBS & Post Graduate doctor. A study of AIIMS, New Delhi, published in 2013 by Verma et. al., calculated the total cost per student as 31.31 lakhs annually and 172.20 lakhs per course [4].

Practising for more than 15 years of dermatology at tertiary care hospital has its challenges, not always rosy, many times dreary, seeing around 120-150 patients in a days OPD, many a routine cases. Majority of patients are from lower economic to lower middle class, but significant number from middle class too.

Being a Tertiary care centre , often many patients come after they have tried out all the various "Pathies" and General Practitioners, the clinical condition would have worsened, often changed the appearance, and over and above patient come with a mindset for a "Quick Fix", that we doctors have a magic wand to make the disease disappear. But in reality we know, many dermatological conditions need prolonged treatment. So it can be frustrating to both parties, too.

Also being a Hospital run by Charitable trust, patient after trying out all private practitioners, when they approach us, they want everything free. "Nothing is Free". And we know dermatological medications, can in no way be considered cheap.

The prevalence of skin disease in rural areas are alarming often can be under reported. Rural people who develop dermatological disorders often do not seek speciality care because of multiple logistic factors like.

1. Accessibility of specialist
2. Cost of Treatment
3. Not aware of whom to consult.

4. Misguided by practitioner of various pathies.
5. Accommodation to the condition as age related.
6. Over the counter drugs

Common issues encountered which result in decrease in quality of life of patients :

1. Awareness in patients, about whom to consult, which often results in patient reaching the centre with aggravated condition, disfigurement and decreasing the quality of life of the patient.
2. Awareness is lacking in general practitioner due to lack of knowledge of the conditions.
3. General practitioner not referring the patient to specialist due to fear of loss of patient.
4. Another big issue is indiscriminate use of Steroids by GP's, as a 'QUICK FIX' for many condition

These issues, Questions need to be addressed, which we all are surely aware off, which defy easy solution, but we need to address it time and again till a definite amicable solution is achieved.

Medical Council of India regulations need to emphasise more on Clinical Dermatology rather than Medical technologies, which keep changing every six month, you cannot run after it, then there will be only accumulation of Junk, waste. Question is why they are only advocating technology, which essentially benefit only the industries. Every budding dermatologists wants to go for LASER, how many patient can afford the treatment, is it the only method. And 80% of work is cosmetic, it is a sorry state of affair, degrading oneself from Dermatologists to Cosmetician, waste of 9-10 years of medical education, a vocational technology course can be developed which will increase employment.

Clinical Dermatology is actually neglected. Skin is the largest organ of the body but it has become an optional subject. Is it a redundant organ like APPENDIX, that you can have a body without skin. Then why in internship, Dermatology has become optional, an elective subject. In the final year MBBS, Dermatology is part of Medicine paper, what is the weight-age as good a 'NIL', and who accesses it, Dermatologist or General Medicine. How can we expect the GP's, who usually will be MBBS, to correctly diagnose and give appropriate treatment. The association of dermatologists needs to address this issue and repeatedly bang on the door of policy makers till it open up.

When issues involve diverse group of people, Policy Maker, Implementing authorities, Health care provider and the patient, it defy easy solution, but

bold steps need to be taken to solve it.

Dermatological associations & societies need to take active part in education of the masses, by creating brochure/pamphlets in all major Indian languages for common dermatological problem, to educate the community. It can offer services to support the Govt. and make the policy makers aware of the issues and help them to plan and direct the policy. There is a urgent need to pursue with MCI to give dermatology its due. The dermatological societies can create database of dermatological conditions prevalent across the country. As dermatologists we can offer our services to community at least via – Teledermatological modality

The Health policy makers must emphasise more on Clinical Dermatology. Dermatology posting in internship should be mandatory for 2 weeks in MBBS, with definite learning objectives. There is a need to bring in policies and training programmes for GP's. There is a need to create means and accessibility to specialist closer to home. There is a need to develop protocol for referral through telemedicine. There is need for accountability of spending on creating doctors and providing health care, in terms of accessibility and service provided to the masses.

To conclude, Rural people who develop dermatological disorders often do not seek speciality care because of multiple logistic and economic factors. The major cause of morbidity in rural patients are due to lack of specialist, accessibility (distance) of

specialist, lack of knowledge, negligence, acceptance of disease as a normal course of aging, cost of treatment and non-compliance to treatment due to prolonged course of treatment. The vision of "HEALTH FOR ALL" is a distant dream, more realistic and that which is achievable, is "HEALTH CARE FOR ALL".

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Application of Digital Planimetry: A Novel Technique of Wound Measurement in Diabetic Foot Ulcers (DFU)

Pandey S.*, Chittoria R.K.**, Mohapatra D.P.***, Friji M.T.***, Dinesh K.S.***

Abstract

Author Affiliation:

*Senior Resident, **Head,
***Associate Professor,
Department of Plastic Surgery,
Jawaharlal Institute of
Postgraduate Medical
Education and Research
(JIPMER) Pondicherry India-
605006

Reprint Request:

Ravi Kumar Chittoria, Head,
Department of Plastic Surgery
Jawaharlal Institute of
Postgraduate Medical
Education and Research
(JIPMER) Pondicherry India-
605006.
E-mail: drchittoria@yahoo.com

Diabetic foot ulcer is almost always associated with reconstructive challenges because of associated morbidities. Involvement of multiple systems and organs makes the disease more complex in nature hence a multidisciplinary team approach is required for its management. Owing to raised blood sugar, micro angiopathy and neuropathy the healing is usually delayed and prolonged wound bed preparation is needed before definitive reconstruction. Wound assessment is mandatory in such long duration wounds to continue or change the treatment plan according to the response of the wound. Subjective assessment of wound may not be an accurate measurement of the wound response hence an objective and accurate assessment technique is mandatory for monitoring the wound behavior. Through this article we present role of digital planimetry as an effective and accurate technique for wound measurement in diabetic foot ulcer.

Keywords: Diabetic; Wound; Digital Planimetry.

Introduction

Incidence and prevalence of diabetes is found to be increasing due to changing life and increase in sedentary life style. Almost 25% of patients diabetes are affected with foot ulceration during their lifetime [1]. According to WHO 32 million people had diabetes in the year 2000 [2,3] while 69.9 million Subjects are predicted to be affected by the year 2025 (Figure 1).

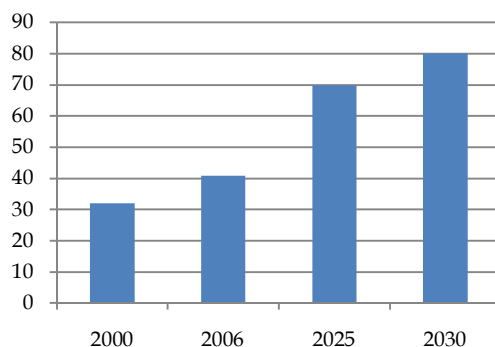


Fig. 1: Estimated number of diabetics in India (in millions)

Diabetes mellitus is the most common cause of Charcot neuropathy which is preventable by awareness, careful observation and planned treatment hence a well organized multidisciplinary team approach can not only prevent the condition to occur but also can provide effective treatment plans to avoid dreaded complications like disability or even amputation [4,5,6].

According to Chennai Urban Population Study (CUPS) and CURES the prevalence of coronary artery disease is higher in diabetics as compared to non diabetics (21.4 per cent and 9.1 per cent respectively). Increased thickness of carotid intima and medial thickness as well as increase in the number of components of metabolic syndrome causes serious complications in diabetes. Similarly the prevalence of peripheral vascular disease (PVD) is also high in diabetics as compared to non diabetics (6.3 per cent and 2.7 per cent respectively), and these figures are lower than the prevalence reported in western populations. DFU can be classified as Neuropathic, Ischemic, or Neuroischaemic depending on the

involvement of nervous system, vascular system or both, respectively [7]. Wound related complications of diabetes can impact significantly on social, mental, physical, psychological and economical prospective. Careful wound management protocol with effective techniques of wound measurement can prevent serious complications and hence can improve patient's quality of life. Through his article we would like to emphasize on use of digital planimetry as an effective technique of wound measurement.

Methodology

This study was conducted in the department of plastic surgery, JIPMER, Pondicherry, India. This is a retrospective study done during the period of March 2013 to June 2013. 12 cases of diabetic foot were analyzed in whom digital planimetry was used as a technique for wound measurement during the process of wound bed preparation. Ulcer was categorized (neuropathic/ ischemic/ neuroischemic), wound was graded according to Wagner's grading system [8].

Thorough limb examination was performed. Documentation of ulcer was done according to digital planimetry software at the time of presentation and was repeated weekly to access the condition of the wound [15].

After thorough initial workup and documentation, wound bed preparation was started along with other treatments related to primary pathology. We used TIME concept for systematic and step wise wound bed preparation (Figure 2) [9].

Wound bed preparation (WBP) by "TIME" concept

T- Tissue management

I- Infection and inflammation control

M- Moisture balance

E- Epithelial (edge) advancement

Fig. 2: TIME concept of WBP

Radiofrequency and Hydrojet technologies [10] were used for Surgical and nonsurgical debridement was done for all wounds. Dressing modalities were chosen according to the wound status. Biological dressings, silver dressings, absorbent dressings and negative pressure dressings were various modalities used for wound cover. Weekly or SOS (depending on soakage and need of change of dressing) wound assessment was done and documented. We used

digital planimetry for wound measurement. We followed the procedure described by Shetty R. et al [11] for calculation of wound surface area by using image J software, the procedure of calculation of wound area was as follows-

Step1- wound was cleaned to define the surroundings.

Step 2- Sterilized grid of 4x4 cm area was kept along the side of the wound (Figure 3, 4)

Step 3- Good quality photograph was taken and saved to the computer. The photograph was analyzed using Image J™ free open source software (Figure 5).

Step 4- The edges of the wound were marked and area was calculated. As the area of grid was known i.e. 16 cm² the number of pixels falling under the square marker and the marked wound were calculated (Figure 6, 7).

Step 5- wound area was calculated according to following formula

Area of wound = 16 (wound measurement/grid measurement)

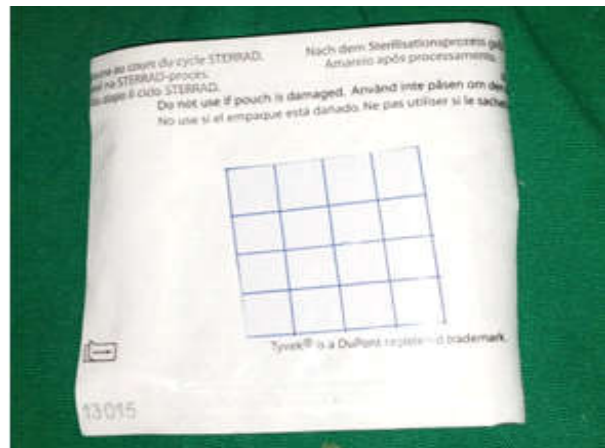


Fig. 3: Sterile grid used for digital planimetry

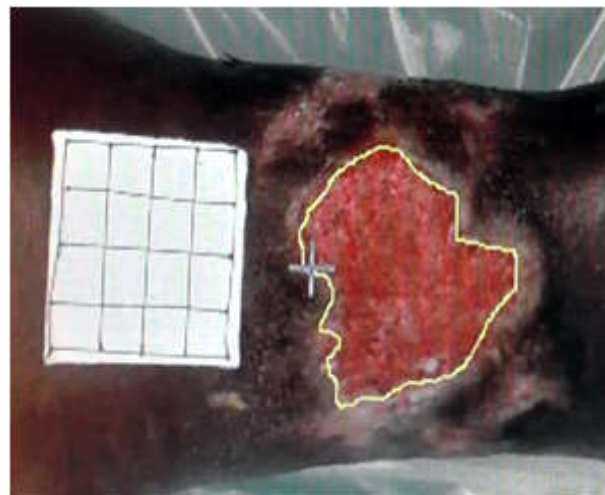


Fig. 4: Grid kept on the side of the wound



Fig. 5: Image J software being used

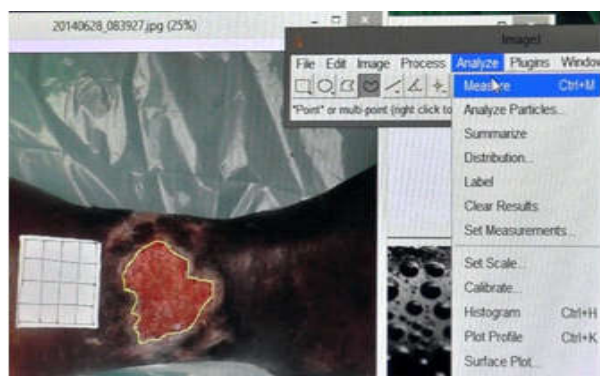


Fig. 6: Wound edge outlined

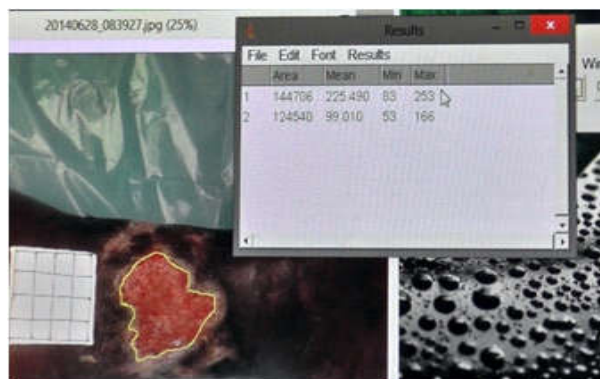


Fig. 7: Wound area being calculated

Result

Twelve patients were included in this study. The mean age was 49.16 years with male to female ratio of 6:1. In 7 patients (58.33%) blood sugar was uncontrolled. The most common co-morbidity was anemia, in 8 patients (66.66 %), followed by hypertension, in 5 patients (41.66 %) and 3 Patients (25 %) were found to have associated renal diseases. Osteomyelitis was present in 2 patients (16.66%). The most common etiology was spontaneous, in 7 patients (58.33 %) and next most common etiology was trivial trauma, in 4 patients (33.33%). Most common site of wound was distal foot. Mean duration of wound was 11.75 weeks. 9 Patients (75 %) were on injectable

insulin and 3 patients (25 %) were on oral hypoglycemic drugs. 1 patient (8.33 %) presented with associated cellulitic changes. Image J was used in all wounds for area measurement. The most common organism grown in tissue culture was pseudomonas, in 4 cultures (33.33%). Methicillin Resistant Staphylococcus Aureus (MRSA) was positive in 1 case (8.33 %). The average duration of systemic antibiotic was 10 days to 3 weeks. The mean duration of wound bed preparation (WBP) was 3.83 weeks.

Autologous Platelet Rich Plasma (APRP) was given in all the 12 cases (100 %). Autologous Lipoaspirate Therapy (ALAT) was used in 2 patients (16.66 %), Autologous Bone Marrow Aspirate Therapy (ABMT) was used in 2 patients (16.66%) and External Tissue Expansion Wound Closure (ETWC) using rubber bands and hooks were used in 1patients (8.33%) (Figure 11a, b). In 2 patient wound was reconstructed with reverse Sural artery flaps (Figure 12) In one patient Wounds was reconstructed with split thickness skin graft (SSG) (Figure 13a, b) while in 9 patients wound was managed without any surgery (Figure14a, b, c). Average duration of wound healing was 10 weeks. No complications were noted in 6 months follow up period (Table 1).



Fig. 11a: Pre operative

Fig. 11b: ETEWC



Fig. 12: Reverse Sural artery flap

Table Case summary

S. NO.	AGE/GEN DER	SITE	DURATION	BJ STORE	WOUND MEASUREM ENT	ORGANISM GROWN	CO MORBIDI TY	OSTEOM YELITIS	WBP	Method of wound measurement	DURATION OF ANTIBIOTI CS	OF NPWT	APR P	ALA T	ABMA T	SURGER Y
1	40 yr/M	Distal third of foot	8 weeks	30	6×4 cm	E. coli, staph aureus	Anemia, HTN	no	5 wk	Digital plannimetry(DP)	5 wk	5 wk	yes	No	No	Nil
2	35/M	Distal third of foot	6 weeks	36	4.5×7 cm	sterile	nil	no	4 wk	DP	3 wk	4 wk	Yes	No	No	Nil
3	45/M	Distal third of foot	12 weeks	24	3×3 cm	Pseudomona s	Anemia	no	5 wk	DP+Bj(Bates jensin) Score	4 wk	5 wk	Yes	Yes	Yes	Nil
4	45/M	heel	16weeks	28	2.5×5 cm	sterile	Anemia	no	week s	DP	3 wk	3 wk	Yes	No	No	nil
5	56/M	Distal third of foot	21 weeks	26	3.5×3.5 cm	Pseudomona s	Anemia, HTN	yes	4 wk	DP+Bj Score	12 wk	4 wk	Yes	No	No	Nil
6	50/M	Al and third of foot	18 weeks	30	18×8 cm	E. coli	Anemia, Hypo procinemi a	yes	4 wk	DP+Bj Score	10 wk	4 wk	Yes	yes	Yes	regional ? ap
7	48/M	Distal third of foot	20 weeks	29	5×5 cm	MRSA	Anemia, HTN, MRO	yes	5 wk	DP	10 wk	5 wk	Yes	No	No	Nil
8	55/M	Distal third of foot	6 weeks	25	4.5×4 cm	Staph aureus	nil	no	3 wk	DP	2 wk	3 wk	Yes	No	No	Nil
9	56/M	Distal third of foot	4 weeks	27	4×4 cm	sterile	HTN, MRO	no	2 wk	DP	4 wk	2 wk	Yes	No	No	Nil
10	48/M	Distal third of foot	10 weeks	25	3.5×3.5 cm	Pseudomona s	Anemia, HTN	no	4 wk	DP	3 wk	4 wk	Yes	No	No	Nil
11	60/M/M	heel	8 weeks	28	4×4 cm	Pseudomona s	Anemia, HTN, MRO	no	3 wk	DP	4 wk	3 wk	Yes	No	No	graft
12	52/M	heel	12 weeks	28	4.5×5 cm	E. coli	nil	no	week s	DP+Bj Score	3 wk	4 wk	yes	No	No	? ap



Fig. 13a: Preoperative

Fig. 13b: SSG



Fig. 14a: Distal foot ulcer

Fig. 14b: After debridement



Fig. 14c: Wound healed

Discussion

Wound measurement is an important step in its management. It helps the clinician in understanding the behavior of the wound and to take necessary actions to prevent the increment and enhance the healing. Wound measurement gives an idea for

deciding the current treatment efficacy and for changing/stepping up the current treatment.

Need for Accurate Wound Measurement

Wound measurement is an integral part of management. Any increase or decrease in wound area indirectly provides information about wound healing or efficacy of current treatment. Continuation of ineffective treatment plan and hence prolonged hospital stay can be avoided by tracking the wound correctly. Hence an objective technique of accurate measurement and documentation is needed for wound management.

Image J Versus Traditionally used Methods

Traditionally used wound measurement techniques are photographic record comparison, ruler method, graph methods. Ruler method can give false high measurements when wound area is calculated by multiplying length and width, especially in irregular wounds. Graphical method provides nearly accurate results but is very cumbersome for regular use. Clinical photography is being used by most of the plastic surgeons as a part of record keeping and tracking the progress of the disease/wound. This is relatively simple and easy method but being a subjective assessment, documentation is not possible for the use of further visits [12,13]. Bates-jenson wound scoring system is another tool used by clinician in modern practice¹⁴. It gives satisfactory information about the nature and severity of wound but calculation of accurate wound area is lacking.

A study conducted by Mayrovitz HN showed efficacy of computerized planimetry in wound measurement [15]. Another study conducted by Wang Y showed comparison of digital planimetry and other methods. They found digital planimetry as an effective alternative [16].

Image J is an easy, freely available and effective tool for measurement of wound surface area in clinical practice. However inability of three dimensional measurements is disadvantage of this technique. Diabetic foot ulcer is one of the commonest forms of cutaneous ulcer in India. The DFU needs multidisciplinary approach and usually takes relatively longer duration for management due to associate co morbidities and complications. Sometimes patients are not fit for anesthesia and surgery due to associated co morbidities. Hence wound measurement plays an important role in management of DFU. Accurate measurement and

careful approach can prevent serious complications, deformities, disabilities and limb loss in patients with diabetic foot ulcer. Through this article we are highlighting the use of image J software as an effective tool for wound measurement in DFU. However a large sample size, controlled study would be helpful for more significant results.

Conclusion

Image J is a simple, easy and cost effective technique of accurate wound management in diabetic foot ulcer.

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Application of Laser in Ankyloglossia Release

Babu P.*, Chittoria R.K.**, Pandey S.*, Mohapatra D.P.***, Friji M.T.***, Dinesh K.S.***

Author Affiliation:

*Senior Resident, **Head,

***Associate Professor,

Department of Plastic Surgery,
Jawaharlal Institute of
Postgraduate Medical
Education and Research
(JIPMER) Pondicherry India-
605006.

Reprint Request:

Ravi Kumar Chittoria, Head,
Department of Plastic Surgery
Jawaharlal Institute of
Postgraduate Medical
Education and Research
(JIPMER) Pondicherry India-
605006.

E-mail: drchittoria@yahoo.com

Abstract

Ankyloglossia is a developmental condition wherein there is a short lingual frenulum that causes restricted mobility of the tongue. It results in feeding problems, speech abnormalities and dental caries. Various methods of ankyloglossia release have been used over the years. These procedures can be simple snipping of the band, or release by V Y Plasty or Z Plasty. One of the main problems associated with the release is bleeding from the mucosa leading to obscuration of the surgical field. Sometimes severe hemorrhage from the sublingual veins can lead to respiratory distress. Thus we have described a safe way of ankyloglossia release using the diode laser which provides excellent hemostasis.

Keywords: Ankyloglossia; Diode Laser; Z Plasty.

Introduction

Ankyloglossia is derived from the Greek words 'agkilos' meaning curved and 'glossa' meaning tongue [1]. It was first described by Wallace [2] who defined it as a condition in which the tongue does not protrude beyond the lower incisor teeth due to a short frenulum linguae often containing scar tissue. It is a developmental condition wherein there is a short, thick and tight frenulum linguae that restricts the movement of the tongue.

The prevalence of Ankyloglossia varies with the population examined from 0.2% to 5% [3]. It can appear sporadically or be associated with various syndromes like Smith-Lemli-Opitz syndrome [4], Orofacial digital syndrome, Beckwith Weidman syndrome, Simpson-Golabi-Behmel syndrome [5] and X linked cleft palate. It has various clinical implications like feeding difficulties in infancy, speech abnormalities and dental caries. Due to the abnormal appearing tongue and associated speech abnormality, older children may develop reduced self esteem.

The condition is classified based on the length of

the free tongue, according to Kotlow's classification [6] into the following classes.

1. Normal range of free tongue > 16mm
2. Class I: mild ankyloglossia = 12-16mm
3. Class II: moderate ankyloglossia = 8-11mm
4. Class III: sever ankyloglossia = 3-7mm Class IV:
5. Complete ankyloglossia < 3mm

Various treatment modalities have been described for the condition. These include simple snipping, frenotomy or frenectomy. The procedure can be performed under local anesthesia or short general anesthesia. The release is usually performed using a scalpel or bipolar cautery. Of late, Erbium or Nd YAG lasers are also being used in its treatment.

One of the problems that occur during ankyloglossia surgery is bleeding from the sublingual veins. This in turn can cause aspiration of blood and respiratory complications intraoperatively. Here we describe a case wherein ankyloglossia release was performed using diode laser which resulted in very minimal bleeding saving precious surgery time and providing a clean surgical field.

Case Report

A three year old girl child presented to the Plastic Surgery Department in JIPMER, Pondicherry, with the complaints of inability to fully protrude the tongue out since birth and inability to pronounce a few words, noticed by the parents when the child was 2 years of age.

On examination, it was found that the child had a short, thick, tight frenulum on the undersurface of the tongue causing Ankyloglossia (Figure 1). She was able to protrude her tongue out just beyond the lower lip (Figure 2).



Fig. 1: Short, thick, tight frenulum noticed on the ventral surface of tongue



Fig. 2: Picture showing limited protrusion of tongue

On protrusion of the tongue, a median furrow was noticed on the dorsal surface of the tongue. On asking the child to touch the roof of the mouth with her tongue, she was unable to do so because of the tight frenulum (Figure 3).



Fig. 3: Picture showing furrow on the dorsal surface of the tongue

On speech assessment it was found that the patient had difficulty in pronouncing the sounds 'ta', 'da', 'la', 'zha'. Patient did not have any feeding difficulties. The patient underwent routine preoperative assessment and was declared fit for surgery under General anesthesia (GA). She was posted for Ankyloglossia release by Z Plasty under GA. Nasal intubation was done and the throat packed with wet saline gauze. The patient was positioned in Rose position. A stay suture was taken in the tip of the tongue. The planned incision line was marked on the undersurface of the tongue. A solution of dilute adrenaline was infiltrated on the planned incision line. After ensuring adequate safety measures, the incision for Ankyloglossia release was made with a diode laser probe with power setting of 2W and frequency of 850nm (Figure 4). After the mucosal incision was made it was noticed that the bleeding was very minimal and the surgical field was clear.



Fig. 4: Diode laser assisted mucosal incision being made

Further dissection was carried out with scissors and the Z Plasty was done. After ensuring adequate release, the flaps were transposed and sutured (Figure 5).



Fig. 5: Completed procedure



Fig. 7: Post op picture

Postoperatively, the patient did not have any complications. She was discharged on post op day 1. Follow up was carried out for a period of 6 months with no complications noted.

Discussion

There are many modalities of treatment of ankyloglossia. These range from simple snipping of the band to frenotomy and frenectomy. Among various frenectomy procedures, Z Plasty is said to have the least recurrence and improved articulation compared to the other forms of release. During the release procedure, one common complication faced by the surgeon is bleeding from the mucosal surface. If the bleeding becomes excessive it could compromise the airway of the patient.

The diode laser was introduced into the field of dentistry and oral surgery in the mid 90s. The electric current is the pump source which produces photons which is conducted through a laser active medium.

This laser works at three wavelengths 810, 940, 980 nm. It is small in size, easy to use with a relatively low cost when compared to other lasers which attracts its widespread use [7]. The diode laser has an added advantage of being conveyed through a fiber which serves as the working tip at the end of the hand piece. The use of flexible, length-adjustable optical fiber also enables efficacious irradiation [8].

Using lasers in oral surgery has many added advantages. There is disinfection of the field, precision in the incision made with minimal damage to the surrounding tissue, hemostasis, reduced post op pain and edema thus causing greater post operative comfort to the patient [9]. The laser assisted procedure is very quick to perform sometimes taking just 2 to 3 minutes. It can be done under local anesthesia, sometimes eliminating the need for suturing the wound [10]. Some authors have advocated its use even without the need for needle infiltration of the local anesthetic. However the settings needed to perform the procedure without causing pain to the patient will cause a delay in the total time taken to complete the procedure [10].

Conclusion

Through this case report we would like to state that diode laser can be used for all patients with ankyloglossia for release by any method. It provides a clean, bloodless field reducing precious time under General anesthesia. Reduced bleeding also decreases the respiratory complications associated with the condition. Hence it is a safe and highly efficacious method of ankyloglossia release.

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Drug Induced Oral Erythema Multiforme: A Rare Case Report

Aditi Agarwal*, Sujatha G.P.**, Ashok Lingappa***

Author Affiliation:

*PG Student, ** Professor,
*** Professor and Head, Dept.
of Oral Medicine and
Radiology, Bapuji Dental
College and Hospital,
Davangere.

Reprint Request:

Aditi Agarwal, PG Student,
Dept. of Oral Medicine and
Radiology,
Bapuji Dental College and
Hospital, Davangere,
Karnataka 577004
E-mail:
draditiagarwal@yahoo.co.in

Abstract

Erythema multiforme (EM) is an acute, self-limited, inflammatory disease of the skin and mucous membranes involving oral mucosa most often, although other mucosal surfaces, such as the genitalia may also be involved. Oral lesions are often an important component of the clinical picture and are occasionally the only component, making it important to identify and distinguish them from other ulcerative disorders, for early management and preventing subsequent more severe form. Oral erythema multiforme is often triggered by HSV infections and rarely by adverse drug reactions. This article highlights one such case of drug induced erythema multiforme with a detailed review of literature.

Keywords: Oral Erythema Multiforme; Ulcerations; Vesiculobullous; Drug Induced.

Introduction

Erythema multiforme (EM) is an acute, self-limited, inflammatory disease of the skin and mucous membranes involving oral mucosa most often, although other mucosal surfaces, such as the genitalia may also be involved [1]. It is a clinical conundrum, the name of which means multiple forms of redness and reflects the broad morphological spectrum of the lesions. The lesion appears mostly as symmetrical papules, later developing into "target" or "iris" lesions with an erythematous periphery and a central zone of necrosis. Other characteristic features include bullae and vesicles. The lesions usually appear bilaterally on the dorsal surfaces of the hands and feet. The oral lesions appear typically as inflammation accompanied by rapidly rupturing vesicles and bullae [2]. Based on the severity and the number of mucosal sites involved, the disease has been subclassified into EM minor and major. EM minor shows ulcerations involving a single mucosal site with typical skin target lesions. EM major shows ulcerations involving more than one mucous membrane with skin target lesions. These lesions can

be triggered by HSV infections or adverse drug reactions [3]. Since the oral lesions, crusted erosions on the lips or intraoral ulcerations and erosions, are often an important component of the clinical picture and are occasionally the only component, it is important to identify and distinguish them from other ulcerative disorders involving oral cavity for early management and preventing subsequent more severe form [4]. This article reports a case of drug induced oral EM.

Case Report

A 50 year old male reported the department with a complain of pain and ulcerations in oral cavity since last one week. History of present illness revealed that patient first experienced pain especially in throat and jaw region which was insidious in onset, continuous, moderate in intensity with no aggravating or relieving factors. Two days later he developed ulcerations which first started over lower lip and later involved complete oral cavity. He was also having difficulty in swallowing. There was no history of fever and

other symptoms associated with it. Patient also gave history of intake of tab ibuprofen 400 mg twice daily for two days before initiation of symptoms. Past medical history revealed he was known case of hypertension since last 8 years and was taking tab Amcard-5 (Amlodipine) once daily. He was also having psoriasis since last 11 years for which he was applying clobetasolpropionisalicyclic acid topically and since last 6 months was taking tab Neotrexate once daily. He was also gave history of smoking since last 20 years 10-8 cigarettes per day. General physical examination revealed skin lesions (Figure 1). Extraoral examination showed bloody encrustations over lower lip (Figure 2).



Fig. 1: Skin lesions



Fig. 2: Lower lip

Lymph node examination showed palpable right and left submandibular lymph nodes which were tender, soft in consistency, mobile.

In intraoral examination, soft tissue examination revealed multiple erosions and diffuse erythema over lower labial mucosa, left and right buccal mucosa, posterior soft palate (Figure 2). Multiple ulcerations were also present over lower labial mucosa and right buccal mucosa of size 1x2cm, having irregular shape, erythematous margins and bleeding floor. On palpation it was tender with soft base. Solitary unruptured bulla was seen over upper labial mucosa (Figure 3).



Fig. 3: Diffuse erythema and ulceration over buccal mucosa and soft palate



Fig. 4: bulla seen over upper labial mucosa

Hard tissue examination revealed normal complement teeth with missing 16,15,47. Generalized attrition was present. Other findings were normal.

Provisional diagnosis of acute multiple ulcerative lesion was considered. Differential diagnosis included were oral erythema multiforme, acute herpetic stomatitis, autoimmune vesiculobullous lesions such as pemphigus vulgaris or bullous pemphigoid.

Investigations carried out was complete hemogram, RBS, and serum creatinine levels which were in normal range.

Diagnosis was made based on clinical picture. Acute onset of ulcerations with positive drug history in our case ruled out the possibility of autoimmune vesiculobullous lesions like pemphigus vulgaris or bullous pemphigoid. Absence of gingival ulceration and extensive irregular ulcerations involving the lining nonkeratinized mucosa in our patient were suggestive of erythema multiforme rather than herpetic lesions which are more common in the keratinized mucosa. Also ulcers seen in herpetic lesions are smaller with regular borders than ulcers associated with EM.

Based on these findings final diagnosis of erythema multiforme was given. Patient was asked to stop the use of ibuprofen and was given prednisolone 10 mg three times a day for eight days.

Patient was followed up. After 2 days of therapy, patient showed reduction in symptoms and lesion (Fig4), while after 8 days complete resolution of lesion with scarring of lower lip and pigmentation of buccal mucosa was seen (Fig 5).



Fig. 5: After 2 days of therapy, reduction in erythema and ulceration over buccal mucosa and soft palate



Fig. 6: Complete resolution of lesions

Discussion

Erythema multiforme (EM) is an acute inflammatory disease of the skin and mucous membranes. The disease was first recognized in 1817 by Bateman and Bulkley and in 1846, reported the first American cases as "Herpes Iris." Later in 1866, Hebra fully described the morphologic features of the eruption under the term "erythema exsudativum multiforme" and also recognized erythema multiforme to be of internal or systemic origin and not local in causation. Erythema multiforme was supposed to be essentially cutaneous in location with oral mucosal involvement present in about 25 per cent of the cases, but the association of severe vesiculobullous oral mucosal lesions with a paucity of cutaneous lesions and in some instances occurrence of severe mucous membrane with entire absence of skin eruption, produced a confusing and bizarre clinical picture. Some investigators described these unusual mucous membrane manifestations of erythema multiforme as new diseases [5]. In 1916, Rendu, termed a severe bullous stomatitis associated with similar lesions on the conjunctival, anal, and penile mucous membranes and a cutaneous vesicular eruption, "Ectodermose Erosive Pluriorificielle."

Baader, in 1925, named severe erythema multiforme of the oral cavity associated with cutaneous lesions, "Dermatostomatitis." Stevens and Johnson in 1922, reported erythema multiforme with predominant involvement of the oral and conjunctival mucous membranes as "a new eruptive fever associated with stomatitis and ophthalmia." This syndrome has also been referred to in the medical literature as "Stevens-Johnson disease." The erythema multiforme group may also belong to the "triple syndrome complex" of Behcet consisting of ulcerations of the oral and genital mucous membranes associated with retinitis and iridocyclitis. Later in 1968, Kenneth described oral lesions typical of EM as an inflammatory oral disorder but without any skin involvement [6].

Etiology and Pathophysiology

EM is a hypersensitivity reaction, results from T-cell-mediated immune reaction to the precipitating agent, which leads to a cytotoxic immunological attack on keratinocytes that express non-self antigens, with subsequent subepithelial and intra-epithelial vesiculation; that leads to widespread blistering and erosions.¹

There are various precipitating factors and Herpes simplex virus (HSV) is the most commonly identified etiology, accounting for more than 50 percent of cases. Fungal infection, *Mycoplasma pneumoniae* is another commonly reported etiology, especially in children [7].

The medications most often associated with erythema multiforme are barbiturates, hydantoins, nonsteroidal anti-inflammatory drugs such as diclofenac, ibuprofen, and salicylates, penicillins, phenothiazines, and sulfonamides. In addition, there have been reports of erythema multiforme associated with vaccines (diphtheria-tetanus, hepatitis B, smallpox), other viruses (varicella zoster virus, hepatitis C, cytomegalovirus, and human immunodeficiency virus). Recurrent erythema multiforme often is secondary to HSV-1 and -2 reactivation [8].

The pathogenesis of herpes-associated erythema multiforme has been well studied and is consistent with a delayed-type hypersensitivity reaction. The disease begins with the transport of viral DNA fragments to distant skin sites by peripheral blood mononuclear cells. HSV genes within DNA fragments are expressed on keratinocytes, leading to the recruitment of HSV specific CD4⁺ T1 cells (helper T cells involved in cell-mediated immunity). The CD4⁺ cells respond to viral antigens with

production of interferon- γ , initiating an inflammatory cascade. In drug associated erythema multiforme lesions test positive for tumor necrosis factor α and not interferon- γ as in herpes associated erythema multiforme lesions [9].

Clinical manifestation

Erythema multiforme usually occurs in adults 20 to 40 years of age, although it can occur in patients of all ages. The disease is more common in males than females in a ratio of 3:2. Erythema multiforme has been classified as minor, major, Stevens-Johnson syndrome (SJS) or toxic epidermal necrolysis (TEN), where erythema multiforme minor is the mildest type of lesion and toxic epidermal necrolysis the most severe. In Erythema multiforme minor, major and SJS Body surface area with epidermal detachment is less than 10% while in TEN it is more than 10% [10].

General Features-Erythema multiforme is associated with an acute onset and, usually, mild or no prodromal symptoms. Fever, lymphadenopathy, malaise, headache, cough, sore throat and polyarthralgia may be noticed as much as 1 week before the onset of surface erythema or blisters. Lesions may appear as irregular red macules, papules and vesicles that collapse and gradually enlarge to form plaques on the skin. Moreover, crusting and blistering sometimes occur in the centre of the skin lesions, resulting in concentric rings resembling a "bull's eye" (target lesion) [11].

Oral features -Oral EM is chronically recurrent condition, with frequency of episodes varying from every 3 weeks to once yearly. Episodes may be cyclic with duration varying from 10 days to 6 weeks. The common sites involved are lips, buccal mucosa, and tongue. Oral lesions are usually erythematous macules on the lips and buccal mucosa, followed by epithelial necrosis, bullae and ulcerations with an irregular outline and a strong inflammatory halo. Bloody encrustations can also be seen on the lips [12].

Diagnosis

There is no specific diagnostic test for EM. Cytologic smears and virus isolation may be done to eliminate the possibility of primary herpes infection. Biopsies are advised only in the early vesicular lesions and not in the ulcerated ones as histopathologic appearances are nonspecific. The histologic picture shows a perivascular lymphocytic infiltrate, non-specific immune deposits of IgM, fibrin at these sites and epithelial

edema and hyperplasia [1,13].

Thus the diagnosis is made on the basis of the total clinical picture and by excluding other oral inflammatory and vesiculobullous lesions. Features more suggestive of EM are the acute onset (or recurrent nature), oral lesions typically located on the lip and anteriorly in the mouth, and pleomorphic skin lesions (typical and atypical target lesions). These findings differentiate EM from other vesiculobullous lesions like pemphigus vulgaris or bullous pemphigoid. Also oral EM lesions are larger, irregular, deeper, and often bleed. Based on these clinical appearance it is differentiated from viral lesions, which are small, round, symmetric, and shallow. In bullous lichen planus, lesions that may have similar ulcerations but presence of Wickham's striae, which is absent in EM is a differentiating feature. Anaphylactic stomatitis often shows urticarial skin reactions with other signs and symptoms of anaphylaxis which will be absent in EM [14,15].

Management

Mild cases of oral EM can be treated palliatively with analgesics for oral pain, viscous lidocaine rinses, soothing mouth rinses, bland soft diet, avoidance of acidic and spicy food, systemic and topical antibiotics to prevent secondary infection. Moderate to severe oral EM may be treated with a short course of systemic corticosteroids in patients without significant contraindications to their use. An initial dose of 30 mg/d to 50 mg/d of prednisone or methylprednisolone for several days, which is then tapered, is helpful in shortening the healing time of EM, particularly when therapy is started early in the course of the disease. Triggering agent should also be identified. If it is found to be HSV infection patients have to be put on antiviral medications while it is an adverse drug reaction, the drug is immediately stopped [16,17].

Conclusion

Oral erythema multiforme is a rare vesiculo-ulcerative disorder which is often triggered by HSV infections and rarely by adverse drug reactions. Diagnosis is based on clinical presentation with no specific diagnostic test. Thus identification of associated triggering agent is important for the recognition and management of erythema multiforme. Management depends on severity of lesions which varies from supportive care to corticosteroid therapy.

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Application of Systemic Coolant in Laser Assisted Plastic Surgery and Dermatosurgery Authors

Pandey S.*, Chittoria R.K.** , Mohapatra D.P.***, Friji M.T.***, Dinesh K.S.***

Author Affiliation:

*Senior Resident,**Head,
***Associate Professor,
Department of Plastic Surgery,
Jawaharlal Institute of
Postgraduate Medical
Education and Research
(JIPMER) Pondicherry India-
605006

Reprint Request:

Ravi Kumar Chittoria, Head,
Department of Plastic Surgery
Jawaharlal Institute of
Postgraduate Medical
Education and Research
(JIPMER) Pondicherry India-
605006.
E-mail: drchittoria@yahoo.com

Sir,

Application of lasers in clinical field has gained significant popularity in India. Lasers are one of the most effective modality in practice related to various cosmetic procedures. Laser was introduced by Maiman in 1960. Various types of lasers used in practice are CO₂ (Carbon Dioxide) Laser, Neodymium Doped Yttrium Aluminium Garnet (Nd: YAG) lasers, Holmium Yttrium Aluminium Garnet (Ho: YAG) laser, Er,Cr: YSGG (Erbium, Chromium doped Yttrium Scandium Gallium Garnet) Laser, Neodymium doped Yttrium Aluminum Perovskite (Nd: YAP) laser, Gallium arsenide (GaAs) laser, Argon came and Diode laser [1].

Various effects of laser are warming, welding, coagulation, protein denaturation, drying, vaporization and carbonization of the tissues. Because of production of significant heat and possibility of damage to surrounding tissues cooling is necessary before and after the application of lasers. Various

studies have shown the importance of cooling system in laser assisted surgical procedures [2,3].

Various methods have been used traditionally for skin cooling like spray method, contact methods using chilled gel/ ice, freeze method, gas technique etc [4] (Figure 1).

We conduct anti aging and regenerative medicine clinic in our department and we use to apply lasers in management of various procedures. An effective pre operative and post operative cooling is must in laser surgery to enhance patient's co operation and to decrease laser induced side effects like erythema, blisters, burning, itching etc. Initially we used traditional methods of skin cooling like ice packs and frozen gel. We found certain disadvantage of these techniques like-

- Cumbersome for the person to hold and apply
- Being a contact method, carries a risk of making the field unsterile
- Starts melting after some times and hence delivers sub optimal cooling
- Difficult to reapply during surgery if previous effect is gone

We started using a systemic coolant "Cryo 6 Skin Cooling System" to serve this purpose (Figure 2). It

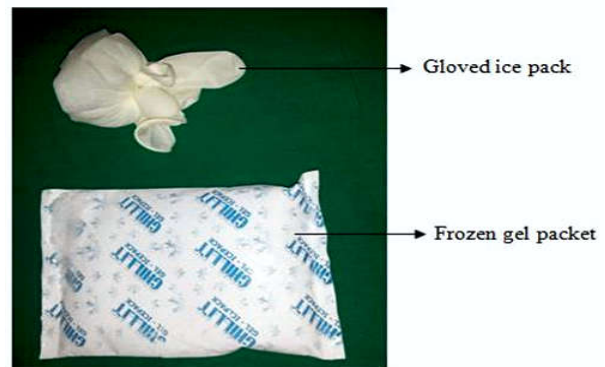


Fig. 1: Maerials used in traditional methods of skin cooling

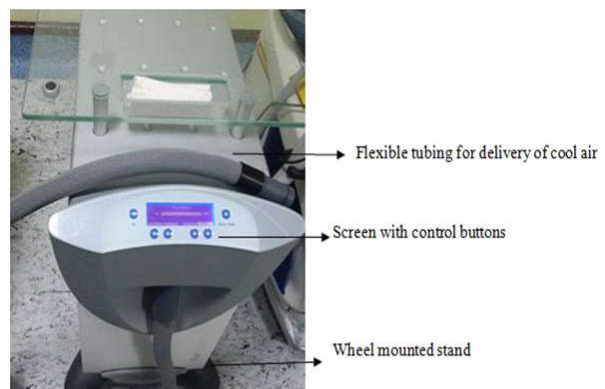


Fig. 2: Systemic skin coolant

works by drawing the room air in to the device, filters and cools the air at around minus 32 degree centigrade. Skin cooling can be controlled by changing the flow rate. The cool air reaches at desired spot by a flexible tubing system with an output nozzle.

We found it as an effective technique for skin cooling in laser surgery with following advantages-

- Easy to apply
- No contact hence no risk of infection
- Provides effective cooling in relatively shorter duration
- Provides instant anesthesia to local tissue
- More suitable for intra operative cooling as compared to ice packs
- As it uses room air hence no risk of interaction at tissue interface unlike in gas cooling systems.
- Small size equipment, portable.

Through this article we would like to highlight the use of systemic coolant in laser surgeries. this is an easy and effective technique for skin cooling in laser surgeries.

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Abstracts from Global Literature: Metabolic Syndrome in Androgenetic Alopecia

Dimpal V. Patel*, **Raksha M. Patel****

Author Affiliation: *Dermatologist(M.D Skin & V.D),Vadodara. **Professor, Department of Dermatology, GMERS Medical College, Vadodara.

Reprint Request: Dimpal Patel, Dermatologist, Room No.57, New R.M.O Hostel, Near SSG hospital, Jail Road,Vadodara, Gujarat 390001
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Metabolic Syndrome in Androgenic Alopecia

Gopinath H, Upadya GM. *Indian J Dermatol Venereol Leprol* 2016;82:404-8

Background: Androgenic alopecia has been associated with an increased risk of coronary heart disease in various studies. The relationship between androgenic alopecia and metabolic syndrome, a known risk factor for atherosclerotic cardiovascular disease, is still poorly understood. **Aim:** To study the association between metabolic syndrome and early-onset androgenic alopecia. **Methods:** A hospital-based analytical cross-sectional study was done on men in the age group of 18–55 years. Eighty five clinically diagnosed cases with early-onset (<35 years) androgenic alopecia of Norwood grade III or above, and 85 controls without androgenic alopecia were included. Data collected included anthropometric measurements, arterial blood pressure and history of chronic diseases. Fasting blood and lipid profile were determined. Metabolic syndrome was diagnosed as per the new International Diabetes Federation criteria. Chi-square and Student's t-test were used for statistical analysis using Statistical Package for the Social Sciences (SPSS) version 17.00. **Results:** Metabolic syndrome was seen in 19 (22.4%) patients with androgenic alopecia and 8 (9.4%) controls ($P = 0.021$). Abdominal obesity, hypertension and lowered high-density lipoprotein were significantly higher in patients with androgenic alopecia versus their respective controls. **Limitations:** The limitations of our study include small sample size in subgroups and the lack of evidence of a temporal relationship between metabolic syndrome and androgenic alopecia. **Conclusion:** A higher prevalence of

metabolic syndrome is seen in men with early-onset androgenic alopecia. Early screening for metabolic syndrome and its components is beneficial in patients with early-onset androgenic alopecia.

Male Androgenetic Alopecia and Cardiovascular Risk Factors: A Case-Control Study

Arias-Santiago S, Gutiérrez-Salmerón MT, Castellote-Caballero L et al. *Actas Dermosifiliogr*. 2010 Apr;101(3):248-56.

Objectives: The objective of this study was to determine the prevalence of metabolic syndrome and carotid arteriosclerosis in patients with early-onset androgenetic alopecia. **Patients and Methods:** Seventy men were studied, 35 with diagnosis of early-onset (before 35 years of age) androgenetic alopecia and 35 control subjects who consulted for other skin conditions. In both groups, the criteria for metabolic syndrome according to the Adult Treatment Panel-III were studied (obesity, triglycerides, high-density lipoprotein cholesterol, systolic and diastolic blood pressure, and blood glucose), presence of atheromatous plaques, and carotid intima-media thickness using Doppler ultrasonography. Other cardiovascular risk factors, hormones, and acute-phase reactants were also analyzed. **Results:** Criteria for metabolic syndrome were met by 57.1% of the patients with androgenetic alopecia compared to 14.3% of the controls ($P < 0.001$). Thirty-four percent of the patients with androgenetic alopecia had atheromatous plaques compared to 8.6% of the controls ($P = .018$). In an independent correlation analysis, abdominal obesity, systolic blood pressure, triglycerides, and blood glucose levels were

significantly greater among patients with androgenetic alopecia. Testosterone and sex hormone binding globulin levels were similar in the 2 groups whereas insulin and aldosterone levels were higher in patients with androgenetic alopecia ($P < 0.05$).

Conclusions: The high frequency of metabolic syndrome and carotid atheromatous plaques in patients with androgenetic alopecia suggests cardiovascular screening should be done to enable early detection of individuals at risk and initiation of preventive treatment before cardiovascular disease becomes established.

A Comparative Study of Dyslipidaemia in Men and Women with Androgenic Alopecia

Arias-Santiago, S., Gutiérrez-Salmerón, M.T., Buendía-Eisman, A. et al *Acta Derm Venereol* 2010; 90: 485–487

Several studies have analyzed the relationship between androgenetic alopecia and cardiovascular disease (mainly heart disease). However few studies have analyzed lipid values in men and women separately. This case-control study included 300 patients consecutively admitted to an outpatient clinic, 150 with early onset androgenetic alopecia (80 males and 70 females) and 150 controls (80 males and 70 females) with other skin diseases. Female patients with androgenic alopecia showed significant higher triglycerides values (123.8 vs 89.43 mg/dl, $p = 0.006$), total cholesterol values (196.1 vs 182.3 mg/dl, $p = 0.014$), LDL-C values (114.1 vs 98.8 mg/dl, $p = 0.0006$) and lower HDL-C values (56.8 vs 67.7 mg/dl, $p < 0.0001$) versus controls respectively. Men with androgenic alopecia showed significant higher triglycerides values (159.7 vs 128.7 mg/dl, $p = 0.04$) total cholesterol values (198.3 vs 181.4 mg/dl, $p = 0.006$) and LDL-C values (124.3 vs 106.2, $p = 0.0013$) versus non-alopepic men. A higher prevalence of dyslipidemia in women and men with androgenic alopecia has been found. The elevated lipid values in these patients may contribute, alongside other mechanisms, to the development of cardiovascular disease in patient with androgenic alopecia.

Baldness and Coronary Heart Disease Rates in Men from the Framingham Study

Herrera CR, D'Agostino RB, Gerstman BB, et al. *Am J Epidemiol* 1995;142:828-33.

Abstract: The authors assessed the relation between the extent and progression of baldness and coronary

heart disease. Baldness was assessed twice, in 1956 and in 1962, in a cohort of 2,017 men from Framingham, Massachusetts. Extent of baldness was classified in terms of number of bald areas: no areas bald ($n = 153$), one area bald ($n = 420$), two areas bald ($n = 587$), and all areas bald ($n = 857$). Men who were assessed both times and who had two or fewer bald areas during the first evaluation were classified into one of three groups: "mild or no progression," "moderate progression," or "rapid progression." The cohort was followed for up to 30 years for new occurrences of coronary heart disease, coronary heart disease death, cardiovascular disease, and death due to any cause. The relations between the extent and progression of baldness and the aforementioned outcomes were assessed using a Cox proportional hazards model, adjusting for age and other known cardiovascular disease risk factors. Extent of baldness was not associated with any of the outcomes. However, the amount of progression of baldness was associated with coronary heart disease occurrence (relative risk (RR)=2.4, 95% confidence interval(CI) 1.3–4.4), coronary heart disease mortality (RR=3.8, 95% CI 1.9–7.7), and all-cause mortality (RR=2.4, 95% CI 1.5–3.8). Rapid hair loss may be a marker for coronary heart disease.

Male Pattern Baldness and Coronary Heart Disease: the Physicians' Health Study

Lotufo PA, Chae CU, Ajani UA et al *Arch Intern Med*.2000 Jan 24;160(2):165-71.

Objective: To examine the association between male pattern baldness and the risk of coronary heart disease (CHD) events. **Design, Setting, and Participants:** Retrospective cohort study among 22,071 US male physicians aged 40 to 84 years enrolled in the Physicians' Health Study. Of these, 19,112 were free of CHD at baseline and completed a questionnaire at the 11-year follow-up concerning their pattern of hair loss at age 45 years. Response options included no hair loss, frontal baldness only, or frontal baldness with mild, moderate, or severe vertex baldness.

Main Outcome Measures: Coronary heart disease events defined as nonfatal myocardial infarction (MI), angina pectoris, and/or coronary revascularization.

Results: During 11 years of follow-up, we documented 1446 CHD events in this cohort. Compared with men with no hair loss, those with frontal baldness had an age-adjusted relative risk (RR) of CHD of 1.09 (95% confidence interval [CI], 0.94-1.25), while those with mild, moderate, or severe vertex baldness had RRs of 1.23 (95% CI, 1.05-1.43),

1.32 (95% CI, 1.10-1.59), and 1.36 (95% CI, 1.11-1.67), respectively (P for trend, <.001). Multivariate adjustment for age, parental history of MI, height, body mass index (weight in kilograms divided by the square of the height in meters as a continuous variable), smoking, history of hypertension, diabetes, high cholesterol level, physical activity, and alcohol intake did not materially alter these associations. Results were similar when nonfatal MI, angina, and coronary revascularization were examined separately, and when events were analyzed among

men older and younger than 55 years at baseline. Vertex baldness was more strongly associated with CHD risk among men with hypertension (multivariate RR, 1.79; 95% CI, 1.31-2.44) or high cholesterol levels (multivariate RR, 2.78; 95% CI, 1.09-7.12).

Conclusion: Vertex pattern baldness appears to be a marker for increased risk of CHD events, especially among men with hypertension or high cholesterol levels.

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