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Research Article

Dermatoporosis: A Review and Call for Renewed Emphasis in Dermatology Practice Globally and Specifically in Sub-Saharan Africa

Olanrewaju Falodun[1*]

[1]National Hospital Abuja Nigeria

***Corresponding Author:** Olanrewaju Falodun, National Hospital Abuja Nigeria

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Abstract

Dermatoporosis also known as chronic cutaneous insufficiency syndrome was described in 2007 by eminent dermatologists. The main deficiency identified in dermatoporosis is a decrease in activity of the main component of the extracellular matrix, hyaluronic acid. This reduction in hyaluronic acid activity leads to the clinical manifestations described in dermatoporosis. These clinical manifestations range from skin atrophy in the early stages to more complicated conditions like dissecting haematomas which requires urgent medical intervention.

The underlying cause for dermatoporosis include skin ageing due to prolonged sun exposure which is the primary underlying cause while secondary causes include, steroid use both topical and systemic as well as nutritional deficits. Some chronic diseases a like chronic kidney disease, chronic pulmonary disease and autoimmune diseases are also secondary causes either directly or due to steroid preparations used in their treatment.

Inspite of the fact that dermatoporosis was defined well over a decade ago this concept is still little known and discussed in global dermatology practice. This paper is an attempt to highlight important aspects of dermatoporosis with a view to reemphasizing this concept hoping that this will help in stimulating further research into this concept and also stimulate therapeutic advances into hyaluronic acid activity which is known to be decreased in dermatoporosis.

Keywords: Dermatoporosis, Insufficiency, Skin ageing, Hyaluronic acid

Introduction

Dermatoporosis, a term that covers all aspects of chronic cutaneous fragility syndrome was first used by Saurent in 2007 [1]. It refers to an important clinical condition that manifests as skin ageing process with the features that are seen in ageing. This clinical entity can be separated into primary and secondary subtypes with the secondary subtype triggered by environmental factors and medications while the primary subtype is largely intrinsic [2]. Cutaneous ageing is characterised by various changes which include connective tissue, vascular and pigmentary alterations that invariably contribute to the complex process [3].

The loss of skin mechanical strength in ageing skin is due to changes that occur in the extracellular matrix with resultant reduction in elasticity of the skin.4 Glycosylated proteins exercise diverse functions on the skin by providing and maintaining hydration of the extracellular matrix. This process prevents the formation of wrinkles because they have the ability to work in consonance with collagen and hyaluronic acid thereby favouring the smoothness of skin structure.4It is the reduction in activity of hyaluronic acid that is responsible for the features seen in dermatoporosis [4].

The loss of skin strength that occurs in dermatoporosis has significant effects on morbidity and mortality in intensive care units where ill patients are managed and this should be highlighted not only by dermatologists but also by other medical specialties.2Different research works among different cohorts have found a prevalence of dermatoporosis of 30.7% to 32% among older adults in European studies [5,6].

The concept known as dermatoporosis has not been adequately emphasized in dermatology practice in the sub Saharan setting much more so in Nigeria. A review of dermatoporosis in the context of the prevailing social, economic and health indices including potential triggers will make it more adaptable and applicable to this environment. An emphasis on dermatoporosis will help in viewing skin ageing not only as a cosmetic problem but will highlight the loss of its protective mechanical function. This becomes more important as life expectancy is increasing in most parts of the world including Africa.

Dermatoporosis is broadly classified into primary dermatoporosis caused by skin ageing due to long term unprotected sun exposure and secondary dermatoporosis which occurs as a result of chronic use of topical and systemic steroids [1]. Corticosteroids affect the collagen, elastin, decorin and metalloproteinases synthesis by altering the expression of genes encoding these skin components [1].

Dermatoporosis is classified into four major stages with increasing severity, morbidity and mortality in advanced stages [7].

Stage 1	Skin atrophy, senile purpura and pseudo-cicatrices
Stage IIa	Localised and small superficial lacerations< 3mm due to fragility
Stage IIb	Larger lacerations >3mm
Stage IIIa	Superficial haematoma
Stage IIIb	Deep dissecting haematoma
Stage IV	Large areas of skin necrosis with potentially lethal complications.

Table 1: Staging of Dermatoporosis [7]

The above table highlights two groups of cutaneous manifestations ,the first group being the skin markers of fragility like senile purpura and pseudoscars while the second group as also highlighted by Kaya and Saurat include lesions arising from trauma like frequent skin laceration, delayed wound healing, bleeding and various degrees of haematomas including dissecting haematomas which require hospitalization [1].

This purpose of this review is to highlight this concept and relate it to Sub-Saharan scenario with the hope that more emphasis will be placed on dermatoporosis in global dermatology practice and specifically in the Sub-Saharan dermatologic space.

The Risk Factors for Dermatoporosis

Dermatoporosis has known risk factors with advancing age being the primary risk factor for dermatoporosis [6]. There are other risk factors which are considered as secondary risk factors, these include nutrition, chronic actinic damage from sun exposure, genetic susceptibility, long term use of topical steroids and chronic illnesses like chronic kidney disease [6].

Nutrition and Dermatoporosis

Nutrition is known to affect the ageing process of the human body as well as other dermatologic conditions like acne, psoriasis and atopic dermatitis. The role of nutrition and dietary patterns on skin integrity and function cannot be underestimated [8]. The pathways linking nutrition with skin disorders are multiple and they impact on the onset, progression and prognosis of the various skin disorders. Malnourished individuals have been found to have skin tears which cause pain and prolonged hospital stay [9]. Various nutritional deficiencies have been linked to skin disorders and correction of the identified deficiencies usually leads to resolution of the skin problem [10].

The effects of nutrition as a risk factor for dermatoporosis becomes a cause for concern with the increasing poverty levels in the Nigeria as well as other countries in sub-Saharan Africa [11]. As a country, Nigeria is presently still struggling with the attainment of sustainable development goals and this mirrors what is happening in Sub Saharan Africa. The factors contributory to malnutrition and food insecurity are multifaceted though worse among women and children in the community [11]. It is therefore obvious that poor nutrition in younger years will have its negative effects on the skin as the individual increases in age.

Chronic Sun Exposure and Dermatoporosis

The knowledge and practice of sun protection is still low in this part of the world [12]. This is particularly of importance because Nigeria falls into the geographical location that has high to extreme ultraviolet index [12]. Several effects of overexposure to UV radiation on the human body are documented especially on the eyes and skin [13]. These include skin ageing, wrinkles and sunburns which all fall within the concept of dermatoporosis, photodermatoses , cataracts and skin malignancies [13]. This is why sun protection practices are advocated but unfortunately the knowledge and adoption of sun protection is still poor. An emphasis on the concept of dermatoporosis will definitely highlight the need for sun protection education in order to ameliorate the skin damage caused by undue sun exposure. Discussions on sun exposure and its effect on the skin can only achieve desired effects if objective ways of measuring cumulative sun exposure are highlighted and emphasized. This will enable adequate and objective comparison and assessments of effects of sun exposure on dermatoporosis. The cumulative dose of ultraviolet radiation reflects the total amount of ultraviolet exposure an individual receives over time and relevant information on the frequency and duration of ultraviolet exposure as well as residential history will be required in the calcu-

lation [14]. The Cummulative Ultraviolet Exposure Scores (CUES) [14] has been used in various researches to assess the relationship between sun exposure and skin conditions. This can be employed in further research on skin ageing and dermatoporosis in the older adult population of Sub-Saharan Africa and globally.

Chronic Steroid use and Dermatoporosis

The use of steroids has been documented as a risk factor for dermatoporosis [1]. A study carried out by Kluger et al at the Helsinki University Central Hospital among 176 older adults aged 60years and above revealed that dermatoporosis was associated with the use of ultrapotent topical steroids as well as oral corticosteroids [5]. This becomes more important particularly in environments where the use of topical steroid as non-prescription medications is prevalent. Studies carried out on prevalence of topical steroids abuse in Africa particularly for skin lightening have yielded high prevalences [15,16]. The problem of topical steroid abuse is global [17] and it is expected that complications from the use of these preparations will be seen globally. The cumulative use of steroid preparations in younger years can hasten skin ageing hence dermatoporosis in the older population. Increased emphasis on dermatoporosis globally will highlight this problem and help advance public discourse on how to prevent this trend particularly among the younger population thus invariably reducing dermatoporosis on the long term.

Chronic Diseases and Dermatoporosis

There are a number of disease conditions that have skin manifestations and effects on skin health particularly with advancing age. Notable among these is chronic kidney disease which affects the skin through various documented skin manifestations [18,19]. There are other conditions that require either topical or systemic steroid therapy and included in this group are chronic pulmonary conditions, autoimmune conditions and skin conditions like eczemas [20-22]. These conditions have all been linked to dermatoporosis and the skin complications must be kept in view while managing individuals with them.

Conclusion

This is a call for renewed emphasis on the concept “dermatoporosis” in dermatologic practice. With an increase in longevity made possible by improved living conditions and advanced technology in medicare. Chronic exposure to ultraviolet radiation remains a major factor in dermatoporosis but chronic use of either topical or systemic steroids can affect skin ageing. Chronic diseases either directly or by use of steroids in their treatment can produce similar effects on the skin. Dermatoporosis is still relatively unknown among dermatologists and it is hoped that this attempt will stimulate a desire to study this concept further and also trigger therapies that will target hyaluronic acid the main component of extracellular matrix which is decreased in activity in dermatoporosis.

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