Clinical Patterns of Facial Aging among Egyptian Females

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ABSTRACT

Background: the skin displays the most visible manifestations of aging. Research interest in aging process has grown and people are becoming obsessed with looking young. The face has received most of the attention and generated most of the studies related to beauty and aging because it is the most expressive part of human body. **Aim of the Work:** to assess the different clinical patterns of facial wrinkles and signs of skin aging among different age categories of Egyptian females. **Subjects and Methods:** this cross-sectional study was carried out in the Dermatology, Venereology and Andrology department of Ain Shams University Hospitals after Institutional Review Board approval. The study included included 100 adult females ranged from 20-60 years old. **Results:** the mean age was (38.570±11.634) with a range of 20-60 years. Skin phototype was Fitzpatrick Type III in 8 patients (8%), IV in 55 females (55%) and V in 37 females (37%). Glogau classification for severity of skin aging signs was type I in 39 cases (39%), Type II in 20 (20%), Type III in 26 (26%) and type VI in 15 (15%). All patients reported history of excessive sun exposure for extended hours; 32 cases reported sunscreen use but not regular, while 68 cases didn't use sunscreen. **Conclusion:** skin Type IV showed more wrinkles indentation index, roughness, melanin concentration, melanin heterogeneity and HGB heterogeneity. There was a significant correlation between the sunscreen use and average melanin concentration, where cases that used sunscreen showed lower average melanin concentration. The relation between sun screen use and severity of wrinkles (Indentation index) was non-significant.

Keywords: Facial Aging, facial wrinkles.

INTRODUCTION

The skin is a portal of knowledge on aging. From its softness and smoothness in infancy, through its suppleness in youth, to its wrinkled texture in elders, the skin displays the most visible and accessible manifestations of aging. As the proportion of the aging population in industrialized countries continue to increase, Research interest in the process of aging has grown and people are becoming obsessed with looking and staying young [1]. The face has received most of the attention and generated most of the studies related to beauty and aging because it is the most expressive part of the human body, responsible for visual evaluation, recognition and social interaction [2]. Aging is a process in which both intrinsic and extrinsic factors lead progressively to loss of structural integrity and physiological function. Intrinsic aging of the skin occurs inevitably as a natural consequence of physiological changes that are genetically determined. Extrinsic factors include smoking, exposure to sunlight and pollution. The synergistic effects of intrinsic and extrinsic aging factors produce deterioration of the cutaneous barrier with significant associated morbidity [3]. Cumulative sun exposure (photoaging) is the most important extrinsic factor in aging skin. Photoaging is the superposition of solar damage on the normal aging process, defined specifically by damage produced in tissue by single or repeated exposure to UV light. Sunlight is believed to account for the vast majority of not only aesthetic effects of skin ageing, but also clinical problems as well [4]. Skin Aging is a complex phenomenon clinically described by numerous features (wrinkles, sunspots, uneven skin color, telangiectasia, skin loosening, etc...) that often depend on ethnic origin. In addition to genetic inheritance, numerous factors can interfere and modify skin color and/or skin color heterogeneity including climatic changes, social and cultural conditions and hormonal status. The different patterns of aging may result from different environmental and constitutional factors which could be explored by an epidemiological approach [5]. Aging process differs among different ethnic groups. Many studies were done to investigate signs of face aging among different populations. To the best of our knowledge, no previous studies were done about face aging in Egypt.

AIM OF THE WORK

The aim of this study is to assess the different clinical patterns of facial wrinkles and signs of skin aging among different age categories of Egyptian females.

PATIENTS AND METHODS

The present study included 100 adult female patients ranged from 20-60 years old. This

cross-sectional study was approved by the Research Ethical Committee, Faculty of Medicine, Ain Shams University and fulfilled their criteria for human research. All patients received full information about description of the study and approved photo documentation. All patients were recruited from Dermatology outpatient clinics and working staff and nurses of Ain Shams University hospitals during the period of May-2017 till October-2017. In this study, we compared different clinical patterns of facial aging in Egyptian females among different age groups. **Subjects:** *Inclusion criteria:* Egyptian females aged 20-60 years, skin type III to V according to Fitzpatrick's [6] classification, type I- IV facial wrinkles by Glogau [7] classification. *Exclusion criteria:* Patients affected with any systemic illnesses as diabetes, hepatic, renal, blood diseases, autoimmune disorders, patients suffering from existing active skin disorders, including acne vulgaris, rosacea, actinic lichen and morphea, patients affected with skin disorders associated with photosensitivity and photodermatosis, patients suffering from benign skin tumors like Seborrheic keratosis or malignant skin tumors, such as squamous cell carcinoma, basal cell carcinoma and melanoma, women who had aesthetic facial treatments, or surgery, during the last 2 years, pregnancy.

Methods: *1- Full history taking:* **a. Personal history**, **b. Present history**, **c. Family history**, **d. Drug history**, **e. Past history**. Quality of life assessment was done using the "World Health Organization Quality of Life (WHOQOL)-BREF" [8] an abbreviated version of the WHOQOL-100. It is a questionnaire including 26 questions providing a broad and comprehensive assessment of quality of life. **Statistical analysis:** Statistical presentation and analysis of the present study was conducted, using the mean, standard deviation, Chi-square and Analysis of variance [ANOVA] tests by SPSS V17. **Correlation analysis:** To assess the strength of association between two quantitative variables. The correlation coefficient denoted symbolically defines the strength and direction of the linear relationship between two variables. **P- value: level of significance**: $P>0.05$: Non significant (NS), $P< 0.05$: Significant (S), $P<0.01$: Highly significant (HS).

RESULTS

Table 1: Comparison between different age groups and quality of life index (WHOQOL)

		Age Group			ANOVA	
		<30 Years	**30-45 Years**	**>45 Years**	**F**	**P-value**
WHOQOL	**Range**	55.69-68.95	56.78-67.4	55.31-68.36	4.775	0.011*
	Mean±SD	63.527±3.626	61.675±3.252	61.098±3.235		

There was a statistical significance between quality of life measured with WHO questionnaire and the advance of age with the worst quality of life among the age group above 45 years old.

Table 2: Comparison between different age groups and average melanin concentration and melanin heterogeneity among tested areas

		Age Group			ANOVA	
		<30 Years	**31-45 Years**	**>46 Years**	**F**	**P-value**
Average melanin concentration	**Range**	0.46-0.79	0.48-1.02	0.45-0.82	3.423	0.037*
	Mean ±SD	0.646±0.084	0.692±0.134	0.711±0.093		
Melanin heterogeneity	**Range**	0.02-0.05	0.02-0.05	0.02-0.06	3.469	0.035*
	Mean ±SD	0.033±0.009	0.034±0.009	0.039±0.009		
	Mean ±SD	0.112±0.029	0.157±0.152	0.166±0.155		

There was a statistical significance between different age groups and melanin concentration and heterogeneity where the group with the older age had more facial melanin concentration and heterogeneity.

Table 3: Comparison between phototype and wrinkles severity and roughness (indentation index) of forehead, crow's feet, nasolabial and marionettea areas

		Photo type			ANOVA	
		Type III	Type IV	Type V	F	P-value
Indentation index forehead	Range	9.030-26.880	7.700-27.250	12.060-26.320	2.819	0.065
	Mean ±SD	15.039±5.893	15.272±4.295	17.174±2.707		
Indentation index crow's feet	Range	12.370-25.400	9.260-28.360	9.720-29.560	5.745	0.004*
	Mean ±SD	15.699±4.142	15.661±5.542	19.617±5.995		
Indentation index nasolabial and marionette	Range	11.220-23.450	10.790-31.530	9.970-34.530	4.761	0.011*
	Mean ±SD	16.318±4.305	18.274±5.625	21.905±7.468		

There were significant statistical results as regards the group with the darker phototype (Type V) had more indentation index of wrinkles in most facial sites (crow's feet area, nasolabial and marionette areas).

Table 4: Comparison between Glogau classification for severity of skin aging signs and, wrinkles severity and roughness (indentation index) of forehead, crow's feet, nasolabial and marionette areas

		Glogau				ANOVA	
		I	II	III	IV	F	P-value
Indentation index forehead	Range	7.7-17.37	12.37-19.33	12.96-21.29	16.29-27.25	30.442	<0.001*
	Mean ±SD	13.055±2.739	16.469±2.374	16.865±2.232	21.249±4.615		
Indentation index crow's feet	Range	9.26-17.81	9.78-24.58	13.26-29.56	19.37-29.23	79.144	<0.001*
	Mean ±SD	12.073±2.366	15.441±3.556	21.610±3.860	24.750±3.423		
Indentation index nasolabial and marionete	Range	10.79-21.51	9.97-22.31	14.56-32.66	18.08-34.53	38.871	<0.001*
	Mean ±SD	14.636±2.822	17.527±3.994	23.948±6.162	26.810±5.016		

Significant statistical results were found between the Glogau classification for severity of skin aging signs and wrinkles severity and roughness (indentation index) for all tested facial wrinkles (forehead/ crow's feet area/ nasolabial and marionette areas), where the indentation index and severity of wrinkles increased with the increase in Glogau score.

DISCUSSION

Face aging is a major cosmetic problem from ancient times to modern medical practice. The face has received most of the attention and generated most of the studies related to beauty because it is the most expressive part of the human body. The increasing life expectancy and demand for prevention and treatment of aged skin underline the need for a better knowledge of the aging process [9]. Aging is a process in which both intrinsic and extrinsic factors lead progressively to loss of structural integrity and physiological function. Intrinsic aging of the skin occurs inevitably as a natural consequence of physiological changes that are genetically determined. Extrinsic factors include cumulative sun exposure which is the most important factor, smoking and pollution. The synergistic effects of intrinsic and extrinsic aging factors produce deterioration of the cutaneous barrier with significant-associated morbidity [4]. Skin aging is a complex phenomenon clinically described by numerous features (wrinkles, sunspots, uneven skin color, telangiectasia, skin loosening, etc.) that often depend on ethnic origin. In addition to genetic inheritance, numerous factors can interfere and modify skin color and/or skin color heterogeneity including climatic changes, social and cultural conditions and hormonal status. The different patterns of aging may result from different environmental and constitutional factors which could be explored by an epidemiological approach [5]. Literature was lacking a standardized tool for the measurement of aging, and numerous different instruments and scales have been published. Few comparative data were available on age-related changes in skin color among different ethnic groups [5] and to the best of our knowledge; no one has yet attempted to investigate the signs of face aging among Egyptians. Therefore, we aimed in the current study to assess the different clinical patterns of face aging in Egyptian women. A cross-sectional study including 100 adult females with age ranging from 20-60 years was done. All cases were recruited from Ain Shams University hospitals. They were classified using Fitzpatrick's classification ranging from skin type III to V. Severity grading of photoaging was done using Glogau scale which was developed to objectively measure the severity of wrinkles and photoaging. Also, Correlation between quality of life and the severity of aging signs was done using the "World Health Organization Quality of Life (WHOQOL)-BREF" an abbreviated version of the WHOQOL-100. **Kaur** *et al.* [10] conducted their study using 400 ordinary photographs from four different age groups belonging to Punjabi Sikh population. All age related changes were found to be minimal in age group 30-35 years, fair in 35-40 years, marked in age group 40-50 years and extremely prominent in 50-60 years. Another study done in Iran investigated melanin and erythema index among five different age group (10-20, 20-30, 30-40, 40-50, 50-60) using Mexameter. They found out that subjects aged 20-30 years and 10-20 years had the highest and lowest skin melanin index, respectively. No significant correlatiom was found between erythema index and age [8]. In spite of these studies, large amount of data still need to be conducted on different populations to have more significance in personal identification of aging features among different ethnic groups. On the other hand, the relation between sun screen use and severity of wrinkles (Indentation index) in forehead, crow's feet area, nasolabial and marionette areas was non-significant according to the results in this study in contrast to other previous studies that confirmed the protective role of sunscreen use against wrinkle formation. *Hughes et al.* [11] concluded that regular sunscreen use by young and middle-aged adults younger than 55 years can retard skin aging including the appearance of wrinkles. The topical photoprotection from UVA by the sunscreen inhibits elastase activity and is, therefore, considered to be an effective treatment for relieving symptoms of photoaging, mainly in the form of fine wrinkles and skin sagging. This study showed a negative correlation between the age, indentation index of wrinkles, average HGB concentration and quality of life score (WHOQOL) where subjects with lower scores of quality of life are older and had more wrinkles and erythema. In agreement with our study *Rexbye et al.* [12] concluded that the high social status, low depression score are associated with a younger look. Those people have better awareness regarding skin care and maintenance of their youthful look by applying skin care products like sunblocks, proper moisturizers and antiaging creams. In addition, *Hara et al.* [13] concluded that the mechanical behaviour of stratum corneum was

responsible for localized strain during the formation of facial expressions, which then lead to residual wrinkle formation. The accumulation of residual wrinkles will cause permanent wrinkles over the long term. People with lower quality of life score do experience more anxiety and more sad facial expressions which accelerates the development of static wrinkles especially periorbital and forehead lines. It seems that the current study provides an objective assessment of the signs of skin aging among Egyptian females. This may pave the way for further understanding of aging process among Egyptians through conducting further studies.

CONCLUSION

There was a negative correlation between quality of life index (WHOQOL) and age, severity of facial wrinkles (indentation index), average HGB concentration. There was positive correlation between age and severity of facial wrinkles (indentation index), average roughness, average melanin concentration, melanin heterogeneity, and average HGB concentration. Skin Type IV showed lower WHOQOL and more wrinkles indentation index, roughness, melanin concentration, melanin heterogeneity and HGB heterogeneity. There was a significant correlation between the sunscreen use and average melanin concentration, where cases that used sunscreen showed lower average melanin concentration. The relation between sun screen use and severity of wrinkles (Indentation index) was non-significant.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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