



CLINICO- EPIDEMIOLOGICAL STUDY OF PHYSIOLOGICAL SKIN CHANGES IN GERIATRICS IN A TERTIARY HOSPITAL OF WESTERN RAJASTHAN

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ABSTRACT

Background: Aging is a biological continuous progressive process by which every individual has to pass through. Human skin undergoes chronological aging and aging due to environmental exposure. Accumulation of molecular damage over time causes functional decline in the human skin, as with the other organs. **Aims and Objectives:** To evaluate the frequency as well as the age and gender variations of physiological dermatological changes in geriatric population in tertiary centre in western Rajasthan and to determine the most common change. **Material and Method:** Hospital based cross sectional observational study was conducted in Department of Dermatology, Venereology and Leprosy, Mathura Das Mathur Hospital, Dr. S.N. Medical College, Jodhpur for the period of 6 months. 200 patients with age 60 and above attending the dermatology out-patient department of tertiary hospital, with normal physiological changes of aging and those consenting were enrolled in the study. **Result:** Of total 200 patients in our study 116 (58%) were males and the rest were females (42%). 61% patients belonged to 60-70 years age group and 11.8% were over 80 years age. 54% patients belonged to rural area and 46.2% were the urban population. Common physiological changes seen: wrinkling, xerosis, Idiopathic guttate hypomelanosis, seborrheic keratosis, white hair, vertical ridging of nails. **Conclusion:** Males outnumbered females with male to female ratio 1.38:1. Most common age group recorded was 60-69 years. Wrinkling came out to be the most common physiological change.

KEYWORDS : geriatric population, photoaging, chronological aging.

INTRODUCTION

Aging is a biological continuous progressive process by which every individual has to pass through and has multiple contributing factors like intrinsic and extrinsic. Intrinsic aging is caused by the inheritance of genes witnessed over the passage of time and manifested mainly by physiologic changes. Extrinsic aging occurs as a consequence of environmental factors (photoaging) such as sun exposure, facial expressions, effect of gravity, smoking, sleeping positions with major morphologic and physiologic manifestations.^[1]

Accumulation of molecular damage over time causes functional decline in the human skin, as with the other organs.^[2] There is reduction in immune function and dermal vasculature compromising skin's inherent ability to repair cells. Epidermis atrophies and skin loses tone and elasticity due to alteration in elastin and collagen giving rise to various senile changes like xerosis, senile purpura, senile lentigens, and senile comedones. Dermoepidermal junction flattens and loss of microvillous projections results in decreased adherence of epidermis to the underlying dermis accompanied with various degenerative and metabolic changes throughout skin layers.^[3]

Low birth rates coupled with long life expectancies due to decline in fertility and mortality rates has shifted the population to an aging mankind.^[4] By 2050, the world population is expected to project to 1.9 billion.^[5]

This study endeavors to evaluate the frequency as well as the age and gender variations of physiological dermatological changes in geriatric population who attended dermatologic opd of a tertiary care hospital in western Rajasthan and to determine the most common change.

MATERIAL AND METHOD

Hospital based cross sectional observational study was conducted in Department of Dermatology, Venereology and Leprosy, Mathura Das Mathur Hospital, Dr. S.N. Medical College, Jodhpur for the period of 6 months. 200 patients with age 60 and above attending the dermatology out-patient department of tertiary hospital, with normal physiological changes of aging and those consenting were enrolled in the study. Ethical clearance was obtained from the ethical committee of the college. Relevant history of complaints, medical ailments taken and thorough dermatological examination was done to look for the chronological aging and photoaging skin changes. Relevant investigations were carried out. Diagnosis was made clinically and photographs were taken and recorded after obtaining the consent. Master chart was prepared from the details recorded on the Performa. Epidemiological and clinical morphological data was obtained from

master chart. All statistical analysis was done using statistical software (SPSS).

RESULTS

Of total 200 patients in our study 116 (58.0%) were males and the rest were females (84 patients-42.0%). 122 patients - 61% belonged to 60-69 years age group and 22 patients- 11.0% were over 80 years age. Majority (108 patients- 54.0%) were residents from rural area. Aging signs were seen in all the patients. Common physiological changes seen were tabulated. Fine wrinkling (200 patients- 100%) followed by xerosis (156 patients-78.0%) were the most common changes seen.

Majority of patients had white hair (156 patients-78.0%). Grey hair observed in (38 patients-19.0%) and black hair in (6 patients-3.0%). Male pattern baldness was observed in (75 males - 64.6%) and diffuse thinning of hair was observed in (77 females- 91.6%)

The commonest nail finding noticed was vertical ridging (109 patients- 54.5%) followed by loss of lustre (56 patients-28.0%) and thinning (49 patients-24.5%). Other changes observed were subungual hyperkeratosis (32 patients-16%), brittle nails (21 patients- 10.5%), beau's lines (17 patients-8.5%), longitudinal melanonychia (16 patients-8%), shininess (5 patients-2.5%), pitting (3 patients- 1.5%). The most common dental changes seen were dental caries (142 patients -71%) followed by staining (90 patients-45%) and loss of teeth (74 patients-37%).

TABLE 1: Frequency of common physiological changes seen in geriatric population.

Physiological changes in elderly	Total cases (out of 200)	Percentage
Fine wrinkling	200	100.0%
Xerosis	156	78.0%
Idiopathic guttate hypomelanosis	103	51.5%
Seborrheic keratosis	80	40.0%
Cherry angioma	66	33.0%
Cracked soles	62	31.0%
Skin tags	52	26.0%
Coarse wrinkling	42	21.0%
Senile lentigens	36	18.0%
Senile comedones	34	17.0%
Colloid milium, milia	31	15.5%
Callosity	28	14.0%
Dyspigmentation	16	8.0%
Senile purpura	10	5.0%

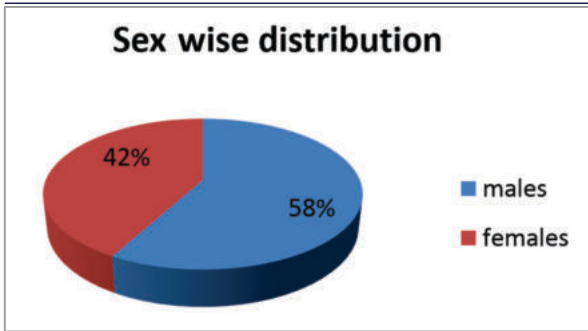


FIGURE 1: Sex wise distribution

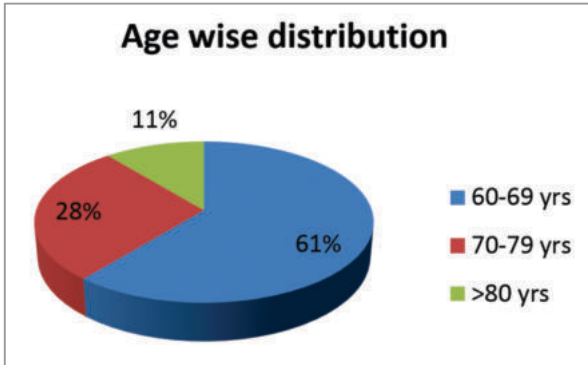


FIGURE 2: Age wise distribution



FIGURE 6: Idiopathic Guttate Hypomelanosis



FIGURE 7: Cherry angioma



FIGURE 3: Senile Purpura



FIGURE 8: Deep wrinkles on forehead with colloid milium on nose.



FIGURE 4: Xerosis



FIGURE 5: Senile Comedones

DISCUSSION

Most common skin changes seen in geriatric population are physiological but they may adversely affect older person's health and quality of life. Decrease in skin lipids leads to dryness and roughness. Fragmentation of collagen and elastic fibres and lipofuscin accumulation incites wrinkled and lax skin^[6]. Decreased inflammatory response causes delayed healing and vulnerability to infection. Reduced support to blood vessels instigates purpuric lesions. Flattening of dermal papillae procure blister formation and consequent infection. Reduced subcutaneous fat leads to increased risk of injury, less natural insulation and increased risk of hypothermia. Shrinkage of capillary in dermal papilla leads to pallor and changes in thermoregulation.^[7] Decrease in melanocytes promotes grey hair and increased susceptibility to solar radiation. Xerosis results from decrease in overall skin hydration which may exacerbate pruritus in elderly.^[8] Dyspigmentation of skin is seen due to the localized proliferation of melanocytes in the sun exposed skin.^[2]

With age, under the influence of hormonal changes the density of hair follicles decrease leading to baldness.^[2] The frequency of tooth loss is greater among elderly.^[9] In the older age, the nails become brittle, pale and dull.^[10]

Signs of intrinsic aging include fine wrinkles, thin skin, loss of underlying fat, sagging skin, sebaceous hyperplasia, greying hair, hair loss, nail fragility, irregular pigmentation, susceptibility of blister formation.^[11]

Photoaging is characterized by citrine skin, cutis rhomboidalis nucahe, favre- racouchot syndrome, senile purpura, stellate pseudoscars, dyspigmentation, guttate hypomelanosis, seborrheic keratosis, freckles, lentigens, diffuse elastoma (dubreuilh), elastic nodule of ear, acrokeratoelastoidosis marginalis, striated beaded lines, actinic granuloma, telangiectasia, venous lakes, purpura.^[11]

In this study, age group of 60 years and above was included and it was observed that the age group 60-69 yrs was more commonly involved with 122 patients (61.0%). The mean age was 66.7 yrs. Most of the the studies^[6,12,13,14,15,16] had included an age group from 60- 65 years as elderly population. 60 years as the lower limit of age range in our study was in line with Chopra et al.^[15] and Nair et al.^[17] Sahoo et al^[18] and Patange and Fernandez^[19] had included an age from 55 years and that by Beaugard and Gilchrist^[20] included an age group from 50 years as elderly. Durai PC et al included all the geriatric population with males above 60 years and females having age of 50 years and above.^[21]

In the present study, 116 were male participants (58.0%) and 84 were female participants (42.0%) with M: F ratio of 1.38:1 which was in accordance to the M: F ratio of 1.4:1 in a study done by Reetu Agarwal et al.^[8] In a study conducted by Durai PC et al female outnumbered males with F: M ratio of 1.34:1^[21] Ankur Ghosh et al reported male preponderance with M: F: 2.2:1.^[22] In our study, males forming the bulk was probably related to them being occupied in outdoor activities.

Fine wrinkling was seen in all patients (100%) in our study which was similar to that observed in study done by Durai PC et al^[21] but higher than the other studies.^[8,16,23] Xerosis was observed in 78% of our patients, higher than analysed in different studies.^[8,16,23,24] Most of our patients were agricultural workers and laborers belonging to rural areas with lower socioeconomic status and never used sunscreens and other anti aging products.

Idiopathic guttate hypomelanosis was seen in 51% of our patients. This finding was comparable to Reetu Agarwal et al^[8] and Dhiraj Kumar et al^[23] but was lower than study of Sanjiv Grover and CRV Narasimhalu.^[16] 40% patients had Seborrheic keratosis which was similar to finding in literatures of other studies.^[8,16,23] Cherry angioma was discovered in 33% patients, comparable to studies of Patange and Fernandez^[19] and Dhiraj Kumar et al.^[23] and half the value observed by Sanjiv Grover and CRV Narasimhalu^[16]. Reetu Agarwal et al reported cherry angioma in 91.8% patients.^[8]

18% patients had senile lentigens. This finding was significantly higher than the study conducted by Durai PC et al^[21] and was nearly half the observation reported by Dhiraj kumar et al^[23] but comparable to other studies^[8,16]. Senile comedones were seen in 17% patients. This finding was less frequently seen in other studies.^[8,16,23]

Dyspigmentation contributed to 8% of observations in our study. Durai PC et al reported this finding in 13% patients in their study.^[21] Senile purpura was seen in 5% patients which was in accordance to the study conducted by Durai PC et al.^[21] This was higher than seen in study of Reetu Agrwal et al.^[8] Dhiraj Kumar et al outlined this finding in 10.8% patients.^[23]

The commonest nail finding observed in our study was vertical ridging of nails (54.5%) followed by loss of lustre (28%) patients. This observation was similar to the study of Sanjiv Grover and CRV Narasimhalu.^[16] Durai PC et al reported loss of lustre (50.8%) as the most common nail finding in their study.^[21] Reetu Agarwal et al had published nail thinning (36%) as the most frequent nail finding in their study.^[8]

Change in hair color is the peculiar feature of aging. In our study, 78% patients had white hair, grey hair observed in 19% patients and black hair in 3% patients. This was in concordance to the study of Durai et al.^[21] Sanjiv Grover and CRV Narasimhalu^[16] reported greying hair as the most frequent hair finding in elderly people. Male pattern baldness was appreciated in 64.6% males and 91.6 % females had grown thinning of hair in the present study. This was higher than reported in other studies.^[19]

CONCLUSION

A total of 200 patients were included in our study. Males outnumbered females with male to female ratio of 1.38:1. Most common age group recorded was 60-69 years. Rural population formed the majority. The skin findings were suggestive of changes that were result of cumulative sun exposure during the entire lifespan. These changes of photo aging

were superimposed with intrinsic aging. Wrinkling came out to be the most common cutaneous physiological change.

REFERENCES

1. Draelos ZD. Concepts in a multiprong approach to photoaging. *Skin Therapy Lett.* 2006; 11(3):1-3.
2. Millington GWM, Graham-Brown RAC. Skin and skin disease throughout life. In: Burns T, Breathnach S, Cox N, Griffiths C, eds. *Rook's Textbook of Dermatology*. 8th edn., Oxford:Wiley- Blackwell publication 2010:8.21-9
3. Montagna W, Kirchner S, Carlisle MS. Histology of sun damaged skin. *J Am Acad Dermatol.* 1989; 21:907-18.
4. mospi.nic.in [Internet]. New Delhi: Central Statistics Office Ministry of Statistics and Programme Implementation Government of India; June 2011. Available from: http://mospi.nic.in/sites/default/files/publication_reports/elderly_in_india.pdf. [Last accessed on 2018 Aug 21].
5. McMurdo ME. A healthy old age: Realistic or futile goal? *BMJ* 2000;321:1149-51
6. Cvitanovi H, Eva EK, Kuljanac I, Jancic E. Skin disease in a geriatric patients Group. *Coll. Antropol* 2010; 34Suppl: 247-251.
7. Yaar M, Gilchrist BA. Aging of skin. In: Wolff K, Goldsmith LA, Katz SI, Gilchrist BA, Paller AS, Leffell DJ, eds. *Fitzpatrick's Dermatology in General Medicine*, 7th edn., New York: McGraw-Hill Companies 2008:963-73.
8. Agarwal R, Sharma L, Chopra A, Mitra D, Saraswat N. A cross-sectional observational study of geriatric dermatoses in a Tertiary Care Hospital of Northern India. *Indian Dermatol Online J* 2019;10:524-9
9. Hunt RJ, Hand JS, Kohout FJ, Beck JD. Incidence of tooth loss among elderly lowans. *Am J Public Health* 1988; 78:1330-32.
10. de Berker DAR and Baran R. Disorders of nails. In: Burns T, Breathnach S, Cox. N, Griffiths C, eds. *Rook's Textbook of Dermatology*. 8th edn., Oxford: Wiley- Blackwell publication 2010:65:7.
11. Fenske NA, Lober CW. Aging and its effects on the skin. In: Moschella. SL, Hurley HJ, eds. *Dermatology* 3rd edn., Philadelphia: WB Saunders 1992;107-22.
12. Yalcin B, Tamer E, Toy GG, Oztas P, Hayran M, Alli N. The prevalence of skin diseases in the elderly: analysis of 4099 geriatric patients. *Int J Dermatol* 2006;45:672-6
13. Smith, Derek R, Leggat, Peter A. Prevalence of skin disease among the elderly in different clinical environments. *Australasian Journal on Aging*. 2005;24:71-6
14. Polat M , Yalcyn B, Calyskan D, Alli N. Complete dermatological examination in the elderly: An exploratory study from an outpatient clinic in Turkey. *Gerontology* 2009; 55:58-63.
15. Chopra A, Kullar J, Chopra D, Dhaliwal S R. Cutaneous physiological and pathological changes in elderly. *Indian J Dermatol Venereol Leprol* 2000; 66:274.
16. Grover S, Narasimhalu C. A clinical study of skin changes in geriatric population. *Indian J Dermatol Venereol Leprol* 2009; 75: 305-306.
17. Nair P, Bodiwala N, Arora T, Patel S, Vora R. A study of geriatric dermatosis at a rural hospital in Gujarat. *J Indian Acad Geriatr* 2013; 9:15-9.
18. Sahoo A, Singh PC, Pattnaik P, Panigrahi R. Geriatric dermatoses in southern Orissa. *Indian J Dermatol.* 2000; 45:66-8.
19. Patange SV, Fernandez RJ. A study of geriatric dermatoses. *Indian J Dermatol Venereol Leprol.* 1995; 61:206-8.
20. Beaugard S, Gilchrist BA. A survey of skin problems and skin care regimens in the elderly. *Arch Dermatol.* 1987;123:1638-43
21. Durai PC, Thappa DM, Kumari R, Malathi M. Aging in elderly: Chronological versus photoaging. *Indian J Dermatol* 2012;57:343-52
22. Ghosh A, Jahan G, Choubey P, Chaudhary SS. Spectrum of geriatric dermatoses in Jharkhand. *IOSR JDMS* 2017; 16:59-62.
23. Kumar D, Das A, Bandyopadhyay D, Chowdhury SN, Das NK, Sharma P, Kumar A. Dermatoses in the elderly: Clinico-demographic profile of patients attending a tertiary care centre. *Indian J Dermatol* 2021;66:74-80
24. Rathore BS, Arvind K, Sanyogita S, Tushyata A. Geriatric dermatoses— A clinical study. *Int J Scientific Res* 2017; 6:176-9.