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A Study on Pattern of Nail Changes in Geriatric Population

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Abstract
Background: *No cutaneous examination is complete without a careful evaluation of nails. Nail changesare common in the elderly and include changes in color, contour, growth, surface and thickness.*
Aim of the study *was to identify nail changes due to various dermatologic or systemic disorders in the geriatric age group.*
Material and Methods: *A total of 100 elderly patients aged more than 60 years with nail changes were included in the study from at tertiary care hospital. In suspected case of fungal infection, KOH (potassium hydroxide) mount of the nail clippings and nail biopsy done, whenever indicated.*
Results: *The commonest nail change seen was onychorrhexis (97%). Other nail changes, in decreasing order, were altered contour (95%), alunula (93%), dark / dull opaque nails (91%), ragged cuticle (88%), slowing of nail growth rate (87%), thickened nail plate (69%), onycholysis (68%), subungual hyperkeratosis (62%), chromonychia (58%), ragged nail folds (45%), pitting (24%), Beau's lines (23%), onychoschizia (18%), brittle nails (18%), clubbing (17%), smooth shiny nails (13%), thinning of nail plate (9%), paronychia (6%), onychoptosis (5%), pterygium unguis (5%), onychomycosis (3%), brachyonychia (3%), longitudinal splitting (2%), subungual hematoma, plat forming of nail plate and powdery white patch on the nail (1% each).*
Conclusion: *Careful examination of nail is very important, especially so in elderly. The nail changes may be a marker for many dermatological as well as systemic disorders.*

INTRODUCTION

Nails are one of the most fascinating components of the skin and it reflects general health, nutritional status, racial background as well as age of an individual.Nail disorders accounts for approximately 10% of all dermatological conditions and affects higher percentage in the geriatric population.[1]

Various physiological as well as disease related nail changes and disorders are seen with increasing age. Many of these are extremely painful, thus affecting stability, ambulation and other functions of nails.[2]These morphological changes at times may be specific but at times may be seen in geriatric age group.

With the increase in life expectancy and chronic life style disorders the various nail changes

occuring in geriatric population have increased. No physical examination is complete without the study of nails. However the nail still remains one of the understudied, underutilized structure.[1] Hence this study was undertaken.

AIMS AND OBJECTIVES

To study the pathological nail changes due to various dermatologic and systemic disorders in the geriatric age group.

MATERIAL AND METHODS

The 100 elderly patients with nail changes were selected at a tertiary care hospital during2014-2015 at Jaipur.

Inclusion Criteria: Patients aged more than 60 years, of both sexes, with nail changes were included in the study.

Exclusion Criteria: Patients with nail changes due to genodermatoses and other congenital disorders and unwilling patients were excluded.

Base Line Evaluation: Detailed history followed by general physical and systemic examination was carried out. Nail, skin, mucus membrane and hair examination in details were recorded in the proforma.

Base Line Investigation: Complete haemogram, urine analysis and KOH (potassium hydroxide) mount of the nail clippings were done. Nail biopsy whenever required and any other investigations were done, whenever indicated.

OBSERVATIONS AND RESULTS

Among 100 patients, aged above 60 years in our study, 71 (71%) were male and 29 (29%) were female, with a male to female ratio of 2.45:1.

The age range of the patients was 61-80 years. Mean age was 67.37 years.

The most common occupation among the study population was agriculture (50%), followed by housewife (18%), business (13%), retired teachers (10%), coolie (2%), office worker (1%), potter (1%), basket weaving work (1%) and others (4%).

The duration of nail disorders ranged from 3 months to 30 years with an average of 4.68 years.

History of varying degree and frequency of trauma to the nails or surrounding area was present in 73 patients out of which 56 were male and 17 were female.

The commonest nail change seen was onychorrhexis (97%). Other nail changes, in decreasing order, were altered contour (95%), alunula (93%), dark / dull opaque nails (91%), ragged cuticle (88%), slowing of nail growth rate (87%), thickened nail plate (69%), onycholysis (68%), subungual hyperkeratosis (62%), chromonychia (58%), ragged nail folds (45%), pitting (24%), Beau's lines (23%), onychoschizia (18%), brittle nails (18%), clubbing (17%), smooth shiny nails (13%), thinning of nail plate (9%), paronychia (6%), onychoptosis (5%), pterygium unguis (5%), onychomycosis (3%), brachyonychia (3%), longitudinal splitting (2%), subungual hematoma, platforming of nail plate and powdery white patch on the nail (1% each).

The distribution by type of thickening and gender is shown in table- 1.

DISCUSSION

Among the 100 patients, 71% were male and 29% were female, showing strong male preponderance. However no significant difference in sex distribution of nail disorders was noted in a study conducted by Committee for care of nail disorders of American Academy of Dermatology (Drake LA).[2] The male predominance in our study possibly reflect relatively high consultations sought by male patients in this age group for various illnesses.

History of varying degree of trauma was present in 73% patients. Trauma remains one of the most common aetiological factors for nail changes in elderly which is consistent with the study conducted by Drake LA, Dinehart SM, J Am Acad Dermatol 1996. and Cohen PR, Scher RK. Geriatric nail disorders: diagnosis and treatment. J Am Acad Dermatol 1992. [2,3]

TABLE 1 Spectrum of Nail Changes

S. No.	Nail Changes	No. of Patients						Total No. of Cases (M+F)
		Male			Female			
		Hand	Feet	Total(any digit)	Hand	Feet	Total(any digit)	
1	Onychorrhexis	64	68	69	28	29	28	97
2	Altered contour	45	62	68	17	25	27	95
3	Alunula	31	61	65	15	27	28	93
4	Dark/ Dull opaque nails	53	62	64	21	27	27	91
5	Ragged cuticle	43	64	64	21	24	24	88
6	Slow growth	32	62	62	13	25	25	87
7	Thickening	13	51	51	04	18	18	69
8	Onycholysis	24	39	47	08	21	21	68
9	Subungual hyperkeratosis	18	41	46	06	15	16	62
10	Chromonychia	22	26	40	11	11	18	58
11	Ragged nailfold	10	20	35	03	05	10	45
12	Pitting	16	00	16	08	00	08	24
13	Beau's lines	04	14	17	02	05	06	23
14	Onychoschizia	06	13	15	00	03	03	18
15	Brittle nails	06	13	15	00	03	03	18
16	Clubbing	-	-	11	-	-	04	17
17	Thinning	04	06	06	03	03	01	09
18	Shiny nails	06	02	08	00	00	01	13
19	Paronychia	02	00	02	02	02	00	06
20	Onychoptosis	01	03	04	00	00	00	05
21	Onychomycosis	00	02	02	01	01	02	03
22	Brachyonychia	02	01	03	00	00	01	03
23	Longitudinal splitting	01	01	02	00	00	00	02
24	Pterygium unguis	02	01	03	01	01	01	05
25	Subungual hematoma	00	00	00	00	00	00	01
26	Plicated nail	01	00	01	00	00	00	01
27	Powdery white patches	00	00	00	01	01	01	01

Various nail changes associated with systemic diseases are shown in table 2.

TABLE 2 Systemic/ Dermatologic Association of Nail Changes

S.No	Nail Change	No. of Cases	Associated Disease
1	Kolionychia &Platonychia	48	Anemia, coronary 8 disease, clay work
2	Onycholysis	43	Anemia, leprosy, psoriasis, palmoplantarkeratoderma
3	Pitting	16	Psoriasis, alopecia areata, paronychia, leprosy, dermatitis
4	Subungual hyperkeratosis	12	Psoriasis, leprosy, palmoplantarkeratoderma
5	Beau's lines	08	Fever with cellulitis, chronic obstructive lung disease, carcinoma breast on radiotherapy, contact dermatitis, stroke, trauma
6	Clubbing	08	Chronic obstructive lung disease, hypertension, congestive cardiac failure, carcinoma, malnutrition
7	Terry's nails	06	Type II diabetes, congestive cardiac failure due to pleural effusion, stroke
8	Longitudinal melanonychia	06	Cancer chemotherapy cisplatin, 5-fluorouracil, cyclophosphamide, Adriamycin
9	Thinning	05	Anemia
10	Diffuse chromonychia	05	Diabetes, malnutrition, anemia, radiotherapy, leprosy
11	Transverse chromonychia	03	Cancer chemotherapy cisplatin, 5-fluorouracil, cyclophosphamide, Adriamycin
12	Half and half nails	02	Carcinoma breast, carcinoma supraglottis

The first and fifth digits were most frequently involved,[4] and toe nail were more commonly affected than the finger nails in most of the cases,[5] which is consistent with the study conducted by Cohen PR, Scher RK. J Am Acad Dermatol 1992 and Theodosat A. DermatolClin2004.[3,5]

In our study onychorrhexis (longitudinal ridging and beading) was the commonest nail change, observed in as many as 97% of patients. Old age is the commonest cause of onychorrexis as reported by Holzberg M. Nail signs of systemic disease.2000. [6]

Altered contour was the next common change found in 95 patients, of which 68 were male and 27 were female. Toenails were more frequently affected. Altered contour of nail plate in the form of platyonychia, koilonychia, increased transverse curvature, pincer nails, irregular dystrophic nail plate and downward bending of nail plate was also present in high percentage (95%) of cases.

Similar studies by Baran R, Dawber RPR.(1994) on nail in childhood and old age, and Cohen PR, ScherRK.Atlas of hair and nails.(2000),Dawber R, Bristow I, Turner W. Nail Disorders. (2001) and Kushner D. Med Surg (1992) have reported similar nail changes in elderly age group.[4,7-9]

Anemia was present in 48% cases.

Patients with platyonychia and koilonychia in our study supports the opinion that nail changes due to impaired circulation resulting in reduced oxygen and nutrient supply is an important factor in causing senile nail changes.[4]

Platyonychia and koilonychia were observed in a Potter in our study could be attributed to working with clay.Similar changes have been found by Baran R,1994 in individuals working with clay and wet work. [10]

The high prevalence of ragged cuticles and nailfolds with associated paronychia in some cases could be due to occupational exposure. These findings are consistent with the study by Raja babu KK. andValia RG, Valia AR 2001.[1,11]

Absence of lunula, was found in 93% of our patients.It is also reported to be an important senile nail change by various workers in their studies by Lewis BL (1955) and Cohen PR(1996).[12,13]

Terry's nails were associated with systemic illness in 6 cases, namely, type II diabetes mellitus (3 cases), pleural effusion with congestive heart failure (1 cases), stroke (1 case) and 1 patient of renal failure. However 7 more patients in our study had no apparent disorder. These cases had terry nail presumably due to ageing process itself. These results are similar to a study byHolzberg M, Walker HK.1984.[14]

Neapolitan nail is reported as a characteristic nail change occurring in the elderly.[1] This uncommon change was seen in only 1 patient in our study.

Nixon DW (1976) reported longitudinal and transverse melanonychia after cancerchemo-therapy.[15]Similar changes were seen in 3 patients in our study.

Thickened nail plates in the form of onychauxis (35 patients), pachyonychia (18), hemionychog-ryphosis (10) and onychogryphosis (6 patients) were observed as a manifestations of ageing in our study. Similar results have been reported in study a conducted by Baran R, Dawber RPR (1994).[10]

In our study anaemia was present in 29 patients, psoriasis in 9 patients, palmoplantarkeratoderma in 4 patents and leprosy in 1 patient. The remaining patients had no obvious cause and appeared to be due to ageing process.

Nail pitting was seen in 24 patients. Beau's lines were noticed in 23 patients in our study. Onychoschizia and brittle nails were found in 18 patients, appears to be due to repeated hydration and dehydration.

Clubbing was associated with chronic obstructive pulmonary disease, hypertension and malnutrition. Other nail changes seen in our study were smooth / shiny nails (13 patients), brachyonychia (2 patients), longitudinal splitting (1 patient),[4] pterygium unguis secondary to brittle nails / trauma (1 patient),[10] platforming of nail plate or plicated nail (square shaped flattening of nail plate with sharply angled lateral margins) in 1

patient,[10] superficial powdery white patches of nail plate (1 patient), trauma induced onychoptosis (5 patients)[10] and subungual hematoma in 1 patient[3] were presumed to be due to ageing process.

SUMMARY

The majority of patients (80%) were in the age group of 61-70 years. The most common occupation among the study population was agriculture (50%), followed by housewife (18%), business (13%), retired teacher (10%), coolie (2%), office work (1%), potter (1%), basket weaver (1%) and others (4%). Trauma was found to be one of the major aetiological factors for nail changes in our study (70% cases).

The first and fifth digits were more frequently involved, and toe nail involvement was more common than the finger nails in our study.

Onychorrhexis was commonest nail change (97%) followed by altered contour (95%) cases. The types of changes seen were platyonychia, koilonychia, increased transverse curvature, pincer nails, irregular dystrophy, and downward bent of distal nail plate. Koilonychia and platyonychiawere associated with anemia in 48% patients.

Lunula was absent in all the twenty nails in 40 patients.

History of slowing of nail growth rate was present in 87% of total cases in age group of 61-80 years. Onycholysis was seen in 68 patients. Associated diseases were anemia,

psoriasis, lichen planus, palmoplantarkeratoderma and treated leprosy.

Subungual hyperkeratosis was present in 62 patients with psoriasis, treated leprosy and palmoplantarkeratoderma.

Pitting was present in 24 patients, 8 cases of psoriasis, 4 cases of alopecia areata had geometrical pitting, 2 cases of contact dermatitis and case of borderline lepromatous leprosy.

CONCLUSION

Careful examination of nail, especially in elderly needs special emphasis because nail changes may be a marker for a wide range of dermatological and systemic disorders as well as ageing process.

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