

## Original Article

# Nail changes in patients admitted in a psychiatric hospital: A cross sectional study

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**Abstract** *Objective* To study the nail changes in admitted patients with primary psychiatric diseases.

*Methods* This cross-sectional hospital based study was conducted in admitted psychiatric patients over a period of one year. Sequential 148 admitted patients with a primary psychiatric illness were studied.

*Results* This study comprised of 148 patients, 112 males and 36 females. Schizophrenia was the commonest psychiatric diagnosis, comprising 57 (38.5%) patients followed by mania seen in 27 (18.2%) patients. Nail changes were seen in 57 (38.5%) patients. Longitudinal ridging was the most common presentation seen in 16 (10.8%) patients, followed by dystrophic nail in 9 (6%) patients, hang nail 8 (5.4%), traumatic nail 7 (4.7%), paronychia 7 (4.7%), longitudinal melanonychia 6 (4%), petechial hemorrhage 5 (3.3%) and focal pigmentation in 5 (3.3%) patients.

*Conclusion* Nail manifestations are common in the psychiatric patients. Understanding the causes of nail changes in these patients can help in the prevention of the same.

**Key words**

Hang nail, longitudinal ridging, nail changes, psychiatric patients.

## Introduction

Psycho-dermatology connotes the interaction between the skin and mind. While, the dermatology addresses the external disease which is visible to the sight, psychiatry on the other hand deals with internal disease.<sup>1</sup> Like skin manifestations, nail changes are also common in various psychiatric patients. Pathological skin picking (PSP) is a complex phenomenon characterized by repetitive or impulsive picking

behavior of otherwise normal skin.<sup>2</sup> Like PSP, nail tic is a persistent, recurrent or repetitive behavioral trait that results in various nail manifestation in primary psychiatric diseases.<sup>3</sup> The nail tic disorder that leads to various nail changes are onychophagia, onychotillomania, onychotemnomania, onychoteiromania, onychodaknomania, bidet nails, perionychotillomania and habit-tic deformity.<sup>3</sup> Some degree of nail picking or biting appears normal and many people do these at various times in their lives. But unlike normal, the pathological behavior is persistent. Therefore, a dermatologist should have a comprehensive understanding of these manifestations. The literature regarding the pattern of nail changes in the psychiatric patients is scarce. On literature

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review, not much has been reported regarding the spectrum of nail changes in admitted psychiatric patients which obliged the authors to undertake such a study.

## **Methods**

This study was carried out by the Postgraduate department of Dermatology, STD's and Leprosy of Government Medical College, Srinagar and Institute of Mental Health and Neurosciences (IMHANS), Srinagar, which is an associated Psychiatric hospital of the Government Medical College, Srinagar, Kashmir, India. It was a cross-sectional study which was done on admitted patients with a primary psychiatric disorder over a period of one year, from January, 2013 to December, 2013 comprising of 148 consecutive admitted psychiatric patients.

Diagnosed cases of primary psychiatric illness, admitted and aged  $\geq 12$  years were enrolled for evaluation of nail changes. Exclusion criteria were dermatological conditions diagnosed before the onset of primary psychiatric illness, any primary dermatological disorder with well known nail changes at the time of study period, pregnancy or history of pregnancy in last 6 months, age less than 12 years, and patients with connective tissue diseases.

The diagnosis of psychiatric disorder was done by a consultant psychiatrist according to the criterion given in diagnostic and statistical manual of mental disorders 4th text revision (DSM IV TR). Informed consent was given by each patient, and those considered incapable of consenting, consent was taken from their closest family member or custodian.

A preformed proforma was filled regarding the demographic variables like age, sex, marital status, occupation, psychiatric diagnosis, etc. A detailed nail examination was done by the same

dermatologist in all patients. Relevant investigations like KOH examination / culture of nail clippings for fungus and biopsy of nail bed for histopathological examination were done when required. The consent to publish the individual patient data including images was given by the patients or their guardian or custodian.

At the end of study, data were compiled and analyzed statistically by computer software SPSS version 16.

## **Results**

There were 148 patients in this study, 112 (75.7%) males and 36 (24.3%) females, with male to female ratio of 3.11:1. The patient age ranged from 12-76 years with an average age of 36.8 years. Majority of the patients (42, 28.3%) were in the third decade, followed by 40 (27%) in the fourth and 29 (19.5%) in the fifth decade (**Table 1**). Regarding occupation, students (26, 17.5%) formed the commonest group followed by farmers (17, 11.4%) (**Table 2**). Ninety-one (61.4%) patients were from rural background and 57 (38.5%) from urban areas, with a rural to urban ratio of 1.59:1. Out of 148 patients, 96 (64.8%) patients were unmarried (including divorced) while 52 (35.1%) were married giving unmarried to married ratio of 1.84:1.

Schizophrenia topped the list among psychiatric diagnoses, comprising 57 (38.5%) patients, followed by mania (27, 18.2%), substance abuse (20, 13.5%) and depression (19, 12.8%), (**Table 3**).

In our study, nail changes were seen in 57 (38.5%) patients (**Table 4**). Out of 57 patients, 23 (15.5%) patients were suffering from schizophrenia followed by mania (9, 6%) and substance abuse (7, 4.7%), (**Table 3**).

**Table 1** Age distribution of patients (n=148).

| Age group (year) | N (%)      |
|------------------|------------|
| 10-20            | 12 (8.10)  |
| 20-30            | 42 (28.38) |
| 30-40            | 40 (27.03) |
| 40-50            | 29 (19.60) |
| 50-60            | 13 (8.78)  |
| 60-70            | 10 (6.76)  |
| 70-80            | 2 (1.35)   |

**Table 2** Occupation of the patients (n=148).

| Age group (year)     | N (%)     |
|----------------------|-----------|
| Student              | 26 (17.5) |
| Farmer               | 17 (11.4) |
| Government employee  | 11 (7.4)  |
| Shopkeeper           | 10 (6.7)  |
| Handicrafts          | 9 (6.0)   |
| Laborer              | 9 (6.0)   |
| Household work       | 9 (6.0)   |
| Business             | 8 (5.4)   |
| Carpenter            | 5 (3.3)   |
| Private job          | 4 (2.7)   |
| Police official      | 4 (2.7)   |
| Teacher              | 4 (2.7)   |
| Mechanic             | 2 (1.3)   |
| Driver               | 2 (1.3)   |
| Mason                | 2 (1.3)   |
| Barber               | 2 (1.3)   |
| Religious preacher   | 1 (0.6)   |
| Baker                | 1 (0.6)   |
| Tailor               | 1 (0.6)   |
| Idle (doing no work) | 21 (14.1) |

**Table 3** Diagnoses of primary psychiatric disorders.

| Diagnosis                               | N  | Nail changes |
|-----------------------------------------|----|--------------|
| Schizophrenia                           | 57 | 23           |
| Mania                                   | 27 | 9            |
| Substance abuse                         | 20 | 7            |
| Depression                              | 19 | 6            |
| Obsessive compulsive disease            | 7  | 3            |
| Major depressive disorder               | 6  | 3            |
| Anxiety disorder                        | 2  | 1            |
| Conversion disorder                     | 2  | 1            |
| Delusional disorder                     | 1  | 1            |
| Attention deficit hyperkinetic disorder | 1  | 1            |
| Personality disorder                    | 1  | 1            |
| Dementia with parkinsonism              | 1  | 1            |
| Conduct disorder                        | 1  | 0            |
| Dissociative disorder                   | 1  | 0            |
| Seizure disorder                        | 1  | 0            |
| Somatization disorder                   | 1  | 0            |

**Table 4** Nail changes in psychiatric patients.

| Nail change                            | N (%)     |
|----------------------------------------|-----------|
| Longitudinal ridging                   | 16 (10.8) |
| Dystrophic nail                        | 9 (6.0)   |
| Hang nails                             | 8 (5.4)   |
| Traumatic nail                         | 7 (4.7)   |
| Paronychia                             | 7 (4.7)   |
| Longitudinal melanonychia              | 6 (4.0)   |
| Petechial hemorrhage                   | 5 (3.3)   |
| Focal pigmentation                     | 5 (3.3)   |
| Complete pigmentation of nail plate    | 4 (2.7)   |
| Nail plate thickening                  | 4 (2.7)   |
| Beau's lines                           | 4 (2.7)   |
| Onychomycosis                          | 3 (2.0)   |
| Median canalicular dystrophy of Heller | 3 (2.0)   |
| Focal onycholysis                      | 3 (2.0)   |
| Punctuate leuconychia                  | 2 (1.3)   |
| Pitting                                | 1 (0.6)   |
| Clubbing                               | 1 (0.6)   |

Longitudinal ridging was the most common presentation seen in 16 (10.8%) patients. The second most common presentation was dystrophic nail seen in 9 (6%) patients followed by hang nail (8, 5.4%), traumatic nail (7, 4.7%), paronychia (7, 4.7%), longitudinal melanonychia (6, 4%), petechial hemorrhage (5, 3.3%), focal pigmentation (5, 3.3%). Four patients (2.7%) each had complete pigmentation of nail plate, nail plate thickening and beau's line. Median canalicular dystrophy of Heller, onychomycosis and focal onycholysis were seen in 3 (2%) patients each. Punctuate leuconychia was seen in 2 (1.3%) patients while pitting and clubbing were seen in one (0.6%) patient each. Some patients were having multiple nail findings while others had only one type of nail change.

## Discussion

The present study was hospital-based study done on admitted patients with primary psychiatric diseases. Majority of the patients were in the their third to fifth decades, third decade being the most commonly affected age group (42, 28.3%), which is consistent with previous

studies.<sup>4</sup> Male predominance was found in our study (male 112 and female 36) with male to female ratio of 3.11:1, which is nearly similar to the previous study done by Mookhoek *et al.*<sup>5</sup> But in another study female predominance was found.<sup>4</sup> The male predominance in our study can be attributed to reluctance from the family side in admitting a female patient in a psychiatric hospital. In addition, many of our patients were drug abusers which are more common in males.

Regarding the occupation of patients, wide range of occupations was noticed. Students and idle (not doing any work) were the majority of patients affected. Rather *et al.*<sup>6</sup> have carried out a study on the socio-demographic and clinical profile of substance abusers attending a regional drug de-addiction centre in Kashmir valley and found that 78.8% drug abusers were primary and high school students. This can be explained by the fact that Kashmir is a region of conflict zone and is in a state of turmoil for last so many years and this has increased the psychiatric morbidity among people.

In our study, Schizophrenia was the most common diagnosis among primary psychiatric diseases seen in 57 patients. Psychosis was the major problem in long standing cases. A similar finding was also noted by Mookhoek *et al.*<sup>5</sup>

The nail changes were seen in 57 patients accounting for 38.51%. Strumia *et al.*<sup>7</sup> found nail changes in 45.8% of patients in anorexia nervosa. Among the patients presenting with nail changes, 23 patients were suffering from schizophrenia, followed by mania (9), substance abuse (7), and depression (6).

Longitudinal ridging was the most common presentation in our study seen in 16 (10.8%) patients. Longitudinal lines on the nails that appear as projecting ridges and may represent long-lasting abnormalities of nail plate. Trauma

to the nail is considered the most likely cause. But many systemic diseases may be associated, like rheumatoid arthritis, collagen vascular diseases, systemic amyloidosis, nail-patella syndrome.<sup>8</sup> It is also common in many psychiatric disorders, probably due to repeated and self-inflicted trauma to the nails. Nutritional deficiencies are common problem in psychiatric patients. Therefore ridging can also be due to iron, folic acid, or protein deficiency in psychiatric patients.<sup>9</sup>

Nail dystrophy is a nail plate change that results from habitual external trauma to the nail matrix and most often the patient is unaware of this behavior.<sup>10</sup> In our study, nail dystrophy was a common manifestation and was seen in 9 (6%) patients. Nail dystrophy mostly affects thumb nail bilaterally, but single nail involving the middle finger has also been reported.<sup>11</sup>

A hangnail is a small, torn piece of skin, on eponychium or paronychia, next to a fingernail or toenail. In present study it was seen in 8 (5.4%) patients. Most often it is a complication of onychophagia and other trauma to the nail leading to damage to the surrounding skin.<sup>3</sup> The habit of tearing and picking the periungual skin is known as perionychotillomania. This habit may lead to development of hangnails or presence of hangnails may act as initiating factor for perionychotillomania.<sup>3</sup>

Paronychia is an inflammation of the folds of tissue surrounding the nail of a toe or finger. Seven (4.7%) patients were having paronychia. In psychiatric patients acute episodes of paronychia may develop due to secondary infection of the traumatized nail folds, which on chronic trauma can turn into chronic paronychia. Paronychia is a common complication of Onychophagia.<sup>3</sup> Osteomyelitis of underlying bone may develop. Traumatic nails were present in 7 (4.7%) patients. The various presentations

of traumatic nails were horizontal splitting, distal multiple V-shaped split, dorsal unevenness and short nail.

Longitudinal melanonychia presents as brownish black pigmentation of nail and was seen in 6 (4%) patients. The etiology of longitudinal melanonychia is multifactorial like cutaneous disorders, systemic diseases, drugs, melanoma and nevi.<sup>9</sup> Baran reported a case of longitudinal melanonychia by nail biting and nail picking.<sup>12</sup> Repeated and self-inflicted trauma of nail may lead to longitudinal melanonychia in psychiatric patients.

Median canaliform dystrophy of Heller was seen in 3 (2%) patients. It is characterized by a paramedian or midline ridge or split and canal formation in nail plate of one or both the thumb nails. Habitual picking or nail trauma of the nail base resulting in temporary defect in the matrix that interferes with nail formation. In all patients presenting with median canaliform dystrophy of Heller, psychiatric opinion should be taken to rule out the underlying primary psychiatric disorder.<sup>13</sup>

Petechial hemorrhage was present in 5 (3.3%) patients. It presents as linear brown-black or red streaks resulting from extravasation of blood from the longitudinally oriented vessels of the nail bed.<sup>14</sup> Trauma is the most common cause. There is a long list of systemic diseases that cause petechial hemorrhage<sup>15</sup> among which subacute bacterial endocarditis is an important systemic cause.<sup>16</sup> However, in psychiatric patients, trauma is likely to be the commonest cause of petechial hemorrhage.

Beau's lines are transverse depressions in the nail plate that occur after a stressful event that temporarily interferes with nail growth.<sup>17</sup> Beau's line was present in 4 (2.7%) patients in our study. Width of the furrow indicates duration of

the illness and is seen in many systemic disorders.<sup>18</sup>

The separation of nail plate from nail bed is known as onycholysis.<sup>19</sup> The cause of onycholysis in psychiatric patients is likely to be trauma to the hyponychium leading to separation of nail plate from the nail bed. The onycholysis was present in 3 (2%) patients in our study. Punctate leuconychia was present in 2 (1.3%) patients. The psychiatric patients bite the finger nails between the teeth leading to formation of punctate leuconychia.<sup>3</sup>

## Conclusion

Nail changes are common in psychiatric patients. Understanding the causes of nail changes in these patients can help in the prevention of the same. Also some nail changes are markers of some psychiatric behaviors which can help the psychiatrist in managing these patients in a better way.

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