

## Original Research Article

# Paronychia: incidence during Magh Mela

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## ABSTRACT

**Background:** Paronychia is one of the most common infections of the fingers and toes. Clinically, paronychia present as an acute or a chronic condition.

**Methods:** The retrospective study was carried out from January 2018 to February 2018 at Allahabad. Gram stain, ZN stain, KOH examination and culture were carried out in 230 cases and species identification was done by Vitek-2 system.

**Results:** Out of these 230 cases 142 (61.73%) presented acute paronychia, 58 (25.21%) cases of chronic paronychia and the remaining 30 cases (13.06%) did not show any growth. In the cases of acute paronychia, authors identified 53.52% *Staphylococcus aureus*, 15.49% *Staphylococcus saprophyticus*, 2.82% Micrococci and 6.34% Citrobacter among aerobes while among anaerobes authors isolated 5.63% Peptococcus, 8.45% Peptostreptococcus, 3.52% Bacteroides and 4.23% Fusobacterium. Among chronic paronychia authors recorded 48.28% pure bacterial growth, 18.97% pure fungal growth, 20.69% mixed bacterial infections and 12.07% mixed bacterial and fungal infections.

**Conclusions:** From this study authors conclude that cold weather and humidity were the predominant and predisposing factors of the high incidence of acute paronychia. Due to very short span single pathogen was isolated from the lesions. In cases of chronic paronychia 37.76% mixed infection were also recorded which may be due to super added infections with primary pathogen.

**Keywords:** Acute, Bacteria, Chronic, Fungus, Paronychia

## INTRODUCTION

Paronychia is an inflammatory disorder of the nail folds of a toe or finger presenting as redness, tenderness, and swelling. It is recalcitrant dermatoses seen commonly in housewives and housemaids.

It is a multi-factorial inflammatory reaction of the proximal nail fold to irritants and allergens. Repeated bouts of inflammation lead to fibrosis of proximal nail fold with poor generation of cuticle, which in turn exposes the nail further to irritants and allergens. Thus,

general preventive measures form cornerstone of the therapy.<sup>1</sup>

Clinically, paronychia presents as an acute or chronic. It has a complex pathogenesis and is caused by multifactorial damage to the cuticle, thereby exposing the nail fold and the nail groove.<sup>2</sup>

Previously, it was believed that chronic paronychia is caused by *Candida*.<sup>3</sup> However, recent data reveals that it is a form of hand dermatitis caused by environmental exposure. *Candida* is often isolated; however, in many cases, *Candida* disappears when the physiologic barrier is

restored.<sup>4</sup> Therefore, the objective of this study is to determine the incidence and spectrum of paronychia.

## METHODS

The study included 230 clinically diagnosed cases of paronychia received from the skin clinics of Allahabad, India.

In all the cases data related to the age, sex, duration of the lesions, occupation, personal, habits etc. were noted. After a detailed clinical examination, the physical features of the lesion were recorded. Care was particularly taken to record the presence of superficial mycotic infections on other parts of the body.

Two hundred thirty patients with purulent or cheesy discharge on pressure on nail folds were selected for microscopy and culture. Where several nail folds were affected only the most affected nail was selected.

Each specimen was divided into two parts, one was taken for gram stain, lactophenol cotton blue stain, ZN stain, and second was inoculated on Mackonkey agar (M008), Columbia sheep blood agar (Biomeurix, France), Sabouraud Dextrose agar (M286) and Sabouraud Cycloheximide Chloramphenicol agar (M664). Two successive cultures were performed to establish the colonization of the pathogen because successive sampling rarely demonstrates the same contaminant.

Cultures were routinely incubated at 25°-37° C and examined daily for up to 4 weeks. The identification of bacteria and yeast were done by Vitek-2 (Biomeurix, France) while identification of individual fungi was based on standard methods such as microscopy, morphology, colonial characterization, pigment production, rate of growth and biochemical test.<sup>5-7</sup>

## RESULTS

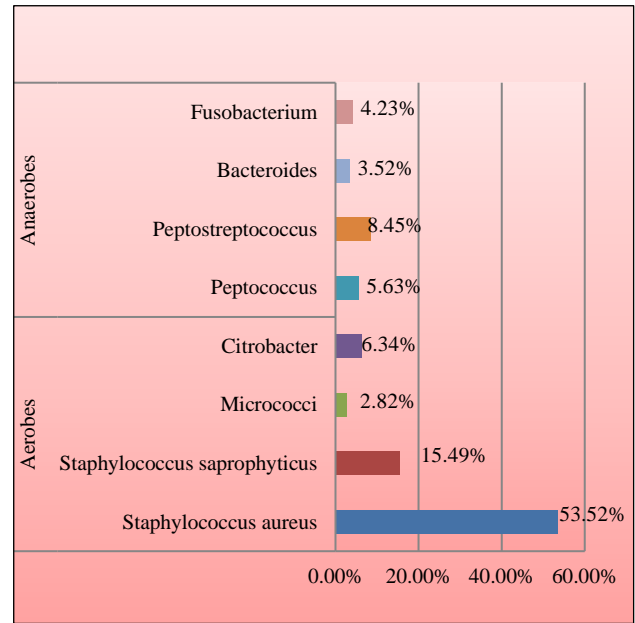
During January 2018 to February 2018, two thirty cases of paronychia were registered. Out of these 230 cases 142 (61.73%) presented acute paronychia, 58 (25.21%) cases of chronic paronychia and the remaining 30 cases (13.06%) did not show any growth. On macroscopic examination the nail change was found in almost all the cases in which transverse striation 1.4%, pitting 2.0%, bluish green discoloration 0.5%, hypertrophy 7.5% and discoloration 88.6% and the above were possible due to inflammation of nail matrix.

On analyzing the data on culture characteristics cases having acute paronychia revealed 78.17% aerobes and 21.83% anaerobes. No case of yeast was found in this category. The spectrum of etiologic agents has been depicted in Figure 1.

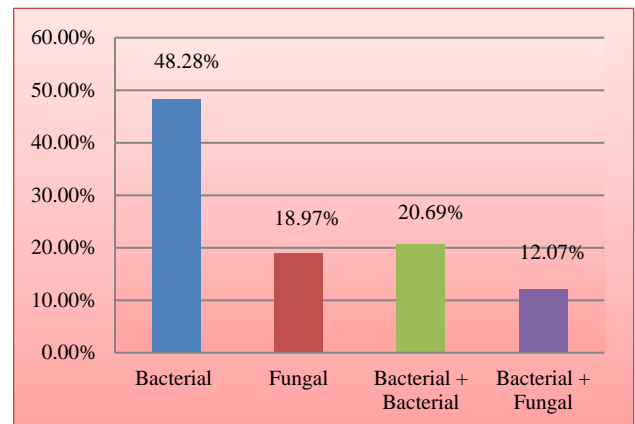
The colony examination of patients having chronic paronychia revealed bacterial colonies 48.28%, fungal

colonies 18.97%, mixed bacterial colonies 20.69%, bacterial and fungal colonies 12.07% as depicted in Figure 2. Demography of these patients is as under:

- Sex (F/M): 89.2%/10.8%
- Age (Year): 68.29±8.845
- Diabetes: 55%
- Hypertension: 25%
- Others: 20%.



**Figure 1: The spectrum of etiologic agents in cases of acute paronychia.**



**Figure 2: The spectrum of etiologic agents in cases of chronic paronychia.**

## DISCUSSION

Paronychia is one of the most common infections of the hand. Clinically, paronychia presents as an acute or a chronic condition. It is a localized, superficial infection or abscess of the paronychial tissues of the hands or, less commonly, the feet. Any disruption of the seal between the proximal nail fold and the nail plate can cause acute

infections of the eponychial space by providing a portal of entry for bacteria.<sup>7</sup>

Leon recorded 90% females, 8.5% children and 1.5% males.<sup>8</sup> In present study the incidence of females was higher (89.2%) than males (10.8%). The females become over-enthusiastic in wet works and religious rituals therefore, predominantly remains the sufferers. According to Stone 9.5% of diabetic female patients over the age of 20 suffered from chronic paronychia in comparison to control group however, authors found 55% diabetic patients who were suffering from paronychia.<sup>9</sup> Esteves found most of his patients in 30 to 60 years of age group.<sup>10</sup>

Hellier and Whittle et al found 77% and 72% incidence respectively in the above age groups.<sup>11,12</sup> In present study most of the patients were between 45-60 years of age group because of their devotions in religious activities.

According to Ganor and Pumpianski the infected fingers were mostly the middle one of the dominant hand as because of its length it was easy to be traumatised and infected after defecation.<sup>13</sup> But in our country the situation is different as authors clean the part after defecation with left hand and still the right ring fingers were affected in many cases.

Chernosky, Shellow and Koplon and Zueheike tried to attribute different colours of nails to different bacterial organisms which authors failed to correlate however, in present study on macroscopic examination the nail change was found almost in all the cases of which transverse striation 1.4%, pitting 2.0%, bluish green discoloration 0.5%, hypertrophy 7.5% and discoloration 88.6% and these may be due to inflammation of nail matrix.<sup>14-16</sup> Whittle et al reported average duration of paronychia was 20 years, the longest being 35 years.<sup>12</sup> In present study the minimum length was 15 days while, longest duration was one year.

In the cases of acute paronychia, authors identified 53.52% *Staphylococcus aureus*, 15.49% *Staphylococcus saprophyticus*, 2.82% Micrococci and 6.34% *Citrobacter* among aerobes while among anaerobes authors isolated 5.63% *Peptococcus*, 8.45% *Peptostreptococcus*, 3.52% *Bacteroides* and 4.23% *Fusobacterium*.

Among chronic paronychia authors recorded 48.28% pure bacterial growth, 18.97% pure fungal growth, 20.69% mixed bacterial infections and 12.07% mixed bacterial and fungal infections.

Different authors like Frain-Bell, Whittle and Moffat, Marten, Stone and Mullins sub and Ganor found *Candida albicans* in 70, 40, 97, 95 and 50% respectively and they all agreed that *Candida albicans* was the major pathogen.<sup>9,12,13,17,18</sup> None of them reported anaerobes as the causative pathogen of paronychia.

## CONCLUSION

From this study authors conclude that cold weather and humidity were the predominant and predisposing factors of the high incidence of acute paronychia. Due to very short span single pathogen was isolated from the lesions. In cases of chronic paronychia 37.76% mixed infection were also recorded which may be due to super added infections with primary pathogen.

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