# CLINICO-EPIDEMIOLOGICAL EVALUATION OF CHRONIC FOLLICULITIS OF LEG- A SINGLE STUDY FROM SOUTHERN INDIA

*Manasi Mishra[1], Surajit Nayak[2], Prasanna Kumar Rathor[3], Maheswar Samanta[3], Satyadarsi pattnaik[1], Prasenjeet Mohanty[1]*

*[1]Department of Skin & Veneral Diseases, Fakir Mohan Medical College & Hospital, Balasore, Odisha, India, [2]Department of Skin & Veneral Diseases, Govt. Medical College & Hospital, Sundergarh, Odisha, India, [3]Department of Medicine, P.R.M. Medical college& Hospital, Mayurbhanj, Odisha, India*

**Correspondence:**
**Dr Maheswar Samanta**
**Department of Medicine, P.R.M.Medical College & Hospital, Mayurbhanj, Odisha, India**

**Email:** dp02433@yahoo.com

DOI: 10.38106/LMRJ.2022.4.3-03

Received: 29.07.2022
Accepted: 09. 08.2022
Published: 30. 09.2022

**ABSTRACT**

This study was conducted to determine the clinico-epidemiological evaluation of chronic folliculitis of the leg in the southern Indian population. This was a prospective observational study, undertaken over a period of two years. All patients attending the outpatient department Southern Indian tertiary care hospital's Dermatology Department (M.K.C.G.Medical College & Hospital, Odisha) were recruited. A total of 100 patients were enrolled, aged between 12 to 70 years with a M: F ratio of 10.1: 1. Eighty per cent of the population in the study were rural, and 20% belonged to the urban area. Clinical characteristics and demographic data of the patients were collected in a pre-designed proforma. Those patients who had pustules on the leg underwent pus culture and sensitivity test. Majority of the patients presented with papules and pustules (96%cases) and bilateral symmetrical leg involvement (98% cases). Pruritus was the most common clinical presentation ( 90% cases). Staphylococcus was isolated in the majority of cases (80%) and was sensitive to Amikacin (73%), Linezolid (70%), vancomycin (68%), and Gentamycin (65%). Chronic folliculitis of the leg is mainly a disease of young adult males of low socioeconomic status. Avoiding aggravating factors and cautious use of sensitive antibiotics may achieve treatment goals and decrease recurrence.

**Key Words**: Chronic folliculitis, Leg infection, Staphylococcus aureus

## INTRODUCTION

Chronic superficial folliculitis of the leg (CFL), resulting from inflammation of terminal parts or ostium of the hair follicle having either infective or non-infective aetiology. Historically this disease was described under various names like Nigerian shin disease (1), chronic folliculitis of the leg (2), therapy-resistant pyogenic folliculitis of the leg (3), epilating folliculitis of glabrous skin, lupoid sycosis of the legs (4), and, more recently, chronic superficial folliculitis of the leg (5).

The clinical characteristics of the disease include recurrent, symmetrical, itchy eruptions of papules or pustules of both lower legs with skin oedema and erythema that upon healing, results in alopecia, atrophy and scarring. The disease course in tropical countries is either self-limiting or prolonged, remitting and relapsing (6). Occupations prone to repeated minor trauma such as agricultural

workers, cement workers, having history of application of oil over the body, contact with seawater, and cow dung are documented exacerbating and precipitating factors (1,6,7). Pruritus is the most common symptom of CFL, followed by pain, bleeding, hair loss, and eczema.

A similar condition affecting both lower legs symmetrically with or without extension to the thigh or forearm was found in Lagos in West Africa named Pustular Dermatitis Atrophicans (8). This disease was thought to be uncommon in India and associated with recurrence and unsatisfactory treatment outcome. Thus this study was conducted to evaluate clinical profile and demography of all CFL cases attending our centre and to explore bacteriological profile and antibiotic sensitivity.

## METHODS

This was a prospective observational study, conducted at the Department of Dermatology, Maharaja Krushna Chandra Gajapati (M.K.C.G.) Medical College & Hospital, Odisha, India from January 2009 to January 2011. The college's Ethical committee permitted the study.

All patients with chronic folliculitis of legs for more than six months duration diagnosed clinically and did not receive any treatment for a minimum of three months before recruitment in the study. The patients consented to be part of the study and underwent study procedure of Pus culture & sensitivity were included. However, patients with acute folliculitis of leg less than six months or Chronic folliculitis or those on medications for three months were excluded. All immunocompromised patients or those on immunosuppressant treatment were also excluded. Those patients who refused to consent or did not show willingness for follow-up were not included.

A detailed history was taken from all the patients recruited in this study, including age, sex, occupation, socioeconomic status, significant past and family history, previous dermatological diseases, predisposing and seasonal factors, onset, duration, evolution of the lesion, and type of lesion, distribution of lesion and clinical features. Finally, a thorough examination was done to find distribution, lesion morphology, and any evidence of pre-existing dermatological disorder.

All patients underwent routine blood investigations, including complete blood count, random blood sugar, renal function test, liver function test, HIV test, detailed urine report, gram staining of pus, and culture and sensitivity were performed. After stopping topical and systemic medications for a week, pus culture and sensitivity were done. Then, the lesion was swabbed with alcohol, and pus was collected using a sterile swab. In crusted lesion, parts were partly lifted with a sterile needle and material underneath was taken.

After collection, pus was sent to the microbiology department, where gram staining and pus culture were done in blood Agar/Mac Conkey agar with incubation aerobically at 37°c 24hr. Organisms were grown and identified by their morphology, cultural characteristics and biochemical reactions. Antibiotic sensitivity was tested on nutrient agar using Bio-dis (Hi-media)R disc diffuse techniques.

### STATISTICAL METHODS

All the data were entered and analysed into Microsoft Excel sheet. Descriptive statistics were done for demographic variables and presented in charts and tables with number, ranges and percentages.

## RESULTS

A total of 100 patients with a confirmed diagnosis of CFL were enrolled, aged between 11years to 70years, most were in the age group between 21 to 30 years (45%), followed by 11 to 20 years (23%). A summary is given in Table 1. The majority of the patients were males with a male: female ratio of 10.1:1. A considerable proportion of the study population reported from lower socioeconomic groups (77%) and rural areas (80%). Table 1 presents a summary of the demographic characteristics of the study population.

**Table 1. Summary of chronic superficial folliculitis of leg Cases Demographic characteristics**

| Age group(years) | Male | Female | Total (%) | Socio-economic status | | Habitat | |
|---|---|---|---|---|---|---|---|
| | | | | Middle | Low | Urban | Rural |
| 0-10 | 0 | 0 | 0 | | | | |
| 11-20 | 19 | 4 | 23 | M(4) | L (19) | 7 | 16 |
| 21-30 | 42 | 3 | 45 | M(8) | L (37) | 10 | 35 |
| 31-40 | 19 | 2 | 21 | M(5) | L (16) | 2 | 19 |
| 41-50 | 8 | 0 | 8 | M(2) | L (5) | | 8 |
| 51-60 | 1 | 0 | 1 | | L (1) | 1 | |
| 61-70 | 2 | 0 | 2 | | L (2) | | 2 |
| Total | 91 | 9 | 100 | | 100 | 20 | 80 |

Analysis of the distribution of the occupation it was found that, highest number of farmers (n=45, 45%) was presented followed by students (n=14, 14%) and cement workers (n-13, 13%). Figure 1 presents occupations of the patients. In 70 patients, lesions appeared, or pre-existing lesions aggravated in summer and rainy sessions, while in the remaining 30 cases, no definite relationship with season was found. Seborrheic manifestations of variable degree (10%), positive HIV serology (4%), psoriasis (2%), sycosis barbae (2%) and lichen planes lesion (1%) were found in the present study(Figure-2).

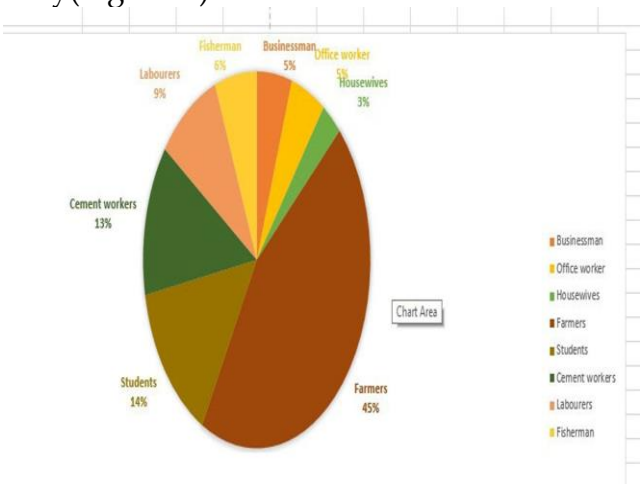


**Figure 1 Occupation-wise distribution of of chronic superficial folliculitis of leg cases**

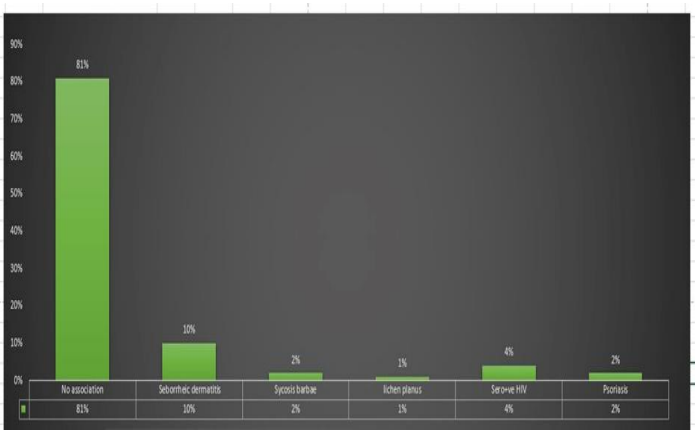


**Figure 2 Association of chronic superficial folliculitis of leg to other diseases**

The disease duration varied from a minimum of 6 months to a maximum of 14 years, with 78(78%) patients attending hospital within one year of onset (Table-2). In almost all cases (n=96, 96%), the lesions appeared as multiple, small, closely set follicular pustules with papules, some intact and some crusted. Isolated papules (3%) and pustules(1%) though found, were rare in our study(Table 2). It was observed that, folliculitis was distributed in all cases, chiefly over the pretibial region of one (2%) or both legs (98%) between the knee and ankle (Table-2, Figure 3). The dorsal skin and other areas of glabrous skin were not affected. Lesions extending to thigh and thigh + forearm found in 24% and 1% cases respectively (Figures 4 and 5). Pruritus was the predominant symptom (90%) followed by burning sensation (25%), pain (9%) & bleeding (2%) (Table-2). On the resolution of lesion, loss of hair was found in 78% of cases (Figure 6).

**Table 2. Summary of clinical characteristics of the patients presenting with chronic superficial folliculitis of leg (CFL)**

| Duration of CFL | No of Patients | % of total |
|---|---|---|
| <1 year | 78 | 78 |
| 1 year to 10 year | 20 | 20 |
| >10 year | 2 | 2 |
| **Types of lesions** | **No of Patients** | **% of total** |
| Papules only | 3 | 3 |
| Pustules only | 1 | 1 |
| Both | 96 | 96 |
| **Distribution of lesions** | **No of Patients** | **% of total** |
| Both legs | 98 | 98 |
| One leg | 2 | 2 |
| Leg and thigh | 24 | 24 |
| Leg and forearm | 1 | 1 |
| **Clinical features** | **No of Patients** | **% of total** |
| Pruritus | 90 | 90 |
| Burning sensation | 25 | 25 |
| Pain | 9 | 9 |
| Bleeding | 2 | 2 |
| Scaling | 20 | 20 |
| Eczematisation | 4 | 4 |
| Loss of hair on the resolution | 78 | 78 |
| Mild atrophy of skin | 30 | 30 |

**Figure 3: Chronic superficial folliculitis of leg case showing both papules and pustules**

**Figure 4: Chronic superficial folliculitis of leg case extending towards the thigh**

**Figure 5: Chronic superficial folliculitis of leg case extending towards the forearm**

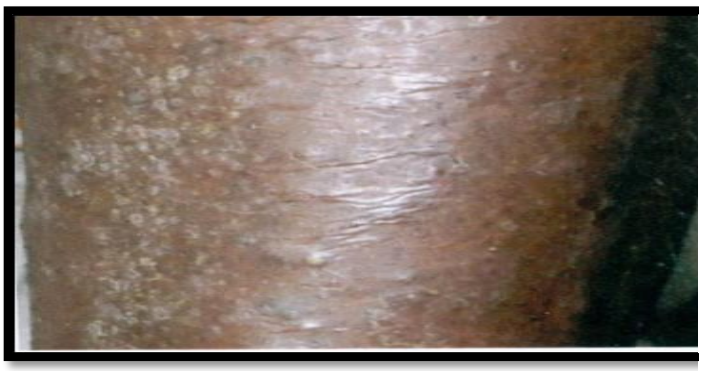

**Figure 6: Chronic superficial folliculitis of leg case showing scaling, hair loss and mild skin atrophy**

Direct smear examination after gram stain showed clusters of staphylococci with plenty of pus cells in 80% of cases, while in remaining 20% of cases; pus cells were only seen, which may be due to technical error. Pus culture was done in 97% of cases, and staphylococcus was the commonest organism found, isolated in 80% of total cases (Table-3). Sensitivity to various antibiotics was described in Table 4. Though all cases respond to treatment within two months of therapy, 10% of cases had a recurrence of lesions within one year, and 30% of cases had recurrence within two years of the beginning of treatment.

**Table-3: Organisms Isolated from Pus Culture**

| Organisms Isolated | No of Patients | % of total |
|---|---|---|
| Staph. aureus | 80 | 80 |
| Coagulase –ve Staph. | 2 | 2 |
| Pseudomonas spp | 7 | 7 |
| Klebsiella spp. | 3 | 3 |
| Beta haemolytic Strepts | 2 | 2 |
| E Coli | 1 | 1 |
| Pus not collected | 3 | 3 |
| Pus was sterile | 2 | 2 |
| Total | 100 | 100 |

**Table -4: Antibiotic sensitivity of Organisms**

| Antibiotics | No of Patients | % of total |
|---|---|---|
| Amikacin | 73 | 73 |
| Linezolid | 70 | 70 |
| Vancomycin | 68 | 68 |
| Gentamycin | 65 | 65 |
| Gatifloxacin | 30 | 30 |

## DISCUSSION

Chronic folliculitis of the leg runs a chronic course; it hardly melts or burns; it simply smoulders. CFL is predominantly a disease in the second and third decades, as reported from various kinds of research literature (1,6,7,8,9,10), which coincides with the present study, where 45% and 23% of cases were in the third and second decades. However, recent literature by Saranya TM et; claimed a little higher age of onset of CFL (5). This disease has been reported to occur up to the sixth decade (6), like our study, where only (2 patients, 2%) were more than 60 years. On the contrary Nigerian study shown none of the parents was more than 30 years (11). The pasha S.K.J. et al. study documented that only 24% of patients were over 30 years (12). It shows the existence of age variation among patients of CFL. In our study cohort, male dominance was found with M: F ratio of 10.1:1, comparable to many other studies(3,6,7,9,10,13,14). However, Harman RR et al. recorded equal sex distribution which is in contrast to our study(1). More manual labour and risk factors explain this high predisposition of males to CFL.

The majority of patients in this study were agricultural laborers (45%), which is almost the same as that was reported by Prasad P et al. (44%)(2). The high incidence of CFL among farmers may be due to frequent minor trauma to the leg during working in the field and exposure to mud, pesticides & allergens. Students(14%), business personnel(5%) and office workers (5%) in our study constituted less number of cases, mostly belonging to the urban population. The excessive friction from clothing, use of tight-fitting long trousers, high external humidity, excessive sweating, and application of vegetable oil may be possible causes of C.F.L. in the above cases, even though no type of occupational trauma could be found.

Cement workers constituted 13% of our study population, comparable to construction workers (7,17.9%) to Saranya TM et al.(5) and discordant with to study by Rama R et al. (8%) (8). Moreover no previous studies had reported that cement being an irritant affects quite a good population.

Though our patients hail from coastal villages, there were only six fishermen (6%) cases which was similar to other studies(2,8); on the contrary, only one case was a fisherman reported by Saranya TM et al. (5). Though there are discrepancies among various study groups, it may be suggested that seawater exposure is a risk factor for CFL.

Our study showed that most patients were from rural areas (80%) and a low socioeconomic group(77%). Most of our patients ( reported exacerbations during the summer and rainy season70%), similar to summer exacerbations by various studies reported in the literature (1,5,6,8,10,14). The role of humidity in exacerbations may be a postulation. Few previous literatures reported vitiligo (2%),leprosy(4%) and Psoriasis(2%) as co-existing diseases in chronic folliculitis(1,2). One recent study by Sanaya TM et al. showed no other skin diseases, Psoriasis and contact dermatitis in 44 (88%), 3(6%), and 3(6%)cases, respectively, this was comparable to our study. Any common pathological mechanism between CFL and other associations, if present, need to be clarified by further studies.

The disease duration in our study varied from 6 months to 14years was discordant with certain previous studies (5,6,10). In contrast, a short duration of disease onset (8 weeks to 2 years) was reported by Tiwari V. et al. in his study of 15 patients(15). Furthermore, most patients in our study (78%) were attending hospitals within 1 yearr of the onset of the disease, which is discordant with certain previous studies(2,5). On the other hand, a study by Sugathan P et al. (6) reported that 4% of patients had a disease of more than 10 years, which is nearer to our study.

Familial affection for CFL was not documented in our patients, while some previous studies reported conflicting results (6,13,15). Bilateral symmetrical affection of the lower leg was seen in most cases(98%) in our study. Similar affection was also documented by various authors previously(6,14,15). Most of the literature demonstrated the anterior and lateral aspect of the leg being the most common site of the lesion (1,5, 6, 10), like ours. No posterior affection of the leg was found in our study in contradiction to Saranya TM et al., where 2(4%) patients had follicles on the back of the leg. The dorsal feet and other areas of glabrous skin were not affected in our cohort like others (2,3,5,6,8). Few studies reported affection for the face & axilla (6,10), contrary to our study.

Follicles were present in lower leg in all cases with extension to thigh(24%) and forearm(1%) in present study, which is different from the study by Rama R. et al where extensions to thigh(22%),forearm(12%),beard area(7%),anterior chest(2%) were noted. The interval between onset of leg lesion and thigh is ranged from 6 months to 3 years.

The presence of follicles with both papules and pustules (96%) were common findings in the present study, although solo presentation (papules-3% and pustules-1%) was rare. This study is consistent with Prasad P et (2) and Kaimal S. et al. (10), where follicules with both papules and pustules were present in 86% and 100% of cases, respectively. Saranya TM et al recorded presence of papules and-pustules(n=38,76%), papules(n=8,16%), pustules(n=4,8%) in contrast to our study. However, all the studies agreed that the most common presentation is with papules and pustules. Nearly all the follicules in the affected area contain pustules, from the centre of which single hair could be seen to be emerging.

Pruritus(90%) was the most distressing symptom reported in the present study, which is nearly the same as that of other studies (2,8). Another Indian literature documented pruritus as a universal symptom (5). Severe burning sensation (25%), pain (9%), bleeding (2%), and eczematisation (4%) were other features in our study, which is comparable to the study by Prasad et al. (2), whereas scaling was seen in 20% of cases, much higher than in other studies (2, 10).

Loss of hair following resolution of the lesion and mild atrophy of skin were seen in 78% and 30% of cases in this study which is at par with other literature (2,6,9).

Pus Culture and Sensitivity were done in 97 (97%) patients out of 100. Staphylococcus was the commonest organism isolated (80%-staph.aureus, 2%-coagulase–ve staphylococcus) in our study, similar to other studies(1,2,3,6,7,8,12,15,16). Beta-haemolytic Streptococcus (2%), Pseudomonas spp. (7%), Klebsiella (3%) were organisms isolated from pustules comparable to other studies(2,10).

Organisms isolated from pustules were sensitive to Amikacin(73%), Linezolid (70%), and Vancomycin (68%). Gentamycin (65%), Gatifloxacillin (30%) and showed variable sensitivity to Erythromycin, Ciprofloxcillin, Imipenem and Cephalosporin. This study is dissimilar to the study by Parikh et al., where staphylococcus showed the highest sensitivity to Erythromycin (97%), followed by Gentamycin (92%). Saranya TM et al., in their study, isolated staphylococcus aureus in 58.3% of cases and documented sensitivity to commonly prescribed all above antibiotics with resistance to penicillin(5). Recurrence was noted in 10% of cases within 1 year. And 30% within two years. At the beginning of treatment. Unavoidance of risk factors, humid tropical climate, and sticking to professions may be causes of recurrence.

Tertiary centre data do not precisely reflect the disease profile of the community. Admittedly, the present study is based on a limited number of cases and is inadequate to provide conclusive data. Therefore, it is considered as the limitation of the study.

## CONCLUSION

Though a ubiquitous entity in tropical countries, chronic folliculitis of the leg has drawn very little attention from Dermatologists, research articles on this entity are limited. In addition, uncertain etiopathogenesis & confusing treatment protocol provides a broad scope for further study of this disease to reach a clear consensus regarding effective protocol. Hence in our opinion, a multicentric trial with a large sample size will throw more light on its distribution &geographical variation.

## ETHICAL CONSIDERATION

The study was approved by the Instituional Research Ethics Committee, all recruited patients provided informed consent. The identity of the patients was coded.

## CONFLICT OF INTEREST

Authors declare no conflict of interest


## FUNDING

This was an observational study, no funding required.


## REFERENCES


1. Harman RR. Dermatitis cruris pustulosa et atrophicans. Br J Dermatol 1968;80:97-107.
2. Prasad P, Anandhi V, Jaya M. Chronic folliculitis a clinicoepidemiological study. Indian J Dermatol Venereol Leprol 1997:63:304-6.
3. Desai SC, Shah BH, Modi PJ, Sethi NC. Therapy resistant pyogenic folliculitis on legs in adult males with hypergammaglobulinemia. Indian J Dermatol Venereol 1964; 30:89-97.
4. Miller RF. Epilating folliculitis of the glabrous skin. Report of a case, histopathologic and nosologic study. Arch Dermatol 1961:83:777-84
5. Saranya TM, SashidharanPillai S, Ajith Kumar K. Descriptive study on clinical profile and demography of patients with chronic folliculitis of leg attending a Tertiary referral centre. Journal of Skin and Sexual Transmitted Diseases. Vol. 2 Issue 2, July-December 2020.
6. Sugathan P, Jacob Z, Joy MI. Folliculitis cruris pustulosa et atrophicans. Indian J Dermatol Venereol 1973:39:35-40.
7. Jacyk WK. Clinical and pathologic observations in dermatitis cruris pustulosa et atrophicans. Int J Dermatol 1978:17:802-7.

8. Rama, R, Guruprasad P., Lakshmi P., Anand Rook etal. A Clinical an Epidemiological study of superrficial folliculitis of legs. J. Evolution Med. Dent. Sci/eiSSN-2278-4802, PISSN 2278-4748/Vol. 5/Issue 65/Aug.15,2016
9. Kumarasinghe SP, Kumarasinghe MP. Chronic folliculitis in Sri Lanka. Indian J Dermatol Venereol Leprol 1996;62:79-82.
10. Kaimal S, D'Souza M, Kumari R, Parija SC, Sistla S, Badhe BA. Dermatitis cruris pustulosa et atrophicans revisited: Our experience with 37 patients in south India. Int J Dermatol 2009;48:1082-90.
11. Clarke GH. A note on dermatitis cruris pustulosa et atrophicans. Trans R Soc Trop Med Hyg 1952;46:558-9.
12. Pasha SK, Gunda P.K. Clinico-etiological profile and antibiotic sensitivity pattern of chronic folliculitis: A common but less focused disease of tropics. Int J Res Dermatol 2018;4:16-22.
13. Kunjukunju BP, Subramoniam L. Chronic folliculitis a clinicoepidemiological study. J Evid Based Med Health, 2017:4:2104-7.
14. Wright RC, Traumatic Folliculitis of the leg. A persistent case associated with use of a home epilating device. J Am Acad Dermatol 1992;27 : 771-2.
15. Tiwari V, Ramji C, Tutakne M. Dermatitis cruris pustulosa et atrophicans. Indian J Dermatol Venereol Leprol 1987; 53:116-7.
16. Parikh DA, Thatte UM, Fernandez RJ, Shroff PS, Wagle UD, lyer EE. Clinical, bacteriological and immunological profile of 20 patients with dermatitis cruris pustulosa et atrophicans. Indian J Dermatol Venereol Leprorl 1989;55:237-40