



International Journal of Dermatology, Venereology and Leprosy Sciences

E-ISSN: 2664-942X

P-ISSN: 2664-9411

www.dermatologypaper.com

Derma 2021; 4(1): 103-106

Received: 24-11-2020

Accepted: 29-12-2020

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Clinico-epidemiological study of pyodermas at a tertiary health center in North Karnataka

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DOI: <https://doi.org/10.33545/26649411.2021.v4.i1b.76>

Abstract

Background: Pyoderma is defined as skin infection mainly caused by *Staphylococcus aureus*, *Streptococcus pyogenes* or both.

Aim: This study conducted from January 2017 to December 2017, aimed at analyzing the magnitude and clinical patterns of pyodermas.

Materials and Methods: A total of 500 patients who attended dermatology department at VIMS hospital with pyoderma were included in the study.

Statistical Analysis: Data was analyzed by SPSS Version 20.0 software.

Results: The incidence of pyoderma was 1.60%. The highest rate of pyodermas were seen in the age group of 16-25 years (95, 19%). Males outnumbered females. Lower limb was the most commonly affected site (217, 43.4%). Diabetes mellitus was the most common associated co-morbidity (67, 13.4%). Primary pyodermas outnumbered secondary. Furunculosis and infected eczema were the most common diagnosis among primary and secondary pyoderma respectively.

Conclusion: Pyodermas have been a major cause of morbidity since time immemorial. Such studies help to assess the changing clinical trends in pyodermas.

Keywords: Pyoderma, primary pyodermas, secondary pyodermas, *Staphylococcus aureus*

1. Introduction

Pyoderma or pyogenic infection of the skin, defined as 'any purulent skin disease', is one of the commonest conditions encountered in dermatological practice [1]. The major pyodermas include impetigo, folliculitis, ecthyma, furuncle, cellulitis, carbuncle, paronychia and many others [2]. Pyogenic infection on a normal skin is called primary pyoderma, and infection over a pre-existing skin disease is called secondary pyoderma.

Most pyodermas are more common during summer and rainy seasons [3]. Factors responsible for its high incidence include poverty, malnutrition, overcrowding, illiteracy, customs, low immunity, habits and people who are prone to various traumas like insect bites, thorn prick have been implicated in the formation of pyodermas [4].

Patients on steroids or chemotherapeutic agents, diabetes, immunosuppressed due to other causes show an increased incidence [1].

2.1 Materials and Methods

Patients attending or who were referred to dermatology outpatient department/wards at VIMS hospital in whom a diagnosis of pyoderma was made formed the subject for the study. It was a hospital based case series study done from January 2017 to December 2017. A total of 500 cases of pyoderma were collected.

Pustules associated with acne, sterile pustules and patients with a history of using topical or systemic antibiotics in the past 2 weeks were excluded.

Data was collected after obtaining informed/written consent from the patients. Clinical details regarding the duration, recurrence and history of any pre-existing skin lesions, evolution of the lesions, clinical pattern and history of antibiotic intake, presence of other illnesses and prior hospitalization was elicited.

2.1.2 Statistical Analysis: Data was analyzed by SPSS Version 20.0 software.

The data was represented in the form of frequency and percentage using tables and graphs.

3. Results

Of 31,206 cases who attended Dermatology out-patient department of Vijayanagar Institute of Medical Sciences, Ballari, during the year January 2017 to December 2017, the no. of new pyoderma cases evaluated was 500, the incidence being 1.60%.

Most of the pyoderma cases belonged to the age group 16-25 years with 19% (Table no.1). The male to female ratio was reported to be 1.72: 1 (Table no.1).

Males (316;63.2%) outnumbered females(14;36.8%). Majority of cases belonged to urban area (345;69%) (Table no. 1). Lower limb was the commonest site to be involved (217;43.4%) followed by head and neck region (136;27.2%) (Table no.2)

Diabetes mellitus was the most common associated co-morbidity (67;13.4%) followed by Hansen's disease (20,4.4%) (Table no.2).

Furunculosis was the most common diagnosis which accounted 134(26.8%) cases followed by infected eczema (91;18.2%) (Table no.2). Primary pyoderma was commoner with 276 cases (55.4%) and secondary pyoderma accounted for 224 cases (44.6%). The ratio of primary to secondary pyoderma in this study was 1.24: 1 (Table no.3).

4. Discussion

In our study of 500 pyoderma cases, highest no. of cases were reported in the age group of 16-25 years with 95 cases (19%) followed by the age group of 6-15 years with 89 cases (17.8%). Bhaskaran *et al.* reported highest incidence in 2nd and 3rd decade of life followed by 1st and 4th decade [6]. Ghadage *et al.* reported most cases in the adult age group than in the children with more than 60% above the age of 13 years [7].

From the above studies it is observed that majority of pyoderma cases were in the age group of 0-10 and 21-30 years of life. Our study correlated with most of the above studies, with majority of cases occurring in first three decades of life. This could be due to more exposure to environment which increases the chances of trauma during work and playing in the first three decades of life.

Pyoderma was commoner in males with 316 cases (63.2%) than in females with 184(36.8%) cases with male to female ratio of 1.72: 1. Venniyil *et al.* reported majority of the pyodermas in males (64.31%) [5]. Patil *et al.* found majority of cases in males 62.8% than in females 37.2% with a ratio of 1.6: 1 [8]. Most of the above studies reported a male preponderance of pyoderma patients. The present study correlated with these studies. Men are more prone to minor trauma by virtue of their occupation. Trauma inturn predisposes them for secondary infection leading in the causation of pyodermata.

In our study, the majority of pyoderma cases were reported from urban areas (69%) and 31% of cases were from rural areas. This increased incidence of pyoderma cases from urban area in our study could be due to the presence of

tertiary centre.

In the present study, the common site of involvement was lower limbs (43.4%) followed by head and neck (27.2%), upper limb (25.8%) and trunk (9.6%). Gandhi *et al.*

reported majority of cases in lower limb(60%) followed by head (47.5%), upper extremity (21.5%) and trunk (12.5%) [10]. Singh *et al.* found lower limbs to be the most common site of involvement followed by upper limbs, face and trunk [1].

Our study correlated with the outcome of above studies, with majority of cases.

67 cases (13.4%) had association with diabetes mellitus and 20 cases (4.4%) had Hansen's disease. Singh *et al.* reported diabetes mellitus in 6.6% cases of pyodermas [1]. Mohan *et al.* reported immunosuppression in 14.2% of all pyodermas cases [9]. Diabetes mellitus with its associated immunosuppression was a significant co-morbidity in our study also.

Primary pyoderma constituted 277 cases (55.4%) and secondary pyoderma constituted 223 cases (44.6%). Singh *et al.* found primary pyodermas (61%) more common than secondary pyodermas (39%) [1]. Venniyil *et al.* reported 56.06% cases of primary pyodermas and 43.93% cases of secondary pyodermas in his study [5]. The less incidence of secondary pyoderma may be due to timely management of primary skin disorders and traumas.

In our study, among primary pyodermas, furunculosis was most commonly seen (26.8%) followed by impetigo (11.6%) and folliculitis (5.8%). Among secondary pyodermas, infected eczema was common (18.2%) followed by infected ulcers of various causes (10.8%) and infected contact dermatitis (6.2%). Venniyil *et al.* found furunculosis (39.5%) to be the most common primary pyoderma and among secondary pyoderma, infected eczema (43.8%) was more common followed by infected scabies (15.23%).⁵ Singh *et al.* reported furunculosis (27.2%) as the major primary pyoderma followed by folliculitis (13.2%) and impetigo (9.4%), and infectious eczematoid dermatitis (12.4%) and infected scabies(6.8%) among secondary pyodermas [1].

This study yielded some useful epidemiological and clinical trends in pyoderma in our tertiary care centre.

Table 1: Socio-demographic profile of the study subjects (n=500)

Variable	Frequency	Percentage
Age group		
< 1 yr	12	2.4
1 - 5 yrs	63	12.6
6 - 15 yrs	89	17.8
16 - 25 yrs	95	19
26 - 35 yrs	68	13.6
36 - 45 yrs	58	11.6
46 - 55 yrs	44	8.8
56 - 65 yrs	45	9
> 65 yrs	26	5.2
Sex		
Female	184	36.8
Male	316	63.2
Area		
Rural	155	31
Urban	345	69

Table 2: Clinical Profile of the study subjects (n=500)

Variable	Frequency	Percentage
Site		
Scalp	37	7.4
Face	89	17.8
Neck	10	2
Axilla	2	0.4
Upper limb	129	25.8
Trunk	48	9.6
Lower limb	217	43.4
Gluteal region	7	1.4
Perineal region	1	0.2
Comorbidity		
DM	67	13.4
HTN	18	3.6
HIV	4	0.8
Hansen's disease	20	4.4
SLE	1	0.2
No illness	390	78
Pyoderma type		
Primary	276	55.4
Secondary	224	44.6

Table 3: Diagnosis of patients based on the type of Pyoderma (n=500)

Diagnosis	Frequency	Percentage
Primary pyoderma		
Acute Paronychia	2	0.4
Carbuncle	12	2.4
Cellulitis	12	2.4
Echthyma	28	5.6
Folliculitis	29	5.8
Furuncle	134	26.8
Impetigo	58	11.6
Necrotizing fasciitis	2	0.4
Secondary pyoderma		
Infected CD	31	6.2
Infected eczema	91	18.2
IBR with secondary infection	8	1.6
Intertrigo with secondary infection	1	0.2
Infected <i>N.ulcer</i>	21	4.2
Osteomyelitis	2	0.4
Infected <i>P.gangrenosum</i>	1	0.2
Infected <i>P.Nodularis</i>	5	1
Periporitis	5	1
Infected Scabies	13	2.6
Surgical Ulcer	21	4.2
Infected Tinea	13	2.6
Infected Ulcer (ruptured furuncle)	6	1.2
Varicella with secondary infection	1	0.2
Infected Vasculitic ulcer	3	0.6



Fig 1: Folliculitis Impetigo



Fig 2: Bullous Impetigo



Fig 3: Infected Contact Dermatitis



Fig 3: Infected tinea infected venous ulcer

5. Conclusion

Pyodermas have been a major cause of morbidity since time immemorial.

Pyodermas are common in the first three decades of life with male preponderance. They occur mostly over the lower extremities followed by head and neck region.

On account of the high prevalence of pyoderma, there is a constant need to obtain more information about the epidemiological data, clinical patterns, predisposing factors, modes of transmission, and effective methods for control through constant monitoring.

This study yielded some useful epidemiological and clinical trends in pyoderma in our tertiary care centre.

6. References

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