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A clinico-pathological study of pyoderma in rural background tertiary care centre of north India- an original research article

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ABSTRACT

Background

Pyodermas are the commonest of infection observed in dermatological practice. It is defined as any purulent skin disease and represents bacterial infections of skin and hair follicles.

Objective

To evaluate the epidemiological spectrum of pyodermas and assess the role of predisposing factors and clinical profile.

Materials and methods

All new cases of pyoderma presenting to the outpatient department of skin –VD and Leprosy from April 2015 to March 2016 were taken up for the study.

Results

A total of 2560 consecutive cases of pyoderma were included in the study. A total number of 26965 new outdoor patients attended the hospital during this period. So the incidence was about 10% cases of pyoderma. Primary pyodermas were found to be more common as compared to secondary pyoderma.

Keywords: Pyoderma, Incidence, Children, Epidemiological.

INTRODUCTION

Pyoderma is a purulent infection of the skin [1]. It can be primary or secondary. Primary pyoderma includes the bacterial infection of the normal skin. Secondary pyoderma is the bacterial infection of already diseased skin. Pyoderma is one of the commonest skin conditions presenting to the outdoor patient department of dermatology [2, 3]. Many predisposing factors like poor hygiene, overcrowding, poverty, malnutrition, illiteracy, custom and habits are responsible for its high incidence in rural background [4]. Hot and humid climate and rainy seasons are the period of maximum preponderance for bacterial infections [5]. Patients who are having diabetes or any pre existing skin disease or the patient is on steroids or chemotherapeutic agents are also prone to pyoderma [6]. The skin is sterile at birth for only a

short period of time, thereafter staphylococcus colonization occurs. Organisms which are found regularly and multiply on the skin surface are the normal resident flora. The transient florae are the organisms which get onto the skin surface from the environment and don't maintain themselves indefinitely on the normal skin. They can be easily removed by scrubbing. The common resident organisms are staphylococcus, corynebacterium acne and aerobic diphtheroids. Primary Pyoderma includes impetigo-contagiosa, bullous-impetigo, ecthyma, follicular impetigo of Bockhart (superficial folliculitis) and deep folliculitis (frunculosis and carbuncle) [7].

Impetigo contagiosa is a superficial infection of the skin commonly due to streptococci or mixed infection. It starts as thin walled vesicle on an erythematous background which soon turns into pustule. Pustules rupture and give rise to honey coloured crust. It heals without scaring.

Bullous impetigo is superficial infection of the skin commonly caused by staphylococcus. It is characterized by thin roofed bullae, rupturing produce characterized a brownish crusted raw areas which heals in the centre and extend periphery to give rise to circinate lesion.

Ecthyma is a deep form of impetigo surmounted by a firmly adherent often hemorrhagic crust which heals with a scar, caused by group 'A' streptococci. Secondary pyoderma includes infection of eczema, infestation and ulcer etc. Streptococci and staphylococcus are the most common organism causing primary and secondary pyoderma. On rare occasions other organisms like pseudomonas, E. coli and proteus may be isolated from chronic pyoderma lesions who are not responding to the conventional therapies [7].

Aims and Objectives

- To evaluate the epidemiological spectrum of pyodermas.
- To assess the role of predisposing factors.

Materials and Methods

A prospective non-randomized study of pyodermas was conducted in the department of dermatology of BPSGMC for women, Khanpur Kalan, Sonipat, A tertiary care centre in rural background of North India. A total of 100 patients out of 2560 patients of pyodermas were enrolled for the pus culture study over a period of one year.

Inclusion Criteria

All clinically diagnosed cases of pyoderma with positive pus culture report, irrespective of age and sex were included in the study.

Exclusion Criteria

The patients who were using antibiotics for last 2 weeks were excluded from the study. Written informed consent was obtained from all concerned. The demographic data, clinical history, duration and family history of the diseased and co morbidities were recorded. Pus samples were collected from fresh lesion of 100 pyoderma patients on two sterile cotton swabs after puncturing with sterile needle. One swab was used for smear examination after gram's staining and another was used to put up culture of blood agar and nutrients agar, incubated aerobically at 37°C for 24 hours, plates showing no growth during the first 24 hours were further incubated for next 24 hours and organisms were identified by standard conventional methods. All the relevant laboratory examinations including complete blood count, blood sugar levels, HIV status and thyroid profile were performed as and when indicated and results were recorded.

RESULTS

A total number of 26965 new outdoor patients were seen in dermatology OPD, the number of new pyoderma cases was 2560. The incidence being 9.5%, the male to female ratio was 1.9:1, with 896 females (35%) and 1664 males (65%). The highest (718, 28%) number of cases were seen in patients of 11 to 20 years age group, followed by less than ten years age group (633, 24.72%), 14.10% (361) observed in 31 to 40 years of age group, (283, 18%) in 21 to 30 years age group, 0.8% (21) in more than 60 years of age group was least common. Males outnumbered females in all age group. Rural patients (2180, 85%) outnumbered the urban patients (380, 15%). Good hygiene was maintained by 45% (1152) patients whereas 55% patients had poor hygiene. Maximum (74%) patients were moderately nourished followed by well nourished (16%) and poorly nourished patients (10%). Majority (61%) of patients were school educated, followed by college educated (19%), illiterate patients (15%) and preschool children (5%).

Most of the lesions were distributed in lower limb (45.8%) followed by face and head neck area (35.2%). Pustule was the commonest type of lesion (57.8%) followed by nodule and crusted lesions (30% and 20% respectively). Patients presented with symptoms of discharge (78%), pain (69%), swelling (52%) and itching (39%). Primary pyodermas were seen more commonly (1881, 73.5%) than secondary pyodermas (679, 26.5%). Primary pyodermas were seen most frequently less than 10 years age group with 525 cases followed by 11 to 20 years of age group (508 cases) least common in more than 60 years age group. Secondary pyodermas were more common in 11 to 20 years of age group (210 cases) and equal number of cases in 21 to 30 and 31 to 40 years of age group (152 cases each). Among primary pyodermas folliculitis was commonest (563 cases) followed by impetigo contagiosa (422 cases). Impetigo contagiosa was more commonly observed in more than 10 years of age group. Among the secondary pyodermas, infected scabies was commonest entity (164 cases) followed by IED (145 cases). Infected ulcers were less commonly observed (30 cases). In our study 323 cases were diabetics and 220 Patients were on corticosteroid therapy from outside. None of Patient of pyodermas had associated malignancy. All Patients were HIV negative. Mild to moderate anaemia was observed in 1123 cases. A total of 100 swabs were collected and sent Patient for pus culture. 59% of primary pyodermas were positive for staphylococcus aureus followed by 21% in secondary pyodermas. No growth was observed in 7% cases. Gram negative organism like E. coli, pseudomonas and Enterobectus were observed in 3%, 1% and 1% respectively.

Table 1:- Epidemiological profile of patients.

Age (Years)	Male	Female	Total(N)	%Age
<10 Yr	396	237	633	24.7
11 - 20	477	241	718	28.0
21 - 30	279	204	483	18.8
31 - 40	263	98	361	14.1
41 - 50	148	73	221	08.6
51 - 60	88	35	123	04.8
> 60	13	8	21	00.8
Total	1664	896	2560	

Table 2:- Age wise distribution of pyodermas.

Primary Pyoderma	<10 Yr	11 - 20	21 - 30	31 - 40	41 - 50	51 - 60	> 60	Total
Impetigo Contagiosa	422	0	0	0	0	0	0	422
Bullous Impetigo	88	0	0	0	0	0	0	88
Ecthyma	12	0	0	2	2	1	3	20
Folliculitis	0	218	180	65	59	38	3	563
Cellulitis	0	127	102	61	36	26	3	355
Acute Paaronychia	0	66	16	43	42	16	0	183
Carbuncle	2	82	15	25	32	23	2	181
Abscess	1	15	18	13	18	3	1	69
Sub Total	525	508	331	209	189	107	12	1881
Secondary Pyoderma								
IED	36	78	6	17	3	2	3	145
Infected Scabies	55	72	13	18	2	2	2	164
Infected Acne	0	30	68	15	0	0	0	113
Infected Contact Dermatitis	2	8	9	28	5	1	0	53
Infected Dermatophytosis	13	18	47	41	13	2	1	135
Infected Herpes	0	2	3	17	7	8	2	39

Zoster								
Infected Ulcer	2	2	6	16	2	1	1	30
Sub Total	108	210	152	152	32	16	9	679
Total	633	718	483	361	221	123	21	2560

Table 3:- Bacterial flora in pyoderma patients (n = 100).

Organism	Gram Status	Primary Pyoderma	Secondary Pyoderma	Total
Staph aureus	+ve	59	21	80
Coagulase –ve Staph	+ve	3	1	4
Haemolyticus Streptococcus	+ve	1	1	2
Non Haemolyticus Streptococcus	+ve	1	1	2
E. coli	-ve	2	1	3
Pseudomonas	-ve	0	1	1
Enterobecter	-ve	0	1	1
No Organism		1	6	7
Total		67	33	100

DISCUSSION

Primary pyodermas is a common health problem in children of less than 10 year of age.[8] The results of present study reveal that staphylococcus aureus is the most common pathological agent found. Similarly reports observed with other authors also.[7,9,10] Because of high prevalence of pyodermas, there is constant need of obtain more information about etiological agent, predisposing factors, mode of transmission and control measures. Highest incidence of secondary pyodermas was observed in 11 to 20 years of age group, because of rural background, poor hygiene and illiteracy. High incidence of pyodermas in early decades of life was also observed by other authors [11, 12].

Our study show distinct male predominance, in all age group as shown by other studies.[7,9,10] The high number of male in our study as well in other study could be because of greater involvement of males in outdoor activities, thus exposing them to trauma and infections. The largest group was of school educated (65%) followed by illiterate (20%) and college educated (15%). In our study, primary pyodermas outnumbered secondary pyodermas that are in concordance with various other studies [10, 11, 12].

CONCLUSION

The highest numbers of cases were observed in 11 to 20 years of age group and lower extremities were the common site of predilection. Primary pyodermas were more common and staphylococcus aureus was the commonest agent in both primary and secondary pyodermas. In conclusion, this study yields some useful epidemiological and clinico bacteriological data about pyodermas.

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