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Clinico Bacteriological Study of Primary PyodermasIn Children in A Tertiary Care Hospital in Andhra Pradesh

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Abstract:
Background *: Primary Pyodermas are one of the commonest clinical conditions encountered in dermatological practice especially in paediatric age group. This pattern of causative organisms of this common condition changes constantly.*
Aims*: 1.To study the clinical and epidemiological patterns of primary pyodermas in children. 2. To know the causative microorganisms.3.To study the predisposing factors of primary pyodermas in children.*
Material and Methods*: A total of 100 patients with primary pyodermas under the age of 12 years attending DVL OPD at SVRR Govt. General Hospital, Tirupati were studied.*
Results*: Primary pyodermas are one of the commonest dermatological diseases among children who attended DVL OPD. The common age group affected was 2 to 4 years with impetigo and folliculitis being the commonest clinical types. Coagulase positive staphylococcus aureus is the commonest etiological agent isolated.*
Conclusion*: Such studies helps in understanding the changing clinical patterns and the etiology of a common condition.*
Key words: *Primary pyoderma , staphylococcus aureus, Impetigo, folliculitis, streptococcus.*

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I. Introduction

Pyoderma is defined as "purulent skin disease".[1] It is one of the commonest cutaneous condition encountered in children[2]. The pyodermas can be broadly divided into primary and secondary types. Most of the primarypyodermas are caused by staphylococcus aureus or group A streptococcus. Various factors like poverty, malnutrition, overcrowding, illiteracy, customs, habits and immunosuppression have been responsible for the high incidents of primary pyodermas in children.[3&4] This study was done to study the clinical patterns, etiology and predisposing factors.

II. Matterials And Methodology

The study material consist of 100 children under the age of 12 years who attended DVL OPD at SVRR Govt. General Hospital, Tirupati. The type of pyoderma was diagnosed clinically. All the children included in this study were untreated. The demographic data, clinical history, associated co-morbiditis were noted. All the relevant laboratory tests including complete blood count and HIV status were tested when indicated. Discharge from a fresh lesion was collected on two sterile swabs after cleaning with 10% alcohol and washing with saline. A Gram stain was done with one swab and the other swab was sent for culture and sensitivity testing. The culture media used were nutrient agar, Macconkey's agar and blood agar. Bacteria were identified on the basis of colony characteristics and coagulase test. Both slide and tube coagulase tests were done for staphylococci. The coagulase positive strains were labeled as staphylococcus aureus and negatives were labeled as coagulase negative staphylococcus.

III. Results

The present study included 100 cases of different types of primary pyodermas in children below 12 years of age who attended DVL OPD, SVRR Govt. General Hospital, Tirupati.

1. **The incidence** of primary pyodermas in children during the study period of one year was around 15%.
2. **Geographic distribution** :- 25% of cases were from rural areas and 75% were from urban areas. Out of the cases from urban areas 75% of cases were from slum areas.
3. **Age and Sex distribution** .

Table 1

Age Group (In years)	Sex		No. of cases	Percentage
	Male	Female		
0-1	3	3	6	6
1-2	4	3	7	7
2-3	12	12	24	24
3-4	8	3	11	11
4-5	8	5	13	13
5-6	4	3	7	7
6-7	5	3	8	8
7-8	3	2	5	5
8-9	2	2	4	4
9-10	3	4	7	7
10-11	1	1	2	2
11-12	4	2	6	6
Total	**57**	**43**	**100**	**100**

The commonest age group affected was 2 -3 years (24%) and least number of cases were seen in the age group of 10-11 years. Youngest patient was 8 months old and the oldest was 12 years. Male predominance was noted in all age groups.

4. **Age distribution of various pyodermas.**

Table 2

Clinical Type	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12
1.Impetigo												
a.Impetigocontagiosa	2	4	9	5	3	3	2	3	2	2	nil	1
b.Bullous Impetigo	4	2	4	4	2	nil	1	nil	1	1	nil	nil
2.Folliculitis	nil	Nil	4	1	4	4	2	nil	nil	1	nil	3
3.Furunculosis	Nil	2	3	2	2	3	2	3	1	3	2	3
4.Ecthyma	nil	Nil	2	nil	2	nil	nil	nil	nil	2	nil	nil

Impetigo contagiosa and bullous impetigo were common in the age group of 0-5 years. Folliculitis was common in 2-6 years age group. Furunculosis was seen in later age group between 5-12 years. The cases of ecthyma were in the age group of 2-9 year

Table 3.Types of pyoderma.

Clinical Type	Male		Female	
	No. of cases	Percentage	No. of cases	Percentage
1.Impetigo				
a.Impetigo contagiosa	21	58.31	15	41.69
b.Bullous Impetigo	9	47.36	10	52.64
2.Folliculitis	11	58	8	42
3.Furunculosis	9	53	8	47
4.Ecthyma	8	88.88	1	11.12

The above table shows that impetigo was the commonest type of pyoderma including impetigo contagiosa and bullous impetigo. (55%)

5. **Sex incidence**: most of the pyodermas were commonin male children.
6. **Socio-economic Status**: Majority of the patients were from lower socio-economic class.
7. **Family history** of similar lesions in other children was present in 25 cases. Most of these patients were suffering from impetigo contagiosa or bullous impetigo.
8. **Pre-disposing factors**: The present study consisted 75% of the cases from urban slum areas who were from low socio economic status with predisposing factors like poor nutrition, poor hygiene and unhealthy surroundings. Above 25% cases had contact history from siblings and school mates.
9. **Clinical features**: (a) **Impetigo contagiosa**. The children presented with erosions with honey coloured crusting commonly involving the central face. Regional lymphaedinitis was noted in 50% of the patients. (b) **Bullous impetigo**. These children presented with intact bullae and annular lesions. (c) **Folliculitis**. Superficial follicular pustules and some crusted lesions in thescalp were seen. (d) **furunculosis**. The children presented with erythematous, indurated, tender nodules and some ruptured lesions discharging pus. (e)**Ecthyma**. These cases presented with ulcer covered by thick brown adherent crust.
10. **Associated Diseases**: Malnourishment presenting as anaemia, dry skin, scanty and lustureless hairwas present in some children. Two of the children were HIV sero positive born to HIV sero positive parents.

Table 4.Gram's Stain Results.

Organisms	No. of Cases	Percentage
1.Gram positive cocci		
In Chains	8	8
In Groups	71	71
Both forms	1	1
2.Gram negative bacilli	3	3
3.Gram positive bacilli	2	2
4.Gram positive cocci and Gram negative bacilli	4	4
5.No isolates	11	11
Total :	**100**	**100**

Table 5.Pattern of Isolation.

No. of Isolates	No. of cases	Percentage
Single Isolates	82	82
Mixed Isolates	5	5
No Isolate	13	13

Table 5aPattern of single isolation

Organism	No. of Cases	Percentage
S. aureus	64	64
Coagulase negative staphylococci	7	7
Beta hemolytic streptococci	7	7
Klebsiella	3	3
Group D Streptococci	1	1
Total	**82**	**82**

Table 5b.Pattern of mixed isolation.

Organisms	No. of cases	Percentage
S.aureus + E. coli	3	3
S.aureus + Klebsiella	1	1
S.aureus + β-hemolytic streptococci	1	1
Total	**5**	**5**

Table 6.Clinico bacteriological analysis of 100 cases of pyodermas

Clinical Type	Total	S.A		CNS		BHS		Kleb.		Coryn.		Group D		Kleb + S.A		E.coli + S.A		□-HS + S.A		NBG	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
1.Impetigo																					
a.Impetigo contagiosa	36	24	66.7	3	8.3	3	8.3	2	5.6	-	-	-	-	-	-	-	-	1	2.8	3	8.3
b.Bullous Impetigo	19	14	73.7	1	5.3	3	15.3	-		-	-	-	-	-	-	1	5.3	-	-	-	-
2.Folliculitis	19	11	57.9	2	10.5	-	-	-	-	-	-	1	5.3	-	-	-	-	-	-	5	26.3
3.Furunculosis	17	12	70.6	1	5.9	-	-	1	5.9	-	-	-	-	1	5.9	-	-	-	-	2	11.8
4.Ecthyma	9	3	33.3	-	-	1	11.1	-	-	2	22.2	-	-	-	-	2	22.2	-	-	1	11.1
	100	64		7		7		3		2		1		1		3		1		11	

IV. Discussion

4.1incidence Of Individual Types Of Pyodermas

In our study of 100 cases, impetigo contagiosa was the commonest type (36%) followed by bulluous impetigo and fulliculitis 19% each. Furrenculosis (17%), echtyma was seen in (9%) of cases. The results of this study are comparable to the study of MariatteS.Mathewet al[4] who reported an incidence of impetigo in 46% of cases, folliculitis in 44.2%, furunculosis in 7.8% of cases and ecthyma in 2% of cases.Kar, P K Sharma et al[5]observed that impetigo was the commonest clinical type(47%).

Age Distribution

The present study showed the mximum incidence of pyodermas in the age group of 1-4 yrs (42%), 33% cases are in the age group of 5-8 yrs and the remaining 25% in the age group of 9-12 yrs. More or less similar observations were made in an earlier study (Mariette S. Mathew et al[4]). Probably similar socioeconomic conditions and predisposing factors are presenting in both studies.

Sex Distribution

The present study of 100 cases of pyodermas constituted 57 male children (57%) and 43 female children (43%) giving the ratio of male to females as 1.33:1.

The study of Adarsh Chopra et al[6] have similarly reported male to female ratio as 1.43:1.

Socio Economic Status

In the present study 76% of cases were from lower socioeconomic strata and 24% from middle class. These findings are comparable to the findings of Ramani and Jayakaret al[7].

Geographical Distribution

In the present study 26 cases (26%) belonged to rural areas and 74 cases (74%) belonged to urban areas, especially people coming from slum areas. This finding is in contrast to the findings of Mariette S. Mathew et al[4] who reported 50.4% of cases in rural population. The urban cases in our study belonged to slum areas with poor living conditions, overcrowding and suffering from malnutrition.

Distribution Of Lesions

Most of the cases showed involvement of extremities, face scalp, trunk and gluteal region. Face and scalp were the most frequent sites involved. Similar observations were made by Bhaskaranet al[8].

Clinical Features

The clinical presentation has followed the classical pattern. Lymphadenitis was noted in 22% of cases where as Burnet J W et al[9] reported a high incidence(92%).

Gram's Smear Examination

Gram Positive organisms were seen in 89% of cases and gram negative organisms in 11% of cases.

Pattern Of Isolates

From the 100 cases of pyodermas studied, S. aureus (64%) was the main offender causing pyoderma in our study. This was followed by β-HS(7%) and coagulase positive staphylococci and coagulase negative staphylococci in 7% each.

Adarsh Chopra et al[6] also have isolated S. aureusin 73%, β-HS in 7% of cases and coagulase negative staphylococci in 2% of cases. So the results of the present study are in comparable to the study of Adarsh Chopra et al.

Mixed infections withS.aureus and β-HS have been found to be 1% in the present study. The combination of s.aureus and klebsiella in 1% and s.aureus and E.coli in 3%. The percentage of mixed infections in our study is 5% which is comparable to the study of Adarsh Chopra et al (6%)[6]. Gram negative bacilli were isolated from 3 cases(3%). Similar observations were made by Adarsh Chopra et al.

In the present study staphylococcus was the main causative organism in all the types of pyodermas, the next being β hemolytic streptococci.

V. Conclusion

1. Primary pyoderma is one of the commonest dermatological entity. Out of the total 10432 patients (new cases) who attended dermatology OPD, 720 had primary pyodermas (7%).
2. They commonly occur in the age group of 2-4 years, most prevalent in low socioeconomic strata.
3. The most common types of pyoderma noted inour study are impetigo (55%) and folliculitis (19%).
4. Coagulase positive staphylococcus aureus is the commonest etiological agent.
5. The present study give knowledge of the pattern of pyodermasand their causative organisms in children in and around Tirupati.

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