Original Article

Clinicobacteriological study of primary pyoderma with reference to antibiotic sensitivity

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Abstract

Pyoderma is pyogenic infection of skin. Muilipal drug resistance is exhibited by the isolated organisms. Due to greater risk of antibiotic resistance, culture and antibiotic sensitivity of the isolated organisms become essential. In our study total 100 patients of primary pyoderma who attended Dept. of Skin and VD. At MGM medical college Aurangabad were enrolled for a period of 1 year, (Jan 2013 to Jan 2014) and studied for clinical patterns and bacteriological profile. Impetigo was the commonest clinical type (48%). . Staphylococcus aureus was the commonest organism isolated (64%)and Beta hemolytic streptococci 17% cases. The isolated strains were sensitive to to Cephalosporins(90-100%), Ciprofloxacin(90-95%) and Gentamycin (80-90%).

Keywords: Antibiotic sensitivity, primary pyoderma, resistance.

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INTRODUCTION

The practicing dermatologist is faced with an everchanging epidemiologic spectrum of cutaneous bacterial diseases. Bacterial infection in the skin has distinct morphologic characteristics which should alert the clinician that a potentially treatable and reversible condition exists. These cutaneous signs may be an indication of a generalised systemic process or simply an pyogenic superficial event[1]. Pyoderma is pyogenic infection of the skin. Pyodermas are one of the commonest clinical conditions encountered in dermatological practice. Pyoderma is primary when it arises on normal skin and secondary when it complicates other skin diseases[2]. The majority of primary and secondary pyodermas are caused by either Staphylococcus aureus or Group A Streptococcus. Predisposing factors like warm and humid climate, overcrowding, malnutrition, local customs and superstitions, diabeties mellitus, immunosuppression etc are known to precipitate pyoderma[3]. Primary pyoderma is more common than secondary pyoderma. Primary pyoderma includes impetigo, icthyma, erysiples, cellulitis, folliculitis, furuncle, carbuncle etc. Impetigo is the commonest clinical variant in primary pyoderma. Pyodermas are quite common in India. Multiple drug resistance is exhibited by the isolated organisms. Changing trends are being noted in etiological aspects of primary pyodermas, it would be ideal to do culture and sensitivity tests before prescribing antibiotics but as this is not always feasible, studies should be conducted to determine the changing trends in etiological agents and antibiotic resistance. Keeping this in mind the present study was conducted.

MATERIALS AND METHODS

The study was approved by institutional review board. 100 patients of primary pyoderma attending the OPD at MGM Aurangabad were included for a period of 1 year(January 2013- January 2014). Cases were selected on random basis. Newly diagnosed and untreated cases were selected for the study. Secondary pyoderma cases were excluded. A detail history was recorded regarding age, sex, occupation, socioeconomic status, onset, duration, progression, associated symptoms, past illness, personal

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hygiene, family and personal history etc in pre-dignosed and pre-tested performa. A thorough clinical examination was made regarding general condition of the patient, morphology and distribution of the lesions. Relevant systemic examination was also done and the findings were recorded. A written consent was obtained from all the patients. The patient were subjected to the routine blood investigations. Pus sample was collected with the help of sterile swabs after cleansing the lesion with 70% alcohol. If crusted lesions were present, the crust was removed and then the sample was collected. In case of intact pustule, the lesion was ruptured with a sterile needle and pus was collected on a sterile cotton swabs. Swabs fronm the purulent lesion was taken and smear was made and Gram staining was done and examined for identification of organism. Pus from the lesion was cultured, were inoculated on blood agar aerobically at 37^0. 24 hour later theorganisms were identified by standard mrorphological and biochemical techniques. Antibiotic sensitivity testing was done by the disc diffusion method and resistance pattern determined.

OBSERVATIONS AND RESULTS

The study showed male preponderance and there was greater association of rural areas, poor hygiene, low socio-economic condition and malnutrition with primary pyoderma. Impetigo was the commonest clinical type and lower limbs were the most common sites affected. Staphylococcus aureus was the commonest isolated organism thus concluding that it is the commonest cause for primary pyoderma, though the epidemiological pattern may vary. Staphylococcus aureus showed maximum resistance to penicillin and ampicillin in this study, so these drugs are no longer the 1st choice treatment. This study is in favor of using cephalosporins as the 1st line of treatment in primary pyoderma. This study also demonstrates the need of continuous monitoring of the changing patterns of antibiotic sensitivity that will necessitate changes in the approach to therapy.

Table 1: Distribution of cases depending upon type of organisms

Organism	Percentage
Staphylococcus aureus	65
Beta hemolytic streptococci	17
Mixed	13
Others	1
Skin commensals	2
No growth	3

Table 2: Distribution of cases depending on sensitivity and resistance pattern of staph. Aureus

Antibiotics	Sensitive (%)	Intermediate (%)	Resistant (%)
Ampicillin	39	6	56
Cotrimoxazole	73	2	25
Ciprofloxacin	93	1	6
Erythromycin	81	1	18
Penicillin	32	2	66
Gentamicin	89	0	12
Netilmicin	91	6	3
Cephalexin	100	0	0
Cefaclor	97	0	3
Cefotaxim	94	2	5
Amikacin	95	0	5
Doxycycline	80	0	20

DISCUSSION

Most of the studies conducted in India showed increased incidence of bacterial skin infection in rural areas[4, 5, 6, 7]. 53 % cases belonged to rural areas and our study coincides with study conducted by Mathew MS, et. al. In the present study there was increased incidence of primary pyoderma in students and majority of the cases belongs to lowersocioeconomic status(73%) and those with poor hygiene constituted 74% which was consistent with study considered by Kakar N *et al*[8]. In present study majority of the cases were in age group of below 10 years (50%) and high incidence was seen in the monsoon (June-September)(41%)8 which was consistent with other studies[8, 9]. Itching (13%) and pain (31%) were the symptoms observed. Pain was the most common symptoms associated with furunculosis. The present study showed an association with anaemia in 25% cases which was consistent with other studies[10, 11, 12]. In present study, Impetigo was the commonest clinical type (48%). The percentage of folliculitis and furuncle was 18% and that of ecthyma (13%), cellulitis (1%) and carbuncle (1%) respectively. These findings were consistent with studies conducted by Nagaraja U *et al* and Baslas RG *et al*[7, 13]. In the present study Staphylococcus aureus was commonest isolated organism (65%)and Beta hemolytic streptococci in 17% cases. Staphylococcus aureus was commonest isolated organism in most of clinical types of primary pyoderma whereas Sterptococci was the commonest organism isolated in cellulitis and these findings were consistent with other studies[7, 13, 14]. Staphylococcus aureus and other isolated organisms like Streptococcus pyogenous, Beta hemolytic streptococci and the mixed isolates showed high sensitivity to cephalosporins (90-100%), Ciprofloxacin (90-95%) and Gentamicin (80-90%). these observation were consistent with studied conducted by Baslas *et al* 7 and Ramani TV *et al*[11]. Streptococci and the mixed isolates also showed good

sensitivity to penicillin (94%)Staphylococcus aureus showed maximum resistance to penicillin(66%) and ampicillin (55%)[10, 15]

CONCLUSION

In conclusion, our study demonstrated that impetigo was the commonest clinical type. Staphylococcus aureus was the commonest isolated oraganism, thus concluding that it is the commonest cause for primary pyoderma, though the epidemiological pattern may vary. This study was in favor of using cephalosporins as the 1st line of treatment in primary pyoderma. This study also demonstrates the need of continuous monitoring of the changing patterns of antibiotic sensitivity that will necessitate changes in the approach to therapy. This study gives an indication of the present state of pyodermas in Aurangabad with a knowledge of the likely causative organisms and their sensitivity and resistance patterns. Proper antibiotic therapy can be given avoiding unnecessary medications with drugs known to be resistant.

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