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SECONDARY INFECTION IN ACNE – BACTERIAL CULTURE AND SENSITIVITY PROFILE

Dermatology

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ABSTRACT

Introduction: Acne vulgaris is a chronic inflammatory disorder of Pilosebaceous follicle. Aims: To determine antimicrobial susceptibility patterns of different organisms to frequently used drugs. **Materials and methods:** A hospital based study of 100 patients (41 males and 59 females) in private hospital in Davangere between April 2018 and June 2018, samples were taken from pustular and nodulocystic lesions. **Results:** Among 100 cases, Staphylococci was most prevalent organism seen in 72% of cases and Klebsiella(1%) were the least prevalent. No growth was seen in 20% of cases. Among topical agents organisms were found to be highly sensitive to Mupirocin(80%) and fusidic acid(60%) and resistant to Clindamycin(55%) and framycetin(60%). Among systemic agents, organisms were found to be highly sensitive to Doxycycline(67%) and highly resistant to Penicillin(92%). **Conclusion:** Clindamycin and Azithromycin are most commonly prescribed drugs for acne treatment but in this study we have found many cases showing resistance to above two drugs. Knowledge of causative organism and antibiotic susceptibility pattern is essential to give proper antibiotic therapy and avoid resistance to ineffective drugs.

KEYWORDS

Acne vulgaris, bacterial culture, drug resistance

INTRODUCTION

Acne vulgaris is a common skin disorder which is of multifactorial etiology. It is a chronic disorder of pilosebaceous follicle and affects youth especially during puberty and adolescent age group. [1] [2] The clinical lesions are non-inflammatory open and closed comedones of varying degree and/or papules, pustules [Figure 1] and nodules [Figure 2] of varying degree of inflammation and depth. The face, back and chest are most frequently affected sites.

AIMS

To identify the bacterial etiology of acne

To determine the antibiotic susceptibility profile of pathogenic isolates.

MATERIALS AND METHODS

Source of Data: A hospital based study of 100 patients (41 males and 59 females) in Bapuji hospital attached to J. J.M. Medical College between April 2018 and June 2018, samples were taken from pustular and nodulocystic lesions.

Inclusion Criteria

Patients of all age groups

Patients of either sex

Patients who have not taken antibiotic therapy for existing lesions

Exclusion Criteria

Patients treated with topical or systemic antibiotics

Patients who were not willing to be a part of study

A detailed history and clinical examination was carried out in every patient. Under aseptic precautions pus samples were collected using two sterile cotton swabs and transported to laboratory within 30-45 mins.

Out of the two swabs, one was used for making smear and gram staining while the other for culture on blood agar [Figure 3] and Mac Conkey's agar. Culture plates were incubated aerobically at 37ºC for 24 – 48 hours. Colonies were identified by gram's staining, colony morphology and standard biochemical reactions.[5] Antibiotic susceptibility testing [Figure 4] of isolated organisms was performed on Muller Hinton agar by Kirby - Bauer's disc diffusion method. [5]

RESULTS

Out of 100 patients - 41 were male and 59 were females. Staphylococci was most prevalent organism [Figure 5] seen in 72% of cases; out of which Methicillin Sensitive(MS) Coagulase Negative Staphylococci(CONS) were 51%, Methicillin Resistant(MR) CONS were 14%, Methicillin Sensitive Staphylococci aureus were 4%, MRSA were 3%. E.Coli(2%), Pseudomonas(2%), Actinobacter(2%) and Klebsiella(1%) formed rest of the bacterial pool. No growth was seen in 20% of cases. Among topical agents organisms were found to be highly sensitive [Figure 6] to Mupirocin(80%) and Fusidic acid(60%) and resistant to Clindamycin(55%) and Framycetin(60%).

Among systemic agents, we found following drugs were sensitive [Figure 7] in descending order of Doxycycline(67%), Ciprofloxacin(65%), Tetracycline(65%), Gentamicin(65%) and resistant to Penicillin(92%), Amoxycillin(57%), Azithromycin (55%), Erythromycin(56%).

DISCUSSION

The most common organism in our study was staphylococcu aureus [3] compared to study by Adekunle et al [8] [Figure 8] and Brock et al. Since bacterial resistance to conventional antibiotics such as Clindamycin among topical and Azithromycin and Erythromycin among systemic agent were reported to have an increasingly trend, research on finding the effective antibiotics seems indispensable.

In this geographical area, Staphylococcus aureus was highly sensitive to Mupirocin and Fusidic acid among topical and to Doxycycillin and Ciprofloxacin among systemic agents. On the basis of these results, we suggest that Mupirocin and Fusidic acid among topical and Doxycycillin and Ciprofloxacin among systemic agents are suitable antibiotics for acne patients.

With these findings we suggest that indiscriminate use of antibiotics, which predisposes individual to development of antibiotic resistant pathogenic strains, should be avoided.[4] Acne therapy varies according to severity of disease, topical medications are generally enough in clearing comedonal acne, while inflammatory acne usually requires systemic antibiotics.[6] [7]

LIMITATION

History of antibiotic therapy before pus culture could not be elicited in few cases, where no growth in culture was reported.

CONCLUSION

Clindamycin and Azithromycin are most commonly prescribed drugs for acne treatment but in this study we have found many cases showing resistance to above two drugs.

Knowledge of causative organism and antibiotic suscebtibiity pattern is essential to give proper antibiotic therapy and to avoid resistance to ineffective drugs.

Figure1- Papulopustular acne

Figure2- Nodulocystic acne

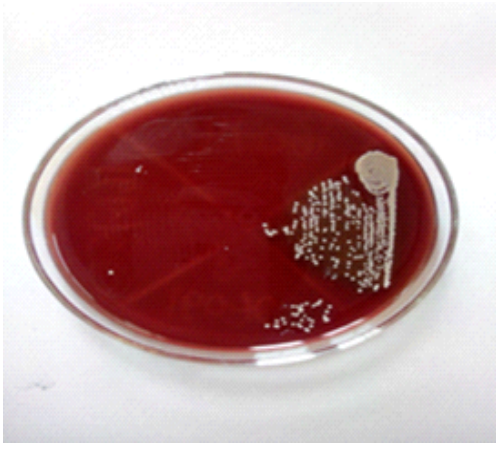

Figure3- Blood agar with staphylococci colonies

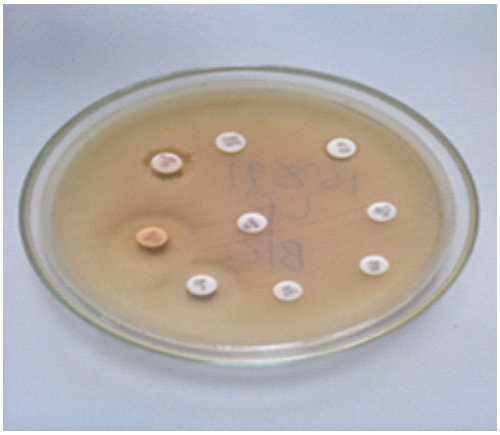

Figure4- Antibiotic susceptibility testing

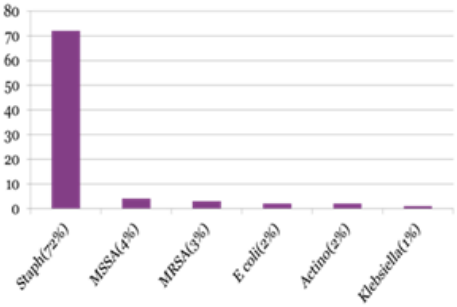

Figure5- Prevalence of microorganisms

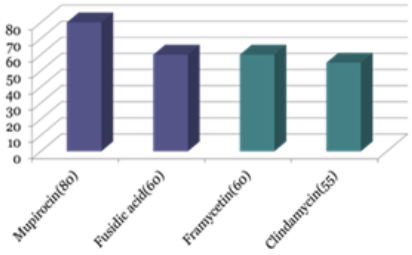

Figure6- Topical sensitivity and resistance

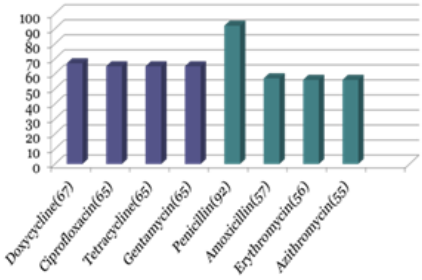

Figure7- Systemic sensitivity and resistance

DRUGS	OUR STUDY	ADEKUNLE et al
Doxycycline	S	-
Ciprofloxacin	S	-
Tetracycline	S	S
Gentamycin	S	S
Penicillin	R	R
Amoxicillin	R	S
Azithromycin	R	-
Erythromycin	R	R
Ampicillin	R	R

Figure8- Comparison with Adekunle et al

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