Volume : 5 | Issue : 8 | August 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Original Research Paper

Prospective Study on Staphylococcus Aureus With Their Antibiotic Susceptibility Pattern From Pus (Wound) Sample

Medical Science

KEYWORDS : Antibiotics, MRSA , MSSA , Staphylococcus

*** Dr. Rajesh Soni** — Associate Professor Department of Microbiology, Hind Institute Of medical sciences , Mau, Ataria ,Sitapur, Lucknow * Corresponding author

Debnath Chaudhuri — Consultant, Department of Biochemistry & Nutrition, All India Institute of Hygiene & Public Health (Affiliated to The West Bengal University of Health Sciences), JC – 27 & 27B, Bidhan Nagar, Kolkata – 700106

ABSTRACT

Objective: To screen various Staphylococcus aureus (MRSA & MSSA) pathogens isolates from pus samples and to determine their antibiotic sensitivity pattern against the commonly used antibiotics.

Materials and Methods: Pus sample were collected from 200 different patients and transported to laboratory and culture and antibiotic susceptibility was performed.

Result: A total 150 Staphylococcus aureus were isolated from 350 wound specimen , out of which 60 were MRSA and 90 MSSA .

Conclusion: Antibiotic sensitivity test of isolates can serve as a tool for physicians to start an empirical treatment and minimize the drug resistance problem.

Inroduction : In pus infection breaking of the host protective layer- the skin and thus disturbing the protective functions of the layer, will induce many cell types into the wound to initiate host response [1]. In pus infection breaking of the host protective layer- the skin and thus disturbing the protective functions of the layer, will induce many cell types into the wound to initiate host response [1]. Infection of the wound is the successful invasion and proliferation by one or more species of microorganisms anywhere within the body's sterile tissues, sometimes resulting in pus formation. According to the nature of the infection is the attachment of microorganisms to host cells and they proliferate, colonize and become better placed to cause damage to host tissue [1].Selection of an effective antimicrobial agent for a microbial infection requires knowledge of the potential microbial pathogen, an understanding of the pathophysiology of the infectious process and an understanding of the pharmacology and pharmaco kinetics of the intended therapeutic agents [2] . Surgical wound and skin infections accounts for 70-80% mortality. It leads to almost one third of the hospital acquired infection among surgical patients [3].Staphylococcus aureus is one of the most prevalent and challenging cause of infection [4]. It may lead to serious complications as pneumonia , septicemia, and arthritis.[5]The wide use of antibiotics in treatment of infection lead to antibiotic resistance among different bacterial strains.[6,7]

Materials and Methods : The study conducted on 150 Staphylococcus aureus isolates that obtained from pus specimens which submitted to department of microbiology from June 2016 – July 2016 were included in the study.

The sample were cultured on blood agar and MacConkey agar plates and incubated aerobically at 37°C for 48 hours. Standard tests like catalase, slide and tube coagulase and growth on mannitol salt agar were used to identify the strain.[8]

Result :

In the 300 wound sample 150 Staphylococcus aureus were isolated in which 60 methicillin resistant Staphylococcus aures (MRSA) and 90 methicillin sensitive Staphylococcus aureus (MSSA).

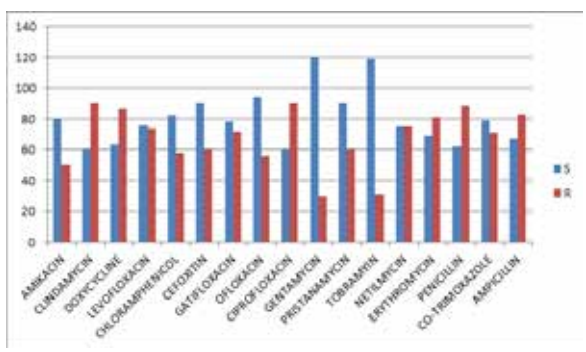

Table 1 Antibiotic sensitivity pattern of gram positive isolates

Antibiotics	ORGANISMS (n= 150) Staphylococcus aureus	
	S	R
Amikacin	80	70
Clindamycin	60	90
Doxycycline	63	87
Levofloxacin	76	74
Chloramphenicol	82	68
Cefoxitin	90	60
Gatifloxacin	78	72
Ofloxacin	94	56
Ciprofloxacin	60	90
Gentamycin	120	30
Pristanamycin	90	60
Tobramycin	119	31
Netilmycin	75	75
Erythromycin	69	81
Penicillin	62	88
Co-Trimoxazole	79	71
Ampicillin	67	83
S= sensitive R= resistant n=number of organisms		

Discusion:

During the period from January 2016 to June 2016 , a total of 350 pus specimens were collected from wound and proceed. Different types of organism were isolated in

Volume : 5 | Issue : 8 | August 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

which 150 Staphylococcus aureus isolated (90 MSSA and 60 MRSA).

In our study, the organisms associated with the infections were Staphylococcus aureus (42.8%) and highly sensitive to Amikacin, Gentamycin, Co-Trimoxazole, Gatifloxacin, Tobramicin For treatment. These findings agree with those reported by Poonam Verma and Chaudhary et al where the most common wound contaminant was Staphylococcus aureus. The findings also agree with those of Buwembo who identified Staphylococcus aureus as the commonest causative agent of potentially contaminated wounds in Mulago hospital[9-11].

In this study, Gentamycin was the most sensitive drug for the Staphylococcus aureus but in Kanan S study antibiotics which higher sensitivity to Meropenem, Linezolid, Vancomycin, Amikacin and levofloxacin.[12]

Conclusion:

Though wound infection is a non eradicable problem, but preventive measures, good disinfection and treatment protocols, clean surgical procedures, proper care of wounds and hygienic practices help to minimize the incidence of the wound infections. Frequent and timely conversation between the microbiologist and wound care practiconers also plays a major role in limiting the wound infection in hospitals. Similarly, the antimicrobial susceptibility testing result suggests that some antibiotics would have very limited usefulness for the prophylaxis or the empirical treatment of wound infection. The result might serve as a foundation for establishing empiric therapeutic approaches for the management of such infection.

REFERENCESs

1. Collier M (2003). Understanding wound inflammation. Nurs. times 99(25): 63-64.
2. Kelwin, W.S., 1999. Anti microbial therapy for diabetic foot infections. Post Grad. Med., 106: 22-28.
3. Zafar A, Anwar N, Ejaz H. Bacteriology of infected wounds-A study conducted at Children hospital Lahore, Pak J Med Health Sci. 2007; 1(3):92-95. 7)
4. Lowy, F.D., Staphylococcus aureus infection . N. England J. Med., 1998; 339: 520-532.
5. Akindele , A.I.K., A. Adewuyi,O.A. Adefioye S.A., Adedokun and A.O. Olaolu, Antibiogram and Beta lactamase Production of Staphylococcus aureus Isolaes from Different Human Clinical Specimens in a tertiary Health Clinical Specimens in a Tertiary Health Institution in Ile-ife, Nigeria. American-Eurasian Journal of Scientific Research, 2010;5(4):230-233.
6. Moinzadeh, F., Z. Arabi and A. Banazadehi, Prevalence and Antimicrobial Susceptibility Patterns of Uropathogens among patients Referring to Valieasr Laboratory in Najafabad, Isfahan, Iran Middle-East Journal of Scientific Research, 2013;13:85-90.
7. Ponnusamy, P. And R. Nagappan, Extended Spectrum Beta-Lactamase, Biofilm-producing Uropathogenic Pathogens and their Antibiotic Susceptibility Pattern from Urinary Tract Infection An Overview. International Journal of Microbiological Research , 2013;4101-118.
8. Pai, V., V.I. Rao and S.P. Rao, Prevalence and Antimicrobial Suceptibility Pattern of Methicillin resistant Staphylococcus aureus [MRSA] Isolates at a tertiary care Hhospital in Mangalore, South India.J. Lab Physicians, 2010; 2: 82-84.
9. Poonam Verma antibiotic sensitivity treatment for for Gram positive bacteria isolated from pus sample.Bull. Environ. Pharmacol.Life Sci ; Volume 1[10] September 2012:03-06.
10. Chaudhary P et al. Prospective study on Bacterial isolates with their antibiotic sensitivity pattern from pus (wound) sample in Kathmandu Model Hospital. International Journal of Medicine &Biomedical Sciences 2015:1(1):15-22.
11. Buwembo KBM. (1990). Post operative wound infection. Kampala: Makerere University;. pp. 1–45.
12. Kannan S et al . Pattern of Pathogens and their sensitivity isolated from pus culture reports in a tertiary care hospital, Puducherry.Indian Jouranal of Basic and applied medical research ; December 2014:vol-4,Issue-1,P-243-248.