ANTIBIOTIC–RESISTANCE PATTERN OF HOSPITAL STAPHYLOCOCCI.*

Dr. B.R. Prasai† M.B.B.S. (Dacca) D.C.P. (London)
Dr. V.L. Gurubacharya† M.B.B.S. (Agra)
DTM & H. (Eng.) D. Path, D.C.P. (London)

Introduction

Staphylococcal infection in the hospital patients is a problem all over the world. Staphylococcus aureus is commonly found in pyogenic infections such as pustules, boils, blepharitis wound infections etc. but in modern hospitals the problem is cross infection with antibiotic resistant strains. Various workers have repeatelly shown that well over 50–60% of the hospital staff are carriers of Staph. aureus in anterior nares (1). If they are found to be antibiotic resistant strains one could well imagine the magnitude of the problem. Certain strains of Staphylococcus aureus have the capacity to produce penicillinase which inactivates the usual Penicllins. Therefore the penicillins available in Nepal have no place in the treatment of patients from whom penicillin-resistant strains of Staph. aureus have been isolated. In a minor proportion of cases, staphylococcus has multiple antibiotic resistance and a blind use of broad spectrum antibiotics is also useless in such cases.

In this article the antibiotic resistance pattern of Staphylococcus aureus isolated in the Central Health Laboratory in Kathmandu has been analysed.

Material

All specimens for culture such as pus,sputum, high vaginal swab, urine etc. from 1. 1. 025 to 30. 9. 025 (last 9 months of 1968) in which staphylococci were isolated have been included in this series. 90% of these specimens were from the Bir Hospital, Kathmandu and the rest were from various other sources. No attempt has been made to bring out exclusive figures for Bir Hospital alone.

Method

The standard method available at the Central Health Laboratory at present is to inoculate such materials in the blood agar and Mackonkey's media. Staphylococci isolated are tested for coagulase production and if found positive antibiotic sensitivity is done on them.

Results

Of the antibacterial drugs tested for sensitivity after isolating coagulase producing

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†Central Health Laboratory, Kathmandu.

staphylococci, 96.8% showed resistance to Sulphonamides out of the 131 cases tested, 75.5% were resistant to Penicillin out of 135 cases, 35.8% to Steptomycin (out of 133), 33.3% to Chloramphenical (out of 66) and 26.5% to Tetracycline (out of 137) Resistance to both Penicillin and Tetracycline was shown in 22.42% (33 out of 137)

ANTIBIOGRAM

Source	Antibiotics									
	Sulpha		Pen		Tetr		Strep		Chlor	
	R	S	R	S	R	S	R	S	R	S
Pus	80	–	66	21	20	63	21	62	16	28
Sputum	2	–	2	2	–	3	2	–	–	3
Throat swab	2	–	2	–	–	2	–	2	1	2
Abscess	2	–	2	–	1	1	1	1	–	2
H.V.S.	26	4	17	18	13	19	16	13	1	6
Urine	11	–	3	8	5	6	3	6	2	2
Miscellaneous	4	–	2	2	–	4	–	4	–	3
Total	127	4	102	33	39	98	43	90	20	46
%of resistant Organisms	96.8		75.5		26.5		35.8		33.3	

R = resistant, S = sensitive, Pen = penicillin

Tetr—tetracycline, Strep—streptomycin, Chlor—Chlorampenicol

Discussion: Percentage of strains resistant to the antibiotics Penicillin and Tetracycline in this series was comparable to the published figures but chloramphenicol resistance was somewhat higher (2)

In Nepal where laboratory facilities are minimum failure on the part of the clinician to appreciate the possible presence of such dangerous strains of staphylococci could very well create a great problem in the future administration of sulfonamides even in apparently minor ailments caused by Staphylococcus aureus is practically useless, a waste of the drug and an inconvenience and even danger to the patient. Penicillin has lost much ground as a weapon against Staph. aureus in hospital practice. It may take a long time in Nepal before the penicillinase resistant penicillins are easily available to the clinicans. The use of chloramphenicol should be generally restricted to the Enteric fever. So it appears that the only drug available at present for Staphylococcus aureus in hospitals is tetracycline but as more strains of multiple antibiotic resistant Staph are being found in Bir Hospital materials, antibiotics should be used with much caution. Time has come now for us to sit together and decide on an antibiotics policy for hospitals.

Conclusion:- An analysis of antibotic sensitivity of Staphylococcus aureus isolated in 137 hsopital cases from the specimens for culture sent to the Central Health Laboratory has

been carried out. The sulphonamides appear to be useless in the staphylococcal infection and the penicillins should be used only in sensitive organisms. Other antibiotics should also be used with much caution. Tetracycline showed the least resistance but whenever possible treatment should be guided by laboratory tests.

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References

1) Principles of Bacteriology and Immunity (1964) by G. S. Wilson and A. A. Miles 5th edition Vol. 2 quoting R.E.O. Williams (1963) regarding Staph as normal flora of anterior nares gives a figure of upto 80% for healthy nurses in hospitals but only 20–50% for healthy adults in a community. The nose differs from the nasopharynx in bacterial flora. In the throat 4–7% carrier rate was recorded in Gt. Britain and 45% or more in Scandinavia. In general the nose appears to be the primary source of Staphylococci in the throat.

2) Medical Microbiology by Cruickshank 11th Edition page 137.