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Culture And Sensitivity Patterns in Diabetic Foot Syndrome

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Abstract
Introduction:*Diabetic foot syndrome is very common in long standing diabetics. Most develop foot ulcers at some point and this accounts for about 20% of all hospitalisations in diabetics.*
Aim:*To identify the pattern in the spectrum of organisms isolated from diabetic ulcers, and their antibiotic sensitivity patterns to help us treat these patients better.*
Methods:*About 300 cases of diabetic foot ulcers (wagner 1 to 5) who where treated in our department as outpatient and as inpatient between 2010and 2014 were retrospectively analysed for the culture results.*
Conclusion:*Most commonly isolated organism was staphylococcus aureus (55%) followed by klebsiella (34%). Antibiotic which was most effective was meropenem , followed by piperacillin and amikacin.*

I. Introduction

India has a vast diabetic population and studies report that 15% of all diabetic patients develop a foot ulcer at some point in their lifetime. The most common problem that patients of poor socioeconomic strata face that prevents healing of the ulcer is infection. Infection worsens the wound condition, delays the healing mechanism and, if appropriate measures are not taken in time, could lead to systemic infection, septicaemia, amputation or even death.

The first response of the physician on seeing the patient is to start emperical therapy along with wound debridement. So instead of following recommendations from the west it is extremely important to be aware of the microbial pattern in that particular locality to initiate the appropriate antibiotics. Hence this study was initiated to find out the microbial pattern in our locality.

II. Aim

To identify the pattern in the spectrum of organisms isolated from diabetic ulcers, and their antibiotic sensitivity patterns to help us treat these patients better.

III. Methods And Materials

About 300 cases of diabetic foot ulcers (Wagner 1 to 5) who were treated in our department as outpatient and as inpatient between 2010 and 2014 were retrospectively analysed for the culture results. The type of organism and sensitivity were recorded from the first culture taken when the patient came to the hospital. The sensitivity test for the cultured organism was done and results recorded and analysed.

IV. Results

Out of the 300 patients, male patients were predominant (63%). The wound pattern varied from Wagner 1 to 5. All patients had Hba1c more than 9, about 190 had some form of neuropathy and 145 had peripheral vascular disease suggested by doppler study. We analysed the report of the first culture taken when the patient came to the hospital. Polymicrobial infection was seen in 103 patients. It was more common in gram negative infections(86 out of 103, two types of G-ve rods). Seventeen gram positive mixed growth had staph aureus with coagulase negative staph or streptococci. The most commonly isolated organism was staph.aureus(165 cases including 69 MRSA), followed by klebsiella (102 patients) and the rest included E.coli in 19 patients, pseudomonas in 12 and candida in the background in 20 cases.

The most effective antibiotic was Meropenem which covered both G+ve and G-veorrganisms (52%). The next best antibiotic was piperacillin with G+ve and G-ve organisms in the sensitive spectrum (24%). Amikacin was the third most effective antibotic(16%,), G-ve predominating the sensitivity pattern. The rest of the patients were sensitive to ciprofloxacin ,amoxclav, cotrimoxasole, cefuroxime, and cefixime.

V. Discussion

Severe and moderate DFIs are usually polymicrobialin nature, whereas mild DFI are mostly monomicrobial. Studies from western countries show that Gram-positive aerobes are the predominant organisms isolated from DFI. In contrast, two recent Indian studies have shown a preponderance of Gram-

negative aerobes. Data from the study byRamakant et al shows that Gram-negative organisms were the major infective pathogens as compared
with Gram-positive isolates. In this study gram positive aerobes were more prevalent followed closely by gram negative aerobes.Anerobes were not considered because of the fact that resistance is low and all patients received anerobic cover.

VI. Conclusion

Since facilities for microbiological studies at the first contact physician/surgeon are usually not available in district hospitals/smaller cities in India, indiscriminate antimicrobial therapy (i.e. Without establishing the aetiology of the infection) has lead to increase in resistant microbes. Therefore it is very important for the physicians to be made aware of the microbial pattern in their locality and their antibiotic sensitivity to avoid resistant strains.

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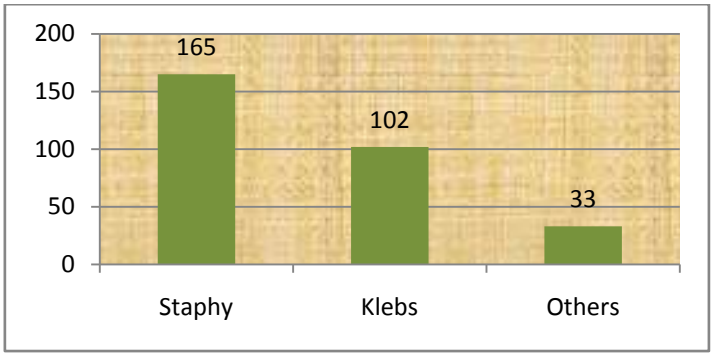
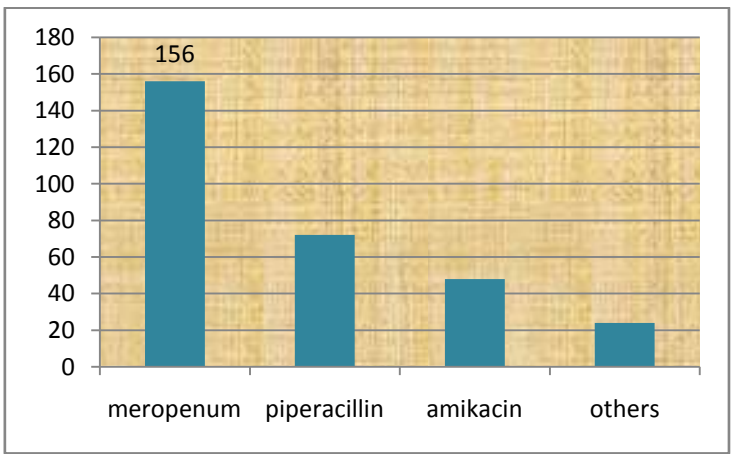


Microbial pattern



Antibiotic sensitivity pattern.