Prevalence and antibiotic susceptibility pattern of MRSA amongst patients admitted at Navodaya Medical Hospital, Raichur

Study of aerobic bacterial profile of chronic dacryocystitis

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A study on device associated nosocomial infections in the adult intensive care unite at a tertiary care hospital


Detection of carbapenemase production among members of Enterobacteriaceae from clinical samples at a rural tertiary care centre

Evaluation of two screening tests for the rapid diagnosis of Leptospirosis in Kolar region

Prevalence of Methicillin Resistant Staphylococcus aureus (MRSA) in community acquired pyoderma

Study of shunt infections in patients with tuberculous meningitis and hydrocephalus - a prospective study

Knowledge and practice regarding infection control measures amongst health care workers in S N Medical College, Bagalkot

Quality control study of hospital laundry in a tertiary care hospital

Metallo beta-lactamase mediated resistance in carbapenem resistant Gram negative bacilli: a cause of concern

Ceftaroline the new cephalosporin - detection of MIC by E strip against uropathogenic E.coli isolates

Knowledge, awareness and practices among health care workers on needle stick injuries

An aerobic study of pus sample - pathogens isolated and antibiotic susceptibility pattern

Study of carriers of Acinetobacter species among health care workers from intensive care units in a tertiary care hospital

Pathogen profile of Ventilator associated pneumonia

Neonatal perianal colonisation of drug resistant strains in Neonatal Intensive Care Units (NICUs)

Antibiogram of Salmonella species in a tertiary care hospital in 2012

Necrotizing enterocolitis in premature neonates – the putative role of early gastrointestinal colonization

Phenotypic differentiation of carbapenemases in Enterobacteriaceae

Nasal screening of health care workers for methicillin resistant Staphylococcus aureus and its antibiogram

Risk factors associated with catheter related infections (CRI) in patients on maintenance haemodialysis

Antibiotic susceptibility pattern among clinical isolates of Staphylococcus aureus with special reference to vancomycin

Retrospective evaluation of aerobic bacterial isolates of orthopedic infections

Beta-lactamase mediated resistance in gram negative clinical isolates
Abstract:

BACKGROUND: Methicillin resistant Staphylococcus aureus strains have emerged in the last decade as one of the most important nosocomial pathogens. Infected and colonized patients provide the primary reservoir and transmission is mainly through hospital staff. The risk factors which contribute to MRSA are excessive antibiotic usage, prolonged hospitalization, intravascular catheterization and hospitalisation in intensive care unit. With the increased incidence of MRSA, the effectiveness of penicillin and cephalosporins is questioned. In fact many stains of MRSA exhibit resistance to both -lactams and aminoglycosides. Hence, a knowledge of prevalence of MRSA and their antimicrobial profile becomes necessary in the selection of appropriate empirical treatment of these infections.

METHODS: This study included 200 strains of S. aureus, isolated from various clinical samples like pus, sputum, CSF, high vaginal swab, and 44 were isolated from blood cultures of neonatal septicemia cases admitted at NMC Hospital, RAICHUR. These isolates were studied by Cefoxitin DD test for routine detection of MRSA. Subsequently AST was performed for the MRSA isolates by standard Modified Kirby Bauer disc diffusion technique.

RESULTS: Out of 200 strains of S. aureus isolated from clinical samples, 115[57.5%] and out of 44 strains isolated from neonatal septicemia cases 26[59.09%] were found to be methicillin resistant. Almost all MRSA strains (94%) were resistant to penicillin, 88% to ampicillin, and 72% towards gentamicin, 96% to co-trimoxazole, 66% to erythromycin. However, all strains of clinical subjects were sensitive to vancomycin.

Conclusion: The determination of prevalence and antibiotic sensitivity pattern of MRSA will help the treating clinicians for first line treatment in referral hospitals
**BO02 STUDY OF AEROBIC BACTERIAL PROFILE OF CHRONIC DACRYOCYSTITIS**

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**Introduction:** Dacryocystitis is a clinical condition causing inflammation of lacrimal sac. If remains untreated, it leads to complications. Geographical variations have been reported with regard to etiological agents and their antimicrobial susceptibility pattern. In view of this, this study was taken up.

**Objectives:** To study aerobic bacterial species responsible for chronic dacryocystitis and their antimicrobial susceptibility pattern.

**Materials and Methods:** A study was carried out in the department of Microbiology, Belgaum Institute of Medical Sciences, Belgaum over a period of one year. A total of 48 clinically diagnosed patients with chronic dacryocystitis were taken into study. 3 samples were collected from lower conjunctival sac and everted punctum from each patient using sterile bacteriological loop which were subjected to smear preparation and inoculation on BHI broth, Mac Conkey, Blood and Chocolate agar. Colonies obtained were subjected to various biochemical tests for their identification, following which antimicrobial susceptibility testing was done using Kirby-Bauer method as per the recommendation of CSLI.

**Results with conclusions:** Out of 48 patients, 40(83%) were females and 8(17%) were males. The most common age group affected was 41-50 years(31.25%) . 6(12.5%) patients had bilateral involvement of eyes. Cultures were positive in 66.7%, among which 72.5% were pure cultures and 27.5% were mixed cultures. Predominant organism was *Staphylococcus aureus* (40.6%) among which MRSA was 38.46%, followed by *Streptococcus pneumoniae* (31.25%). Amikacin, Gentamycin, Cefotaxime, Clindamycin and Vancomycin were found as most effective antibacterial agents. Detection of specific etiological agent followed by specific antibiotic to which it is susceptible will enable the clinician in the patient management.
BO03 Determination of Minimum Inhibitory Concentration (MIC) of Vancomycin among MRSA by macrobroth dilution technique.

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Abstract

Introduction:

Methicillin Resistant Staphylococcus aureus (MRSA) is an important nosocomial as well as community pathogen. They are usually resistant to multiple classes of antibiotics. Vancomycin is the recommended therapeutic agent for treatment of infections caused by such strains.

Vancomycin resistant Staphylococcus aureus (VRSA) was first reported from the United states in 2002. Strains with intermediate resistance to vancomycin (VISA) have been reported from Japan, France, UK, Germany and India.

There has been a recent interest in the use of vancomycin MIC results to predict the outcome for patients with serious MRSA infections being treated with vancomycin. Several studies have demonstrated higher failure rate for vancomycin treatment of MRSA infections with higher MIC’s within the susceptible range.

This study was conducted to look for multidrug resistance among MRSA and determine the MIC values of vancomycin among them in our setup.

Material and methods: Fifty one MRSA isolates obtained from various clinical samples were included in the study. Antibiotic susceptibility testing was done by Kirby bauer disc diffusion method. Determination of MIC’s of vancomycin was done by macrobroth dilution method.

Results: All interpretations were made based on CLSI guidelines. Forty-five isolates were found to be multi drug resistant. Twenty two and 10 isolates had high MIC values (in the susceptible range) of 1 µg/ml and 2 µg/ml respectively.

Conclusion: All the isolates of MRSA tested for MIC by macrobroth dilution were sensitive to vancomycin. Thirty two isolates had high MIC values (1-2 µg/ml)
**BO04 A STUDY ON DEVICE ASSOCIATED NOSOCOMIAL INFECTIONS IN THE ADULT INTENSIVE CARE UNIT AT A TERTIARY CARE HOSPITAL**

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**Introduction:** The surveillance of Device associated nosocomial infections (DANI) in ICUs can reduce incidence of NI, healthcare cost & a better control of infections.

**Materials and Methods:** This study was conducted between October 2011 to December 2012 in a six bedded adult ICU. A total of 767 specimens of endotracheal aspirate, catheterized specimen urine and intravenous blood were collected from 425 eligible patients (CDC criteria). Identification of pathogens, antibiotic susceptibility testing were carried out as per standard guidelines. Extended Spectrum β-Lactamase (ESBL), Inducible AmpC β-Lactamase, Plasmid-mediated AmpC production, and Metallo-β-Lactamase (MBL) were tested for Gram negative bacilli by Combined disc diffusion method, Disk antagonism, Modified three-dimensional test, and Modified Hodge Test respectively. The data were analysed for determining DANI rate for Ventilator Associated Pneumonia (VAP), Catheter Associated Urinary Tract Infections (CA-UTI) & Central Line Associated Blood Stream Infections (CLA-BSI) using CDC guidelines.

**Results:** DANI rate for VAP, CAUTI & CLA-BSI was 4.3, 0.5 & 0.07/1000 device days respectively. *Acinetobacter baumannii* & *Pseudomonas aeruginosa* were commonest isolates. 76% of *A.baumannii* & 28% of *Ps.aeruginosa* were Pandrug resistant (PDR). ESBLs, MBL, & Plasmid-mediated AmpC production for *A.baumannii* was 58%, 68% and 73% while for *Ps.aeruginosa* was 61%, 33% & 28% respectively.

**Conclusion:** VAP was most common infection. PDR *A.baumannii* & *Ps.aeruginosa* were predominant organisms. Most common resistance mechanisms were Plasmid-mediated AmpC for *A.baumannii* & ESBLs for *Ps.aeruginosa*.
BO05 Unusual Gram negative bacilli in patients with septic shock harbouring New Delhi metallo-β-lactamase -1 gene.


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**Introduction:** *bla*$_{\text{NDM-1}}$ is a gene carried on plasmids that code for New Delhi metallo-β-lactamase-1(NDM-1), an enzyme capable of rendering β-lactam drugs inactive. Rapid transfer of this gene among related and unrelated bacterial species leads to dissemination in the hospitals causing serious health hazards. Here we report 3 cases of mortality due to infections caused by multi drug resistant Gram negative bacteria positive for the NDM-1 gene in a tertiary neurocare centre.

**Materials & Methods:** The bacterial isolates were identified and antibiograms were generated based on conventional and automated Vitek 2 Compact 60 system. Phenotypic assays such as Double Disk Synergy Test and Modified Hodge’s Test were performed to confirm the activity of metallo-β-lactamases. Plasmid DNA was isolated and Polymerase Chain Reaction was performed using specific primers for *bla*$_{\text{NDM-1}}$ gene.

**Results:** Multidrug resistant *Roultella ornitholytica* and *Acinetobacter baumannii* from tracheal aspirate and *Providencia rettgeri* from blood, positive for the gene were isolated from three post-operative patients. All three patients were put on combination drugs such as Amikacin, Piperacillin + Tazobactam and Levofloxacin. Unsuccessful antibiotic treatment and post operative complications led to their death by septic shock.

**Conclusion:** The present study is the first report, from India to the best of our knowledge, of NDM-1 harbouring *R. ornitholytica* infection resulting in mortality. Critically ill patients are always at a higher risk of developing nosocomial infections with resistant strains like NDM-1. Molecular assays aid in early identification of such organisms and must be considered as part of routine microbiological testing. A strict antibiotic policy is necessary.
BO06 DETECTION OF CARBAPENEMASE PRODUCTION AMONG MEMBERS OF ENTEROBACTERIACEAE FROM CLINICAL SAMPLES AT A RURAL TERTIARY HEALTH CARE CENTRE

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Introduction:

Carbapenems are considered the reserved drugs to treat multidrug resistant infections by gram negative bacilli. Resistance to carbapenems has been reported more commonly due to production of carbapenemase enzyme.

Objectives:

To screen the Enterobacteriaceae isolates from clinical samples at Kolar for Carbapenemase production.

To confirm the Carbapenemase production by using Modified Hodge Test and determine the Minimal Inhibitory Concentration for ertapenem using E-strips

To screen for presence of Carbapenemase producing Enterobacteriaceae in the feces of infected patients

To analyze the final outcome of the patients

Materials & methods:

All clinical samples received at SDUAHER microbiology lab between January ‘12 - January ‘13 yielding growth of isolates of Enterobacteriaceae were screened for carbapenem resistance by standard disc diffusion method. Isolates which showed positive results on screening were further subjected to Modified Hodge test and their minimal inhibitory concentration level for ertapenem determined. Simultaneously, faeces samples of patients infected with carbapenemase producing strains were collected and plated onto selective MacConkey agar (0.5 mg/l of meropenem). The case records of patients yielding carbapenem resistant organisms was analyzed for the outcome

Results:

A total of 992 isolates of Enterobacteriaceae were screened. Of these, 175 (17.6%) showed resistance to carbapenems. Modified Hodge test could detect 74/175 (42.28%) as positives. Eighty two isolates (46.25%) had MIC levels of ≥1µg/ml for ertapenem suggesting resistance. In our study the overall resistance to carbapenems was 8.3%. Most of the strains showed sensitivity to chloramphenicol followed by tetracycline. Seventy six patients could be
followed up, 60 (79%) of the patients recovered and were discharged and 7 (9%) patients expired; rest were lost to follow-up. Of the 12 stool samples collected, 6 (50%) produced growth on selective MacConkey agar.

**Conclusion:**

Carbapenem resistance among members of *Enterobacteriaceae* is on the rise. The overall resistance to carbapenems in our study was 8.3%. We found that the carbapenem resistant strains were found harbouring the gut of infected patients. There is a need to alert our physicians on judicious use of antibiotics and also follow strict hospital infection control measures.
Evaluation of two screening tests for the rapid diagnosis of Leptospirosis in Kolar region

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Introduction:

Leptospirosis is endemic in many parts of Karnataka including Kolar region. As definitive diagnosis by culture is difficult, Serological tests based on detection of antibodies remain the most practical method of diagnosis. It is often necessary to use multiple tests to make a reliable diagnosis as cases may be missed when a single test is used. Some serological tests are cumbersome and labour intensive and some are amenable to automation. Here we have evaluated 2 rapid serological tests: IgM ELISA with Indirect immunofluorescence assay(IIFA) and compared with Microscopic agglutination test(MAT).

Objectives:

1. To evaluate the Cut off titre in IIFA and MAT.
2. To evaluate IgM ELISA and IIFA as screening tests.
3. To find out the ideal test for paired samples.

Method:

Serum samples from 150 patients presenting to R.L Jalappa Hospital, Kolar and clinically suspected of Leptospirosis were screened by IgM ELISA (IVD Microlisa kit;J. Mitra co.) and IIFA (In House by using Patoc strain of Leptospira). Positive samples detected by these tests were subjected to MAT using Patoc strain of Leptospira for confirmation.

Results:

Cutoff titre for both IIFA and MAT found to be 1:80
IgM ELISA was found superior to IIFA, technically easy to do but showed false positivity rate of 10%
MAT was useful in the case of paired samples to show a rise in titre; but IIFA failed to detect change in titres.
ABSTRACT

Introduction: Methicillin-resistant Staphylococcus aureus (MRSA) is an important nosocomial pathogen. Prevalence of Methicillin-resistant Staphylococcus aureus (MRSA) strains is reported to be increasing globally. MRSA are increasingly being reported to cause community acquired infections like community acquired pyoderma. Pyodermas are the infections of the skin or its adnexa by pus producing microorganisms. The rapid emergence of multidrug resistance in most of the Gram positive bacterial isolates complicates the management of pyoderma. The study was conducted to find the prevalence of MRSA infection in community acquired pyoderma.

Materials and methods: A prospective study was performed from August 2012 to October 2012 in 75 OPD patients with pyoderma. Swabs were taken from purulent lesions and cultured on Blood agar and Mac Conkey agar. Antimicrobial sensitivity testing was performed using Kirby-Bauer disk diffusion technique for Amikacin, Ciprofloxacin, Cefoxitin, Netilimicin, Clindamycin, Fuscidicacid, Teicoplanin, Linezolid ,Mupirocin, Pristinomycin.

Results and Conclusion: Staphylococcus was the predominant isolate 64(85.3%) of which 31 isolates (48%) were MRSA. Staphylococcus showed 100% sensitivity to Netilimicin, Teicoplanin, Linezolid, Mupirocin, Pristinomycin. Resistance pattern was as follows Amikacin(17%),Ciprofloxacin(77%),Clindamycin(4.65),Fuscidic acid(11%). This study shows MRSA infections in the community is on the rise and an effective antimicrobial policy is mandatory to reduce the spread in the community.
B009 Study of shunt infections in patients with tuberculous meningitis and hydrocephalus-a  prospective study

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**Introduction:** Hydrocephalus(HCP) is a complication of tuberculous meningitis (TBM). Ventriculo-peritoneal(VP) shunt surgery is the treatment modality of TBM with HCP. Infection remains the most serious problem of VP shunt placement. The aim of this study was to find out the rate of shunt infection following shunt surgery for TBM with HCP.

**Material and methods:** This study was conducted for a period of 3 months from 1st October to 31st December 2012. A total of 70 ventric cerebrospinal fluid (CSF) and 7 shunt tips were received from patients with shunt surgery. A total of 70 CSF samples received, of which 29 were from mass lesions with HCP, 22 were from TBM with HCP, and 19 were from other causes of HCP. The CSF was subjected to cell count, Gram’s stain, culture, identification and antimicrobial susceptibility test by conventional and automated methods.

**Results:** Out of 70 shunt CSF sample 14(20%) showed growth. Among 14 culture positives 8 were Methicillin Resistant Coagulase Negative Staphylococci, 3 were Coagulase Negative Staphylococci, 2 were Pseudomonas aeruginosa and 1 was Non fermenting gram negative bacilli. Among 7 shunt tips 5 showed no growth and 2 yielded Pseudomonas aeruginosa. Antibiotic susceptibility pattern of the above isolates showed varied sensitivity / resistance results.

**Conclusion:** Methicillin Resistant Coagulase Negative Staphylococci still the commonest organism responsible for shunt infection, followed by Pseudomonas spp. Commonest age group is middle age and males are predominantly affected. Further larger study group is necessary to arrive at proper conclusion.
BO10 Knowledge And Practice Regarding Infection Control Measures Amongst Health Care Workers In S .N. Medical College, Bagalkot.

Authors: Dr. Hema S. Bhaskar, Dr. Shivakumar S. Solabannavar. S. Nijalingappa Medical College, Navanagar, Bagalkot.

Introduction: Healthcare workers should know and practice proper infection control measures in order to prevent the spread of infections among themselves and to the clients they treat. Our study was aimed at assessing the knowledge and practice among healthcare workers in S. Nijalingappa Medical College, Bagalkot.

Materials and methods: This cross-sectional study was conducted by using questionnaire which was distributed among one hundred and thirty health care workers which included Staff Nurses and Laboratory technicians which they answered and returned. The questionnaire included twelve questions about Infection Control Practices and four questions about Knowledge.

Results: Of the one hundred and thirty participants 99% were aware that hands should be washed before and after taking care of clients. But only 26% were aware that soiled linen should be separated from unsoiled linen before sending it to the laundry. 85% were aware that HIV was not transmitted through ordinary social or casual contact and only 40% answered that disinfection did not kill all the micro-organisms.

Conclusion: As there is discrepancy in the knowledge and practice among the healthcare workers about infection control practices, it is necessary to conduct periodic training programmes to keep them informed about the importance of infection control practices. There is also a need to monitor and assess them periodically.
ABSTRACT

Background: Hospital laundry are potential reservoirs of bacteria in hospitals. Several studies have shown that the laundered clothes remain contaminated even after terminal cleaning. Preventing contamination and providing clean linen and laundry should help to prevent hospital acquired infections. Being an important component in the management of patients and the role in causing hospital acquired infections the study about hospital laundry has been undertaken.

Objective: The study had two objectives: To identify the levels of bacterial contamination on laundry loads and evaluation of washing procedure.

Methods: Six samples each of blankets, bed sheets, pillow covers, surgeon suits and surgeon gowns were studied. Samples were taken from the surface of these materials by sweep plate method prior to washing procedure. The second set of samples were collected from the same materials after the washing procedure. Swabs were then processed for isolation of bacteria and then identified by colony morphology, culture characteristics and biochemical reactions according to standard techniques.

Results: Out of the 30 samples studied, 24 (80%) of them were contaminated with bacteria. Out of which 23 (76.67%) were positive for some type of gram positive cocci, among these 4 (17%) were Staphylococcus aureus and 19 (83%) were coagulase negative Staphylococcus. 14 (46.67%) contained Clostridium species and 2 (6.67%) contained Escherichia coli. After washing, 25 (83%) of the clothes were sterile. 5 clothes were still contaminated, out of which Coagulase negative Staphylococcus were isolated from 4 and Clostridium species from 3 clothes. No isolates of Escherichia coli were found after washing.

Conclusion: Though terminal cleaning fails to completely eliminate bacteria from the laundered fabrics, it is effective in considerable reduction in bacterial growth.
Introduction:
The emergence of acquired metallo-β-lactamases (MBL) in Gram-negative bacilli is becoming a therapeutic challenge, as these enzymes usually possess a broad hydrolysis profile that includes carbapenems and extended-spectrum β-lactams.

Material and Methods:
A total of 100 non duplicate resistant isolates were tested for the presence of metallo-β-lactamases by Combined disc test and Double disk synergy test with various distance from edge to edge (10mm,15mm,20mm), between the IPM and EDTA.

Result:
Of the 100 IMP resistant isolates screened 30 (30%) were MBL positive by phenotypic methods i.e, double disk synergy test and combined disc test.

All the 30MBL positive isolates had shown synergy (100%) at 10 mm distance, 27(90%) isolates had shown synergy at 15 mm distance and 13 (43.4%) isolates were shown synergy at 20 mm distance. All the 30 MBL producers were multidrug resistant. Of the 30 MBL isolates, 27(90%) were sensitive to colistin (CL). All MBL positive *Pseudomonas aeruginosa* were sensitive to polymyxin B 100μg.

Conclusion:
MBL producing isolates are associated with a higher morbidity and mortality. Moreover given the fact that MBLs will hydrolyze all classes of β-lactams and that we are several years away from the development of a safe therapeutic antibiotic. Their continued spread would be a clinical disaster. In present study validates the 10mm to be the optimal distance for DDST test for MBL detection and the use of combination tests would increase the sensitivity to detect the presence of MBL among the clinical isolates of Gram-negative bacilli.

Therefore, it is recommended that MBL detection must be done in all diagnostic laboratories on a daily basis to prevent the emergence and spread of such organisms.

**Key words:** Carbapenem, CDT, DDST, EDTA, Gram negative bacilli
B013 Ceftaroline the new cephalosporin – Detection of MIC by E strip against Uropathogenic *E.coli* isolates.

**Authors**: Dr G.S.Vijay Kumar, Dr Ramya S.R. Post Graduate, J.S.S. Medical College

**Introduction**: Ceftaroline fosamil is a new broad spectrum bactericidal cephalosporin effective against community and hospital acquired Gram negative uropathogens and is found to be very effective against MRSA and Enterococcus isolates. Its action is limited against ESBL producing Enterobacteriaceae and Gram negative non fermenters.

**Methodology**: 50 Uropathogenic *E.coli* clinical isolates were tested to detect MIC against ceftaroline using E Strip, antibacterial efficacy of the new drug was compared with ceftriaxone, imipenem, nitrofurantoin and amikacin discs by Kirby bauer disc diffusion. 30 confirmed ESBL *E.coli* and 20 non ESBL *E.coli* uropathogens isolates were included and ATCC *E.coli* 2922 was the control strain. CLSI guidelines was followed during AST.

**Results**: ESBL *E.coli* showed 100% susceptibility to Nitrofurantoin and Imipenem. 24 (80%) ESBL *E.coli* isolates were susceptible to Amikacin. Ceftaroline susceptibility was seen only in 20%(8/30)isolates. 100% resistance to Ceftriaxone was exhibited by ESBL *E.coli*. Non ESBL *E.coli* showed 100% Susceptibility to Imipenem, Nitrofurantoin, Ceftaroline and Amikacin. 50% were Susceptible to Ceftriaxone. MIC for Ceftaroline was 2 μg/ml to 32 μg/ml for ESBL producers, 12 showed 8 μg/ml, 15 showed an MIC of 16 μg/ml and 3 showed 32 μg/ml MIC. Non ESBL *E.coli* showed an MIC of 2 μg/ml.

**Conclusion**: Ceftaroline is an effective broad spectrum antibiotic effective against Non ESBL *E.coli*, its action against ESBL is not very convincing. Combination with betalactamase inhibitors may be effective.

**Key words**: Ceftaroline, ESBL *E.coli*, MIC.
BO14 Knowledge, awareness and practices among health care workers on needle-stick injuries.

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Abstract

Introduction: Health care workers are always at greater risk of infection by needle-stick injuries (NSIs) owing to their greater handling of sharps in various situations. This study was carried out to assess knowledge, awareness and practices pertaining to needle-stick injuries among the technicians, attenders and sweepers as this class bores equal risk and tends to be unaware or are aware but tend to be negligent regarding the same.

Methods: This was a cross sectional study wherein a 18 item questionnaire was distributed among technicians, attenders and sweepers from different departments of S.N. Medical College and HSK Hospital and Research Centre, Bagalkot and collected back, to obtain information about awareness and practices followed regarding needle-stick injuries.

Results: A total of 103 candidates were considered for this study, of which 40 (38.83%) had suffered NSI, 56 (54.36%) had knowledge that HIV, Hepatitis B and Hepatitis C are all transmitted through NSI. 25 (24.27%) knew that maximum risk of transmission through NSI is of Hepatitis B. 72 (69.90%) have knowledge of Universal Precautions and management of waste sharps. 85 (82.52%) dint have knowledge regarding reporting of NSI.

Conclusion: The survey revealed that knowledge of health care workers about risks associated with NSIs and use of preventive measures was inadequate. A Standard operating procedure (SOP) should be formulated regarding NSIs in all health institutions. It should outline precautions to be taken when dealing with blood and other body fluids. It should also contain reporting of all needle-stick injuries. Health care workers should be aware of hazards, preventive measures and post-exposure prophylaxis (PEP) to NSIs. A hospital-wide hepatitis immunization programme should be started.
B015 AN AEROBIC STUDY OF PUS SAMPLE-PATHOGENS ISOLATED AND ANTIBIOTIC SUSCEPTIBILITY PATTERN

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INTRODUCTION:

Human skin acts as an excellent barrier to infection, provided it is not breached. Superficial infections are mostly caused by Gram positive cocci. Gram negative bacilli can cause wound infections and infections in areas likely to be contaminated by faecal flora.

OBJECTIVE:

To study the bacteriological profile and antibiotic sensitivity pattern of pus sample.

METHODS:

250 pus samples were collected with sterile cotton swabs and then inoculated to MacConkey agar and Blood agar, incubated at 37°C for 24hrs, followed by identification of isolates based on their cultural characteristics and reactions in standard biochemical tests. All the isolates were tested for Antimicrobial susceptibility by the disc diffusion technique according to CLSI guidelines on Muller Hinton Agar.

RESULTS:

Out of the 250 samples, 162 were culture positive for bacterial growth. 62.8% of the samples showed monomicrobial and 5% polymicrobial infection. Escherichia coli (18%, n=29) and Klebsiella spp (18%, n=29) were the most frequently isolated pathogenic bacteria. Most of these strains were sensitive to Aminoglycosides (68.9%) and resistant to Fluroquinolones (82.75%). ESBL production was 82.75% in Escherichia coli & 89.6% in Klebsiella species. Staphylococcus aureus was the most common gram positive organism isolated (n=24, 14.8%), among which MRSA was 79.16% (n=19).

CONCLUSION:

This study has shown that a majority of the isolates were gram negative bacteria. There is a need for continuous monitoring to determine the susceptibility pattern of common isolates which are found in the hospital, which provide clinicians and surgeons, valuable information upon which empiric antimicrobial therapy of infection can be predicted.
STUDY OF CARRIERS OF ACINETOBACTER SPECIES AMONG HEALTH CARE WORKERS FROM INTENSIVE CARE UNITS IN A TERTIARY CARE HOSPITAL

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Background: Acinetobacter baumannii is a common pathogen in ICUs attended with higher mortality and morbidity with increasingly limited therapeutic options. Limited data on carriers of Acinetobacter species and their role as source of nosocomial infections necessitated the present study.

Objectives: Incidence of carriers and Antibiogram typing of Acinetobacter spp. from healthy health care workers (HCWs) from different ICUs and to assess role of carriers as source of nosocomial infections.

Material and Methods: Specimens from 82 HCWs (72 staff nurses and 10 attenders) from ICUs and 50 from General wards were collected from nose, throat, axilla and hands and processed by standard laboratory procedures. Antibiogram typing done and association of carriers with cases done by Acinetobacter spp. with identical antibiogram type from carriers and cases. Distribution of carriers was assessed by Chi-square test.

Results: Incidence of Acinetobacter baumannii carriers was 14.63%, (15.28% Vs 10%, P=0.55 NS) in nurses and attenders and (11.11% Vs 16.36 % P=0.39 NS) among male and female HCWs respectively. Carrier rate was 30% and 28.57% in SICU and NICU respectively with none from CCU, ICCU and GENERAL WARDS. Carrier rate was 4.1% at hands, axilla and throat. Four antibiogram types of Acinetobacter baumannii with temporospatial association with 12 nosocomial infections were observed. Distribution of
Carriers in different ICUs was not statistically significant. Carrier rate decreased to 4.87% in repeat samples collected from 12 carriers.

**Conclusions:** Role of A. baumannii carriers (HCWs) as source of nosocomial infections is doubtful representing transient colonization. Further studies needed to explore other sources like ICU environment and colonized patients.

**Key words:** Pseudomonas aeruginosa, Health Care Workers (HCWs), Carriers
B017 Pathogen profile of Ventilator associated pneumonia

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Rationale : Ventilator-associated pneumonia (VAP) is a common complication of ventilatory support for patients with acute respiratory failure and is the second most frequent infection in the intensive care units (ICUs). It is associated with increased morbidity and mortality despite the continuous advances in diagnosis and treatment techniques. Awareness of the microbiology of VAP is essential for selecting optimal antibiotic therapy.

Objective To evaluate the microbiological profile of patients with VAP admitted to the ICUs at our hospital

Materials & Methods : This was a cross sectional study. VAP data over a period of 24 months (Nov 2010 – Oct 2012) in a tertiary care ICU was retrospectively analyzed. The patients were stratified by age, sex, infection type, identified pathogens and ICU stay outcome.

Results : The VAP rates was identified to be 5.82 per 1000 Ventilator days. The mean of days under mechanical ventilation of infected patients was 10.5 days. It was found that 36.8% of the patients had polymicrobial infection. Acinetobacter baumannii was the predominant pathogen in early and late onset VAP, followed by Pseudomonas aeruginosa, Klebsiella pneumonia, Candida spp and Staphylococcus aureus. Most of the isolates were multidrug-resistant producing Carbapenemase and ESBLs. Mortality among VAP patients was 13.15%.

Conclusions : Knowing the local microbial flora causing VAP and effective infection control practices are essential to improve clinical outcomes.
BO18 Neonatal perianal colonisation of drug resistant strains in Neonatal Intensive Care Units (NICUs)

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Introduction:
Bacterial colonization of the neonatal gastrointestinal tract has emerged as an issue involving nutrition, immunity and increased susceptibility to infections leading to increased mortality. Gram-negative bacilli (GNB) have emerged as the principle cause of nosocomial infections. As bacterial strains become increasingly resistant to standard antimicrobial therapy, measures to control and prevent this problem are essential.

Objectives: To study neonatal bacterial colonization of drug resistant strains in NICUs.

Materials & Methods: A prospective study where 100 perianal swabs were collected on third day from all infants admitted in the NICUs. Swabs were processed and isolates identified using conventional methods. Resistant strains were detected as per CLSI guidelines.

Results: Out of 100 samples, 57 were from NICU & 43 from Sick Baby Ward (SBW). 4% showed No growth, 55% single organism, dual organisms from 38%, 3 organisms in 3%. Total 118 GNBs & 21 Enterococcus spp were isolated. Among GNBs 44%(25/57) of E coli, 38% (15/40) of Klebsiella spp, 24% (5/21) of Enterobacter spp, total 45(38%) were MBL producers. 6 (5%) were ESBL producers & AmpC producers were not detected. Out of 21 Enterococci 6(29%) were vancomycin resistant.

Neonates treated with 4 or more antibiotics, showed increased resistant colonizers.

Conclusion: The high prevalence of drug resistance isolates in NICU patients shows the importance of implementation of infection control measures and strict antibiotic policies.
BO19Antibiogram of Salmonella species in a tertiary care hospital in 2012

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Introduction: CLSI 2012 guidelines recommend new Ciprofloxacin disc diffusion and MIC interpretive criteria for Salmonella typhi and extraintestinal Salmonella. It has also been stated that Nalidixic acid, considered a surrogate marker for fluoroquinolone resistance, may not detect all mechanisms of the same. The increasing trend of fluoroquinolone resistance necessitates the need for MIC testing.

Objectives: The aim of our study was to analyze the susceptibility pattern of Salmonella species in our hospital, to know the range of MIC’s for Ciprofloxacin and Azithromycin and to also detect the presence of multi drug resistance.

Materials and Methods: From Jan to Dec 2012, 343 isolates of Salmonella enterica serovar typhi and Salmonella enterica serovar paratyphi A were included in the study. Blood culture was performed using BacT Alert 3D. Identification was done by standard biochemical tests and slide agglutination, and antibiotic susceptibility test for Ceftriaxone, Chloramphenicol, Cotrimoxazole, Nalidixic acid (and for few isolates using Ciprofloxacin disc) was done by Kirby Bauer Disc diffusion method and MIC determination by the E-test for Ciprofloxacin and Azithromycin. CLSI guidelines were used for interpretation for all antibiotics except azithromycin. BSAC guidelines were used for interpretation of Azithromycin MIC.

Results: Total culture positives were 343, adults: 217 and children: 126; Males: 200 and females: 143. There were 251 isolates of S. typhi and 92 S. paratyphi A. Nalidixic acid resistance was 94% in S.typhi and 96% in S. paratyphi A. The MIC’s for Ciprofloxacin ranged from 0.06 - >=32 µg/ml in S.typhi and 0.06 - 1µg/ml in S.paratyphi A. Both the species were susceptible to Azithromycin, MIC’s ranging from 0.125 -12 µg/ml. There were 2 isolates of S.typhi which were sensitive to Nalidixic acid but moderately sensitive to Ciprofloxacin as per the MIC’s. No resistance to other drugs was detected in our study.

Conclusion: Though Nalidixic acid serves as a reliable surrogate marker of fluoroquinolone resistance, however, MIC testing would provide a better insight into the changing patterns in susceptibility.
BO20 Necrotizing enterocolitis in premature neonates – the putative role of early gastrointestinal colonization

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Background

Necrotizing enterocolitis (NEC) is a gastrointestinal emergency and major cause of morbidity in the neonatal intensive care unit (NICU). We studied the risk factors, pattern and type of microorganisms colonizing the gastrointestinal tract of neonates with NEC, their antibiotic susceptibility and its role in NEC.

Material and methods

40 neonates were included in our prospective case control study over 15 months, 18 with NEC and 22 with no NEC. Risk factors for NEC were assessed. Oral and rectal swabs collected on day 1, day 3 & day 7 and processed. AST was performed on the isolates based on CLSI guidelines.

Results and conclusion

Of neonates with NEC 100 % were preterm, delivered by LSCS, on parenteral nutrition, 44.45 % were of LBW, 55. 55 % of VLBW, 88.88 % were given formula feeds and none were colonized on day 1. Klebsiella spp, Enterobacter spp, Acinetobacter spp & S.aureus were isolated relatively more from neonates with NEC. Resistance to antibiotics used for treatment- ampicillin (52-57%), gentamycin (31-82%), cefotaxime (43-80%) for NEC was found. Risk factor association and change in antibiotic resistance prevalence was statistically significant. Delayed colonization, also pathogenic strains are associated with NEC. Premature infants in NICU acquire many nosocomial pathogens as flora, an issue of concern.

Key words: Necrotizing enterocolitis, NICU, gastrointestinal flora
BO21 Phenotypic differentiation of carbapenemases in Enterobacteriaceae.

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Introduction:

Carbapenems are usually the choice of antimicrobials in infections caused by members of Enterobacteriaceae family producing ESBL and Amp C. Resistance to carbapenems is a significant therapeutic threat due to the production of enzymes, carbapenemases which are divided into class A, class B and class D. Phenotypic detection and differentiation of type of carbapenemases in carbapenem resistant Enterobacteriaceae(CRE) is important for proper infection control and appropriate patient management.

Materials and methods:

A total of 70 isolates of Enterobacteriaceae were screened for production of carbapenemases. The positive isolates were subjected to simple phenotypic detection methods using the inhibitors, phenyl boronic acid(PBA) and EDTA differentiating them to class A(KPC) and class B(MBL) carbapenemases.

Results:

A total of 7(10%) were resistant to carbapenems of which 3 were E.coli, 2 were Klebsiella pneumonia and Citrobacter species each. 4 (57%) were MBL producers and 1(14%) KPC producer. 2(28%) of them showed negative for both types.

Conclusion:

We conclude from the present study that Class B carbapenemases appear to be predominant among carbapenemase producing Enterobacteriaceae in our institution. This phenotypic method is very helpful to detect carbapenemase production and provides a simple algorithm for the differentiation of KPC and MBL enzymes.
BO22 NASAL SCREENING OF HEALTH CARE WORKERS FOR METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS AND ITS ANTIBIOMGRAM

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INTRODUCTION: Asymptomatically colonized health care workers are the major sources of methicillin resistant Staphylococcus aureus (MRSA) in the hospital environment and are more commonly identified as links in the transmission of MRSA among patients. Nosocomial infections due to MRSA is a known cause of increased hospital stay, morbidity and mortality especially in the critically ill patients. Hence, the aim of the study was to screen for nasal carriage of MRSA in health care workers & to determine the antibiogram.

MATERIALS & METHODS: The study included 90 health care workers (23 doctors, 52 nurses & 15 lab-technicians) working in various wards in KVGMC Hospital. Sterile cotton swabs pre-moistened with sterile normal saline were used to collect nasal swabs from the anterior nares. S. aureus were identified by morphology on Gram stain, biochemical tests and colony characteristics. Subsequently antibiotic sensitivity was done based on Kirby-Bauer disk diffusion method. Methicillin resistance was tested using cephoxitin (30µg) discs.

RESULTS & CONCLUSION: 9 MRSA were isolated from 14 S. aureus out of which 7 (77.7%) were from nurses & 2(22.3%) were from lab technicians. The MRSA were multidrug resistant but all were susceptible to vancomycin & linezolid. Hence, nurses should be screened & decolonized at periodic intervals before & after shifting to different wards so as to prevent nosocomial infections.
BO23 RISK FACTORS ASSOCIATED WITH CATHETER RELATED INFECTIONS (CRI) IN PATIENTS ON MAINTENANCE HAEMODIALYSIS

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Objective: To determine the incidence and associated risk factors for catheter related infections in patients on maintenance haemodialysis.

Methods: Eighty-seven haemodialysis patients (56 M; 31 F) were enrolled in the study. After insertion of dual lumen catheter, patients were followed up till its removal. Nasal swabs were also collected before insertion. At each dialysis session, catheters were examined for any evidence of local infection or sepsis. In case of suspicion, local pus swab, blood culture samples and the catheter tip were sent to microbiology laboratory and patients were empirically administered vancomycin. Data obtained was examined for relationship of CRI with clinical and socio-demographic risk factors.

Results: Bacterial colonization (>15 CFU) was seen in 53 catheters (61%) out of which 24 (45.2%) catheter tips were colonized by S. aureus. Bacteremia was present in 18 (20.7%) patients and P. aeruginosa was the most common organism isolated. Statistically significant factors associated with CRI included history of bacteremia, presence of diabetes mellitus, long duration (>15 days) of catheterization and antibiotic use within 3 months (p < 0.05 for all). However, the age, gender and staphylococcal nasal carriage did not correlate with increased risk of infection.

Conclusions: P. aeruginosa is the most common organism in catheter related bacteremia which may have a bearing on our current antibiotic policy. Also, early initiation of hemodialysis through fistula may help reduce the CRI rate.
BO24 ANTIBIOTIC SUSCEPTIBILITY PATTERN AMONG CLINICAL ISOLATES OF STAPHYLOCOCCUS AUREUS WITH SPECIAL REFERENCE TO VANCOMYCIN

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Introduction:

Staphylococcus has long been recognized as a major pathogen of community and hospital acquired infections. Vancomycin has been widely used in the treatment of infections caused by Methicillin resistant Staphylococcus aureus(MRSA) and emergence of Vancomycin intermediate Staphylococcal aureus and Vancomycin resistant Staphylococcus aureus (VISA and VRSA) has been of great concern in clinical setting.

This study was done to evaluate the possible presence of VISA and VRSA in our hospital.

Materials and methods:

Eighty three S.aureus were isolated from various clinical samples like pus, sputum, blood, body fluids, CSF, ear swab and endotracheal tube.

Kirby Bauer disc diffusion method was used to determine the susceptibility of these 83 Staphylococcal strains to common antibiotics. Cefoxitin disc (30 µg) was used to identify methicillin resistance.

The minimum inhibitory concentration (MIC) of Vancomycin for MRSA isolates was carried out according to standard methods using agar dilution method and E-test. Heteroresistance to vancomycin in staphylococcus aureus (hVRSA) were detected by using BHI screen agar with 4µg/ml vancomycin and 16g/lit casein.

Results:

Out of 83 Staphylococcal isolates, Most of the isolates were resistant to amoxyclav and ciprofloxacin(97.6% and 90.4% respectively). 100% sensitivity was seen with Linezolid and Mupirocin.

Out of 83 Staphylococcus aureus isolates,58 were identified as MRSA. Among these isolates two showed intermediate susceptibility to vancomycin (MIC- 4µg/ml). None of the isolates were resistant to vancomycin.Among susceptible strains,16 showed heteroresistance to vancomycin.

Conclusion:

The present study reveals the emergence of VISA/VRSA and indicates the magnitude of antibiotic resistance in and around the study area. The major cause of this may be unawareness and indiscriminate use of broad-spectrum antibiotics.
BO25 RETROSPECTIVE EVALUATION OF AEROBIC BACTERIAL ISOLATES
OF ORTHOPEDIC INFECTIONS

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Introduction

Orthopedic infections are associated with a high morbidity, increased mortality and substantial cost and often require aggressive antibiotic therapy. Bone infections remains a serious therapeutic challenge and increasing resistance has complicated management of these infections. Delayed or ineffective treatment causes significant morbidity in terms of pain, loss of function and the need for further surgery and antibiotics.

Objectives

To study the bacteriological spectrum and antibiotic susceptibility pattern of isolates of orthopedic infections

Materials and Methods

We performed a retrospective review of clinical and microbiological data sets using the access database of patients admitted in orthopedic ward from January 2012 to December 2012.

Results

Out of 98 samples, 72 (73.46%) yielded pure growth, 21 (21.42%) mixed growth, 5 (5.1%) showed no growth. Out of 115 bacterial strains isolated 56 (48.69%) were Staphylococci and 59 (51.3%) were Gram negative bacilli.

Among the Staphylococcus spp, MRSA (50%), MSSA (33.9%), MSCONS (9%) and MRCONS (7.1%). Susceptibility pattern of MRSA isolates were 68% to cotrimaxozole, 43% to clindamycin, 29% to erythromycin, 18% to gentamycin and all MRSA strains were sensitive to Vancomycin and Linezolid.

Among Gram negative bacilli, Pseudomonas (25.4%), Escherichia coli (22%), Enterobacter (22%), Klebsiella (15.3%), Citrobacter (8.4%), Acinetobacter (3.3%) and Proteus (3.3%). Pseudomonas strains showed 100% sensitivity to imipenem, 87% to piperacillin-tazobactum, 73% to amikacin, 66% to cefotaxime, 47% to ciprofloxacin, 27% to gentamycin.

Conclusion

Knowing the prevalence and the antibiotic susceptibility pattern of the isolates helps us to guide the clinician to select the most appropriate antibiotics thereby preventing indiscriminate use of antibiotics.
INTRODUCTION:

Beta-lactam antibiotics are most widely used agents for gram-negative bacterial (GNB) infections. The predominant mechanism by which they withstand these antimicrobials is by synthesis of β-lactamases such as extended-spectrum beta-lactamases (ESBLs) and AmpC.

MATERIALS AND METHODS:

This study was conducted in Microbiology laboratory, Kasturba Medical College, Mangalore, in March 2012. Various clinical specimens were collected and processed by standard microbiological techniques. Isolates were identified and antibiotic susceptibility testing was done by modified Kirby-Bauer method. The combined disc method was done for ESBL detection. AmpC was detected by AmpC disk test.

RESULTS:

A total of 138 GNB were isolated. ESBL was detected in 61.1% of E. coli and 42.1% of Klebsiella. AmpC production was detected in 34.1% of GNB. Majority of E.coli, Klebsiella, Acinetobacter and Enterobacter showed multidrug resistance. Among antibiotics tested, E. coli and Klebsiella were most susceptible to Amikacin followed by β-lactamase inhibitor combinations. All Acinetobacter strains were susceptible to Cefoperazone/Sulbactam combination. Citrobacter showed 100% susceptibility to Amikacin, Cefoperazone-sulbactam, Amoxyclav and Ampicillin-sulbactum. All organisms were least sensitive to Ampicillin, but susceptibility increased when combined with a β-lactamase inhibitor.

CONCLUSION:

Resistance in GNB is increasing at an alarming rate. Indiscriminate use of third generation cephalosporins in treatment is partly responsible for the emergence of resistance. Judicious use of antibiotics and strict infection control procedures can play a significant role in reducing the emerging drug resistance.