RISKFACTORS AND ANTIBIOTIC PROFILE OF MULTI DRUG RESISTANT ACINETOBACTERINFECTIONINVENTILATOR ASSOCIATED PNEUMONIA (VAP) PATIENTS

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ABSTRACT

Background: The 2nd common healthcare associated infection in critically ill patients is pneumonia which accounting to 27% among seriously sick patients.Ventilator associated pneumonia (VAP) is defined as pneumonia occurring after 48 hours of endotracheal intubation & this study was planned tostudy aerobic bacterial agents and their antibiogram in ventilator associated pneumonia patients..

Material and Method:Total 100 patient who were having modified Clinical Pulmonary Infection Score (CPIS) >6 and culture of endotracheal aspirate with growth thresholds greater than equal to 10^6cfu/ml was taken as a case of VAP and further processed for detection of etiological agents and there antibiotic sensitivity testing as per standard microbiological guidelines.

Result: Out of 100 VAP cases studied, 133 bacteria were isolated, amongst them commonest isolate was Acinetobacterspeciesin 62 cases (46.61%) , followed by Klebseillapneumoniaein 35 cases (27.77%) and *Pseudomonas aeruginosa* in 23 cases(18.25%)etc.56(90.32%) isolates of Acinetobacter were found Multidrug resistant with Ampicillin,Cephalosporines , Flouroquinilone and Carbapenems.

Conclusion: Various preventive measuressuchasstrictinfection control measures,rational useofantibiotics,surveillanceprograms etc. arecrucialtocontrolinfectionsduetoHospital associated infection inpatientsadmittedtoICU and incidence of VAP can be reduced.

Key Words – Multi-drugresistant, Acinetobacter species, ventilator-associatedpneumonia, ICU.

Introduction – Pneumonia is the second most common Health care associated infection in critically ill patients [1]. Ventilator associated pneumonia (VAP) is defined as pneumonia occurring after 48 hours of endotracheal intubation & initiation of mechanical ventilation (MV) including pneumonia developing after extubation[2]. VAP is most frequent ICU acquired infection accounting to 9 % to 27% of patient's intubated[3,4]. *Acineto bacterbaumannii,* a gram-negative, cocco-bacillus is found a bundantly in moist environment, has emerged as an important infectious agent to hospitals worldwide[5]. It can accumulate various mechanisms of drug resistance and become a strains that are resistant to all commercially available antibiotics[6].

Acinetobacter is a commoncauseoflate-onsetVAP,whichoccursmorethan5-7days after admission to the hospital, and are associated with a higher mortality rate than other bacteria[7].

For *Acinetobacter*, the following definitions were established based on the extent of resistance to antibiotics which were used as a treatments for *Acinetobacter*(ie, cephalosporins, fluoro quinolones, and carbapenems) **Multidrug-resistant**: isolate is non-susceptible to at least one agent in three or more antibiotic classes. **Extensively drug-resistant**: isolate is non-susceptible to at least one agent in all but two or fewer antibiotic classes **while in Pandrug-resistant** isolate shows resistance to all antibiotic agents[8].

Materials and Methods –This was a hospital based ,cross sectional study done for a period of 16 months since January 2013 to April 2014 on patients admitted in thefour Intensive Care Units i.e. Intensive Cardiac Care Unit (ICCU), Medical Intensive Care Unit (MICU), Respiratory Intensive Care Unit (RICU) and Surgical Intensive Care Unit (SICU) and informed consent was obtained from each patient's next of kin.

469 patients were on ventilator for more than 48 hours.Out of 469 patients, 100 patients were included in the present study according to the inclusion criteria.

- **Inclusion criteria:**

1) Adult patients (over 18 year of age) of both gender &clinically suspected as ventilator associated pneumonia.

- **Exclusion Criteria:**

1) Patients on mechanical ventilation for less than 48 hrs.

2) Patients in ICU & not receiving ventilator support and have developed pneumonia.

The diagnosis of VAP was based on clinical and microbiological criteria[4]. Patient on mechanical ventilation for more than 48 hours with modified Clinical Pulmonary Infection Score (CPIS) >6 [9,10]and culture of endo tracheal aspirate with growth thresholds greater than equal to 10^6cfu/ml[15] was taken as a case of VAP. Endo tracheal aspirate (EA) samples from the VAP patients were collected with proper aseptic precautions and sent immediately to the microbiology laboratory for processing and identification[11].Theaspiratespecimens showingpresenceof25 polymorphonuclear(PMN) leucocytesperhigh powerfield(HPF)on Gramstainwereprocessed further.Identification of *Acinetobacter species* wasmade as per standard laboratory protocol.[12,13](Gram staining, colony morphology, motility, oxidase, catalase and Indole, urease, citrate, gelatinhydrolysis, glucose and lactose fermentation and oxidation and growth at37°C. Antibiotic susceptibility testing of these bacterial isolates were done by employing Kirby Bauer Disk Diffusion method on Muller Hinton agar(MHA) plate as per CLSI guidelines 2013[14]. and following antimicrobial agents were used: Ampicillin (10 µg), Cefotaxime (30 µg), Ceftazidime (30 µg), Ciprofloxacin (5 µg), Gentamicin (10 µg), Co-trimoxazole (25 µg), Imipenem (10 µg), Meropenem (10µg), Piperacillin-Tazobactam(100/10 µg), Aztreonam(30 µg), Tobramycin(10 µg), Amikacin(30 µg), Colistin(10 µg), Gatifloxacin(5 µg).All the discs were procured commercially from Hi-media laboratories limited except Meropenem disc which was procured from BD Company. The quality control for all the disc (both Hi-media & BD disc) were done by using E.coli ATCC 25922, Pseudomonas aeruginosa ATCC 27853.

RESULT: In study time 767 patients were admitted in various ICUs, 469 patients were on mechanical ventilation for more than 48 hours among them only 100 patients fulfilled the clinical and microbiological criteria with CPIS > 6 for the diagnosis of VAP. In the present study total 133 organisms (polymicrobial infection was also seen) were isolated from culture of endotracheal aspirates.

The isolation was monomicrobial in 65 cases (65%) and polymicrobial in 35 cases (35%).

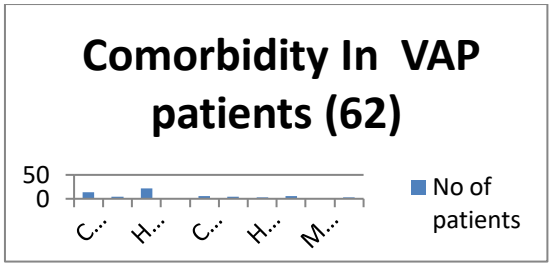
Twenty five cases (18.79%) were categorized under early onset group and 108 (81.21%) under the late onset group as shown in Table 1. The majority i.e. 94.73% of bacterial isolates causing VAP were found to be gram negative bacilli. Acinetobacter speciesaccounted for a maximum 49.20% of VAP cases followed by *Klebseillapneumoniae* (27.77%) and *Pseudomonas aeruginosa* (18.25%) Variousother clinical conditions andhistory of antibiotics received before commencemen t of VAPinthese 100 patients were studied.The findings are displayed inTable 2.

Table-1: Distribution of organism in early & late onset of VAP

Organisms	Early onset	Late onset	Total (%) Total no of isolates=133
Acinetobacter species	04 (3%)	58 (43.61%)	62(46.61%)
Klebseilla pneumonia	06(4.5%)	29 (21.80%)	35(26.31%)
Pseudomonas aeruginosa	06 (4.5%)	17 (12.78%)	23(17.29%)
E.coli	01 (0.75%)	-	01(0.75%)
Klebsiellaoxytoca	-	02 (1.5%)	02(1.5%)
Serratiamarcesence	01 (0.75%)	-	01(0.75%)
Citrobacter species	02 (1.5%)	-	02(1.5%)
MSSA	05 (3.76%)	-	05(3.75%)
MRSA	-	02 (1.5%)	02(1.5%)
Total	25 (18.79%)	108 (81.21%)	133 (100%)

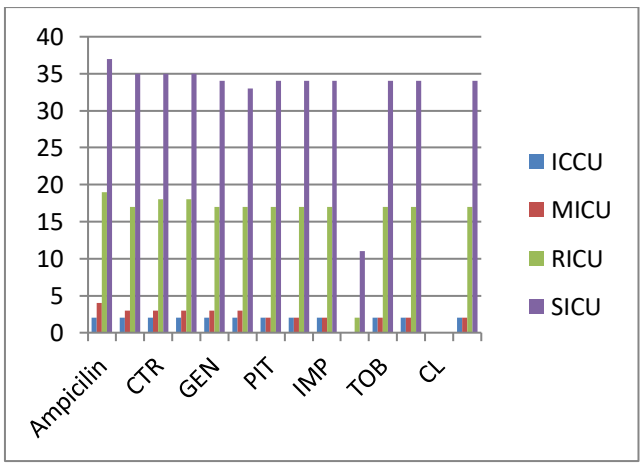
Table2 Associated clinical condition *in* VAP patients with Acineto bacterco infection:-

Associatedclinicalcondition	Out of total patients(62)	%
CVA	13	20.96 %
Burns	4	6.45 %
Head Trauma	22	35.48%
Acute LVF	2	3.22%
CKD	5	8.06%
Encephaopathy	4	3%
Hemiparesis	3	2.25%
OP poisoining	5	8.06%
Meningoencephalitis	1	0.75%
Perotinitis	3	2.25%



The Resistance pattern of *Acinetobacter species* from our study is mentioned in table 3.

Drugs	ICCU	MICU	RICU	SICU	Total =62 (%)
Ampicilin(AMP)	02	04	19	37	62(100%)
Ciprofloxacin(CIP)	02	03	17	35	57 (91.93%)
Ceftriaxon(CTR)	02	03	18	35	58(93.54%)
Ceftazidime(CAZ)	02	03	18	35	58 (93.54%)
Gentamicin(GEN)	02	03	17	34	56 (90.32%)
Cotrimoxazol(COT)	02	03	17	33	55(88.70%)
Pipracillin-Tazobactam(PIT)	02	02	17	34	56 (90.32%)
Meropenem(MRP)	02	02	17	34	56 (90.32%)
Imipinem (IMP)	02	02	17	34	56 (90.32%)
Azotreonam (AZ)	00	00	02	11	13 (20.96%)
Tobramicin(TOB)	02	02	17	34	56 (90.32%)
Gatifloxacin(GAT)	02	02	17	34	56 (90.32%)
Colistin(COL)	00	00	00	00	00(00%)
Amikacin(AK)	02	02	17	34	55 (88.70%)



Discussion – Occurrence of VAP inventilated patients ranges from7% to more than40%[16]. Among non- fermenting GNB

*Acinetobacter*species are commonest cause ofVAP[6].As this organism survives both inmoistand dry conditions for a longer duration,it often leads to no socomial outbreaks[17]. In the present study, 62%VAP cases could be attributed to *Acinetobacter species*, Baraibar*etal*. Have reported8.1% VAP cases caused by *Acinetobacter*spp[6]. Factors which are causative for the development of *Acinetobacter*spp. VAP are Head Trauma, CVA, OP poisoning, CKD, Encephaopathy, Burns, Peritonitis, Hemiparesis, Acute LVF, Meningoencephalitis. Numerous studies haves how that VAP increases death rate among critically ill patients, especially in cases where the pneumonia is due to a multidrug-resistant pathogen[18]. Incidence of VAP due to MDR *Acinetobacter* spp.is not uncommon and is well reported[7,16,19]. The bacteria quickly develop resistance to various groups of anti microbials including aminoglycosides, fluoroquinolones, and carbapenems[20]. The irrational use of carbapenems and fluroquinolones has been associated with the emergence of MDR *Acinetobacter*[21].

Conclusion –Ventilator Associated Pneumonia dueto*Acinetobacter*spp. Is most dreadful complications that occur in the critical care setting and pose a serious challenge in choosing the right anti biotic for the treatment and care. Various strategies like strict infection control and antibiotic resistance surveillance programs,judicious prescribe of anti bioticsis crucial to control infections by MDR *Acinetobacterbaumannii*..

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DUPLICATED GALLBLADDER PRESENTING WITH ACUTE ACALCULOUS CHOLECYSTITIS :A RARE CASE STUDY

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ABSTRACT

INTRODUCTION: Gallbladder duplication is a rare surgical encounter and can present clinical challenge due to difficulties with diagnosis and identification.It's identification and classification in various types is very important to prevent complications in gallbladder diseases.

PRESENTATION OF CASE: We present 14 years old female patient who came with complaint of pain in the upper right quadrant region. Duplicate gallbladder was identified in CT scan. Patient was conservatively managed and discharged after satisfactory recovery.

DISCUSSION: Clinical significance of double gallbladder is same as single gallbladder like acute or chronic cholecystitis, cholelithiasis, empyema, torsion, cholecystic fistula and carcinoma. Surgeons should be aware about probable increased intraoperative complication associated to double gallbladder,mainly iatrogenic bile duct injury which can be troublesome in postoperative period also.

CONCLUSION: Duplication of gallbladder is a rare congenital anomaly that needs extra attention in surgery. Diagnostic preoperative imaging plays vital role in avoiding complications during surgery.

Key Words: Duplicate Gallbladder, Congenital anomalies, cholecystitis, morphological abnormality,

Introduction

Duplication of gall bladder is a rare congenital condition that is seen in ratio of 1: 3800-4000 live birth. Clinical symptoms of it are not different from single gallbladder pathology. Reported cases of it in female patients are more than male patients due to higher occurrence of gallbladder disease in women [1, 2].Congenital anomalies and anatomical variations are important causes of increased intra operative and post -operative complications of laparoscopic cholecystectomy. So, these anomalies should be diagnosed preoperatively by radiological imaging to reduce complication rate. Iatrogenic bile duct injuries are more common during laparoscopic cholecystectomy in comparison to open method due to visual preception illusion and these injuries increased in case of congenital anomalies and anatomical variation. Hence, clinical consideration of a duplicate gallbladder in a symptomatic patient has a vital role in