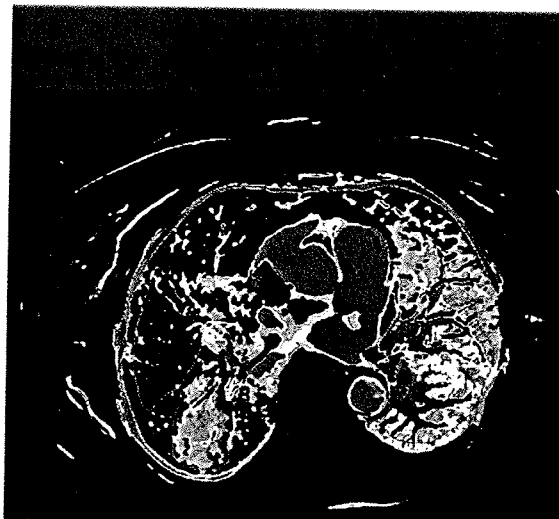
European Respiratory Society



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ABSTRACTS
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28. Diagnosis and prognosis of ventilator associated pneumonia: the clinical track

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Automatic control of the tracheal cuff pressure does not prevent ventilator-associated pneumonia (VAP)

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Background: The aspiration of subglottic secretions colonized by bacteria around the tracheal tube cuff due to inadvertent deflation of the cuff plays a pivotal role in the pathogenesis of VAP. We assessed the efficacy of an automatic device for the continuous control of the cuff pressure in preventing VAP.
Methods: We prospectively randomised ventilated patients to receive either the automatic device or routine cuff pressure care (control group). Patients with pneumonia or tracheotomy were excluded.
Results: We included 124 patients, 60 in the automatic and 64 in the control group, age 64±17 yr, APACHE-II 18±5. The main causes for intubation were decreased consciousness (38, 30%) and exacerbation of chronic lung diseases (30, 24%). Both groups were similar at baseline. The VAP rate was similar between groups (12, 21% in the automatic group vs 18, 29% in the control group, p=0.40). Similarly, the rates of tracheotomy (15, 25% vs 10, 15%), mortality in the ICU (17, 28% vs 14, 22%) and in the hospital (26, 43% vs 20, 31%), as well as the ICU (13±15 vs 13±13 days) and hospital stay (27±24 vs 25±20 days) were similar among the automatic and the control groups, respectively.
Conclusions: The use of an automatic device for the continuous regulation of tracheal cuff pressure does not prevent VAP and mortality.
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Non-invasive assessment of alveolar infection using HME filter elution

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VAP is the leading cause of death in intensive care units. In ARDS the diagnosis of pneumonia is difficult with similar clinical manifestations and lack of predictability of the clinical markers. Tracheal aspirate is unreliable source of bacteriological sampling, whereas bronchoalveolar lavage (BAL) is the gold standard. We investigated whether the HME filter used as part of the ventilator circuit could be utilised to sample clinically relevant alveolar infection. A hydrophobic pleated HME filter is placed at the junction of the endotracheal tube and ventilator circuit. This ensures humidification of the inspiratory air by evaporation on a warm filter and water retention from the warm expiratory air by condensation.
Method: Filter elution (FE) was obtained by introducing 20 ml of sterile 0.9% saline into the foam side of the filter before aspirating back the saline. The FE that is obtained is than centrifuged at 1100rpm for 10 minutes and residue was cultured for bacterial growth. Microbioology from FE was compared to tracheal aspirates (TA) and BAL from 27 patients with ARDS.Where there was significant BAL growth, FE grew significantly more bacterial pathogens compared to TA (p=0.02).
Results:

Samples, n=27	BAL	FE	TA	Matched Growth	
				BAL - FE	BAL - Sputum
Positive Growth	20	14	5	12	3
No Growth	7	13	22		

These results suggest that FE may represent an improved method of non-invasive assessment of alveolar infection in patients with ARDS.

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Clinical pulmonary infection score (CPIS) and inflammatory response in patients with new pulmonary infiltrates and suspected ventilator acquired pneumonia (VAP)

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VAP bears a high morbi-mortality and is a complex diagnosis.
Aim: assess the relation between the clinical pulmonary infection score (CPIS) and the inflammatory response in ventilated patients with suspected VAP.
Methods: We included 32 ICU patients ventilated for>48h with new pulmonary infiltrates and suspected VAP and 12 ventilated controls without infiltrates. CPIS was measured and systemic and local inflammatory response was assessed in plasma and BAL fluid respectively at day 1 and day 3 (TNF-alpha and soluble receptors, IL1b, IL6, IL8, IL10, PCR and procalcitonine. A standard microbiological work-up was carried out.
Results: IL6 was increased in patients with infiltrates compared to controls both in plasma (515±614 vs 46±2 pcg/ml: p<0.05) and BAL (1756±659 vs 132±200: p<0.05). PCR was also higher those with suspected VAP (79±72 vs 39±29: p<0.04) 17 patients had CPIS ≤ 6 (64±14yr; APSII:21+4) and 15 (53±14yr; APSII:20+7) had CPIS>6. We did not find significant differences in inflammatory markers between these two groups with this cut-off point usually usually considered in clinical decision making.
Conclusion: Ventilated patients with suspected VAP have an increased inflammatory response compared to controls. Supported by FIS 02/0632, Red GIRA and Red Respira.

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Evaluation of severe pneumonias in the ICU of a tertiary center in Southern India

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Introduction: Severe pneumonias are frequently encountered in the ICU setting,contributing to high mortality.They include ventilator associated pneumonias (VAP),Aspiration pneumonias,severe Community Acquired Pneumonias.
Objective: To systematically evaluate the incidence of severe pneumonias,their major risk factors,causative organisms & their drug resistance patterns and the treatment outcomes which may serve as basis for a multidisciplinary approach to reduce their incidence.
Design: Retrospective study
Setting: 18 bedded tertiary care ICU (Apollo Hospitals, India)
Subjects: 124 patients (Jan 2002 - Dec 2004) met the study criteria.
Results: APACHE II scores ranged from 14 to 49. VAP observed in 54 patients.Commonest organisms were Gram negative bacteria - Pseudomonas 36%,Klebsiella 24%,Staph aureus 12%.Resistance also observed to anti pseudomonas penicillins.Carbapenems were very effective in resistant cases.Overall mortality was higher in elderly with serious Comorbid conditions and Polytrauma patients.
Conclusions: VAP is seen in more than 40% patients. There is increasing incidence of ESBLs producing organisms leading to increased resistance.Judicious use of Betalactam antibiotics like Carbapenems with Aminoglycosides and newer Quinolones is very essential in reducing the mortality.

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The risk of bronchoalveolar fluid (BAF) contamination in ICU patients with infectious pulmonary complications

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We compared the results of bacteriological examination and examination for the presence of fungi in mouth washing, in the sample from large airways, in the bronchial sample and in BAF sample in 151 ICU patients.
Mouth washings were made prior BAL in 93 and lavage from main and lobar bronchi in 121 patients. Negative bacterial findings in mouth and BAF were in 35 (38%), positive findings in mouth and BAF in 4 (4%), positive but differing findings in mouth and BAF in 16 (17%), positive in the mouth but negative in BAF was in 17 (18%), and negative bacterial finding in the mouth but positive in BAF in 21 (23%) patients. Negative bacterial findings in bronchial samples and in BAF were observed in 78 (65%), identical findings in large airways and BAF in 8 (6%), and differing findings in large airways and BAF in 6 (5%) patients. A positive finding in the large airways and negative in BAF was seen in 5 (4.1%) patients, whereas in 24 (20%) patients there were negative findings in large airways and positive in BAF. In 63 (68%) no fungal microorganisms were found either in mouth washings or in BAF. In 2 (2%) identical findings of fungal microorganisms were present in mouth washing and BAF, in 4 (4%) different organisms were in mouth washing and BAF. In 14 (15%) patients there was a positive finding in the mouth but negative in BAF, and in 10 (11%), a positive finding in BAF but negative in the mouth.
The risk of BAF contamination by bacterias and fungi from either large airways or mouth is unlikely if the methodology of BAL is strictly adhered to.

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Late-onset ventilator-associated pneumonia in patients with acute nervous system infections

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Late-onset Ventilator-associated pneumonia (VAP) in patients with acute nervous system infections which treated at the Intensive Care Unit (ICU) is a major cause of mortality. The objective of this paper was to establish the type of nervous system infections, etiology, disposition and risk factors for the development VAP.
Method: 180 patients with bacterial meningoencephalitis and cerebritis, were ad-

mitted to the ICU; 108 patients required mechanical ventilation, while 35 patients developed late- onset VAP (19 males, 16 females, average 58 years). Risk factors for VAP were: chronic respiratory diseases (58,9%), depressed consciousness or coma (66,1%), infections diseases and previous antibiotic exposure (third generation cephalosporins and metronidasol 88,2%), duration of mechanical ventilation (>23 days). The most common pathogens isolated were: Pseudomonas aeruginosa (56,1%), Acinetobacter spp. (19,8%) Staphylococcus aureus (21,7%). The sensitivity to antibiotics were investigated by Sceptor system of Bacton Dickinson (USA). We found that Pseudomonas aeruginosa showed a high degree of resistance to a large number of examined antibiotics: piperacilin-tazobactam (53%), amynoglycoside (92%), levofloxacin (66,7%), ceftriaxone (88%), ceftazidime (67%), cefotaxim (80%) while sensitivity was to imipenem (100%) and aztreonam (96%). Total mortality was 24/35 (71,4%). We conclude that prolonged mechanical ventilation was associated to higher percentage of multiresistent Pseudomonas aeruginosa (statistic significance).

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Predictors of early mortality after ICU discharge

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The aim of the study is to evaluate possible predictors of early mortality after ICU discharge. Sixty-four consecutive patients discharged alive from ICU and were followed up 1 year. The patients were divided into two groups: Patients who had died in 1 month after discharge (group I) and patients who were still living 1 month later after discharge (group II). The age, diagnosis, comorbidity, home oxygen and mechanical ventilation therapies, duration of mechanical ventilation, duration of stay in the ICU, APACHE II score (in admission and discharge), sequential organ failure assessment (SOFA), logistic organ dysfunction score (LODS) and therapeutic intervention scoring system (TISS) (discharge), several laboratories and mechanical ventilation data (admission) were compared between two groups. The early mortality was 25%. Reasons for ICU admission in group I were acute exacerbation of COPD (43,75%), asthma (6,25%), pulmonary embolism (6,25%), pneumonia (18,75%), restrictive lung disease (12,5%) and acute renal failure (12,5%). Univariate analysis indicated a statistically significant difference between the group I and II in the following variables respectively: age (69.44±12.82; 59.05±15.49) APACHE II score (11.43±2.5; 9.65±2.43), LODS(6.07±2.46; 4.42±2.44) and hemoglobin levels(12.01±1.84; 13.38±2.21). The early mortality was independently associated in the multivariable analysis with only age (OR=1.08 CI 95%: 1.01-1.14 p=0.021). In conclusion, early mortality after ICU discharge is very high and according to our results most of the clinical variables except age may not predict early mortality after discharge.

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Risk factors, etiology, and clinical outcomes of ventilator-associated pneumonia

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Introduction: Ventilator-associated pneumonia (VAP) is a frequent ICU problem.
Aim: To update our data of risk factors, etilogical agents, and clinical outcomes of VAP.
Method: We included 70 mechanically-ventilated patients admitted to respiratory and critical care ICUs from June 2003 to June 200 5in Alexandria Main University Hospital, Egypt. Data was gathered and tracheal aspirates was used for cultures.
Results: Ventilator-associated peumonia occurred in 55.7% of mechanically ventilated patients. The most common causative pathogens were Pseudomonas (23.9%), Klebsilla (14.1%), Proteus (8.5%), MSSA (5.6%), and Mycoblasma (5.6%).

Table 1. Risk Factors and Outcomes of VAP

Variable	Non-VAP Patients (31)	VAP Patients (39)	P Value
Age	47.2+12.4	42.9+9.7	0.120
APACHE II Score	31.6+5.7	30.7+5.7	0.543
Supine Position	16 (51.6%)	33 (84.6%)	0.003
Early feeding	13 (42%)	34 (87.2%)	<0.001
Mechanical days	14.2+9.3	20.7+6.7	0.002
Mortality	8 (25.8%)	10 (25.6%)	0.600

Conclusion: Supine position, tracheostomy, early entral feeding, prolonged enteral feeding, and lower albumin serum level were most common risk factors to develop VAP. Pseudomons aueroginosa and Klebsilla pneumoniae were the most common cauative pathogens of VAP. Mechanical ventilation, ICU stay, and hospitalization days were prolonged for patients with VAP. Patients with VAP had longer duration of antibiotic therapy. Prevetion of VAP would help improving clinical outcomes of ICU aptients.