‘A randomised trial of Diagnostic Techniques for Ventilator-Associated Pneumonia’

New England Journal of Medicine, Dec 21 2006; Vol 355: No 25: 2619-2630

Background

This multi-centre study (28 ICUs) compared the clinical effectiveness of blind **endo-tracheal aspiration** and **broncho-alveolar lavage with bronchoscopy** in diagnosing VAP in patients with suspected infection, mechanically ventilated for over 4 days. The empirical antibiotic protocol used was standardised for the study (meropenem alone or meropenem + ciprofloxacin) and subsequently amended according to sensitivities obtained from microbological tests.

The study also examined the effect of these techniques on:

hospital mortality at 28days	(primary outcome measure)
survival in ICU & hospital	(secondary outcome measures)
length of stay in ICU & hospital	
duration of mechanical ventilation	
organ dysfunction scores	
use & non-use of antibiotics	
rates of targeted therapy	

Summary of Results

There was no significant difference in 28-day hospital mortality between between the 2 groups (BAL group 18.9% vs Endotracheal aspirate group 18.4%; p=0.94). Nor were there any significant differences between the 2 groups in terms of the secondary outcome measures.

Critique

The study only focused on the diagnosis and clinical outcomes of VAP in patients who were immuno-competent and not colonised with either pseudomonas or MRSA. Patients who were also allergic to penicllins, carbapenems, cephalosporins & ciprofloxacin or already receiving the study antibiiotics were also excluded.

This resulted in a very large proportion of potentially eligible patients (1791 out of 2531) being excluded from the study thereby affecting the results. More specifically, patients with chronic disease, previous bacterial colonisation or who were immuno-compromised were not investigated, excluding the very population who are at the highest risk of VAP and in whom VAP most commonly occurs. Isolation of a causative organism can be extremely difficult in these patient groups and bronchoscopy with BAL may offer significant advantages over blind endo-tracheal aspiration in terms of diagnosis, targeted antibiotic therapy, ICU/hospital stay, weaning and mortality.

Another factor not taken into account was the duration of hospital stay prior to admission to ICU admission and mechanical ventilation. This would affect the risk of

exposure and type of micro-organism that the patient may acquire which influence the clinical effectiveness of either diagnostic technique. Similarly, prior antibiotic therapy was not documented other than related to the use of meropenem or ciprofloxacin and could affect the diagnostic yield of both techniques.

Conclusion

This study has shown no significant difference between endotracheal aspiration and BAL in terms of clinical outcome in immuno-competent patients with VAP who are not colonised with other micro-organisms. However, these findings cannot be extended or applied to patients with chronic disease, previous bacterial colonisation or who were immuno-compromised, in whom the majority of cases of VAP occurs. Clearly further trials are required in these patient groups.