Mini BAL v/s Bronchoscopic BAL

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Introduction

- Patients in the intensive care unit (ICU) are at risk for dying not only from their critical illness but also from secondary processes such as nosocomial infection.
- Pneumonia is the second most common nosocomial infection in critically ill patients, affecting 27% of all critically ill patients .
- 86 % percent of nosocomial pneumonias are associated with mechanical ventilation and are termed ventilator-associated pneumonia (VAP).
- The mortality attributable to VAP has been reported to range between 0 and 70%.

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- Early diagnosis and treatment is vital for lowering the high mortality rates .
- Unfortunately, the accurate diagnosis of VAP remains a challenge for the clinicians due to the fact that clinical, radiological and microbiological findings have low sensitivity and specifity.
- Diagnosis as a practicable method in centers not using tracheal aspirate, has low specificity and high false positive rates due to upper respiratory tract (way) contamination.
- Mini-non-bronchoscopic, protected BAL, protected specimen brush (mini-BAL, PSB) has low contamination probability so it could provide higher sensitive and specific results.

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Method

- **Study design**
- Totally 60 patients were included in the study.
- Among 60 patients

  in 30 patients bronchoscopic bal was done , in the remaining 30 minibal was done .
- The procedure to be done i.e either bronchoscopic bal or minibal in intubated patients was randomly selected
- **INCLUSION CRITERIA:**
- patients who developed area of consolidation on x ray, with fever, leucocytosis and purulent secretions on suctioning and age18-60 years were included in the study.

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- **EXCLUSION CRITERIA:**
- Patients who had consolidation before intubation, immunocompromised status, HIV seropositive, those with cancer, age <18 and >60 were excluded.
- The organisms isolated , response to treatment and number of patients who died were noted.

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Procedure

- In patients satisfying the inclusion criteria consent was taken and either minibal or bronchoscopic bal was done.
- **MINIBAL:**
- Also referred to as blind BAL or non-bronchoscopic BAL was done by using foleys catheter , mucus trap and suction.
- First the Fio2 was increased to 100%, 15 minutes prior to the procedure.
- A foleys catheter was passed through the ET tube directed towards the side required.

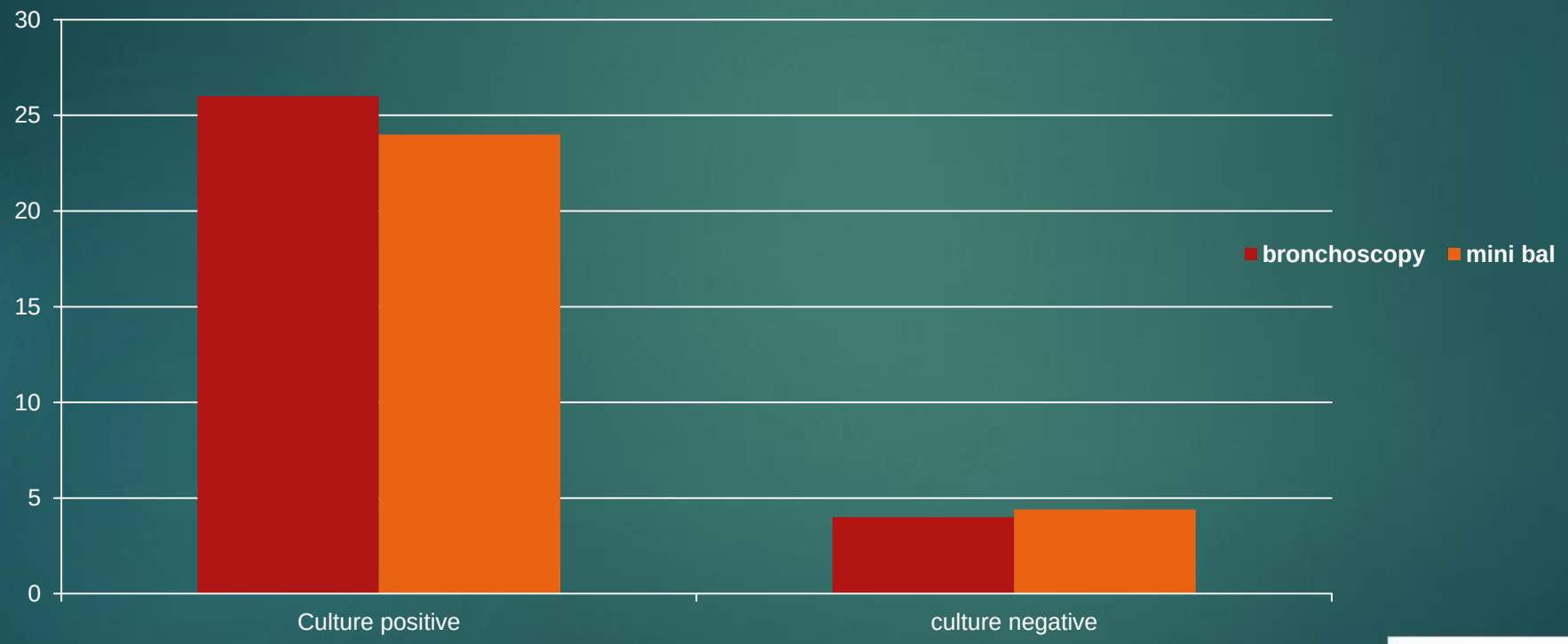
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- 20 ml of saline was flushed through the catheter, then it was connected to mucus trap and NS was collected using suction.
- This was repeated till the sample was sufficient.
- The procedure was stopped as soon as saturation fell below 90%.
- The sample was sent for necessary investigations.
- **BRONCHOSCOPIC BAL:**
- The procedure was same as above except that bronchoscope was used instead of foleys catheter.
- **BAL** fluid collected and sent for investigation.

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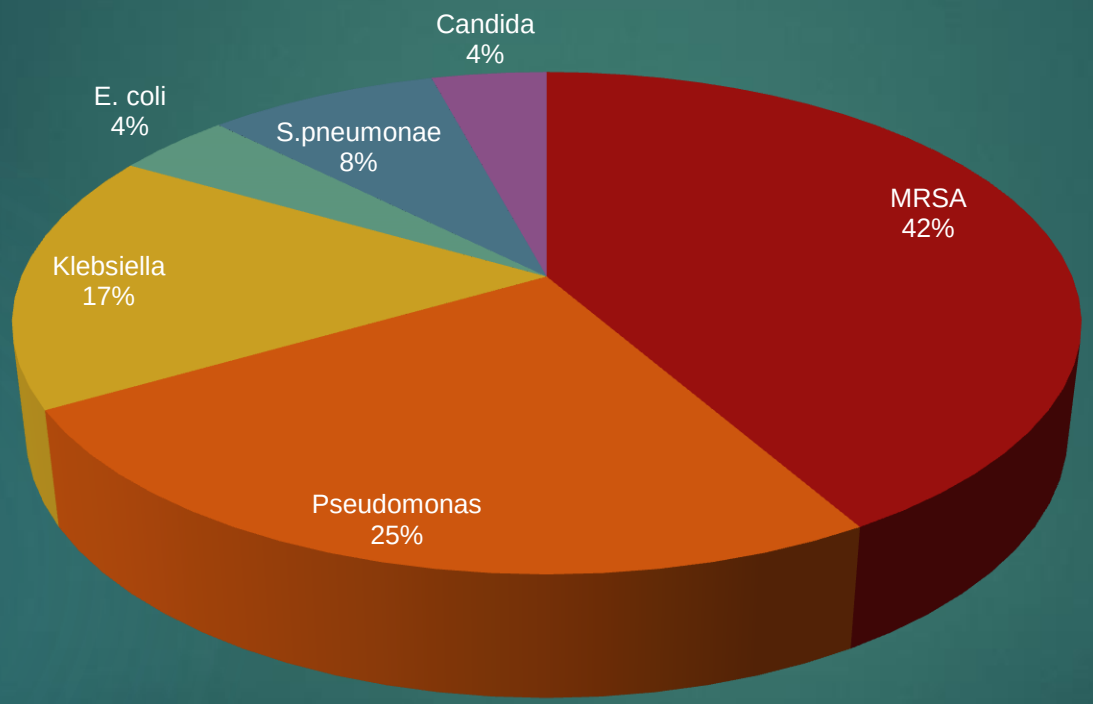
Statistical analysis

Comparision of isolated organism in bronchscopic BAL that with Mini BAL



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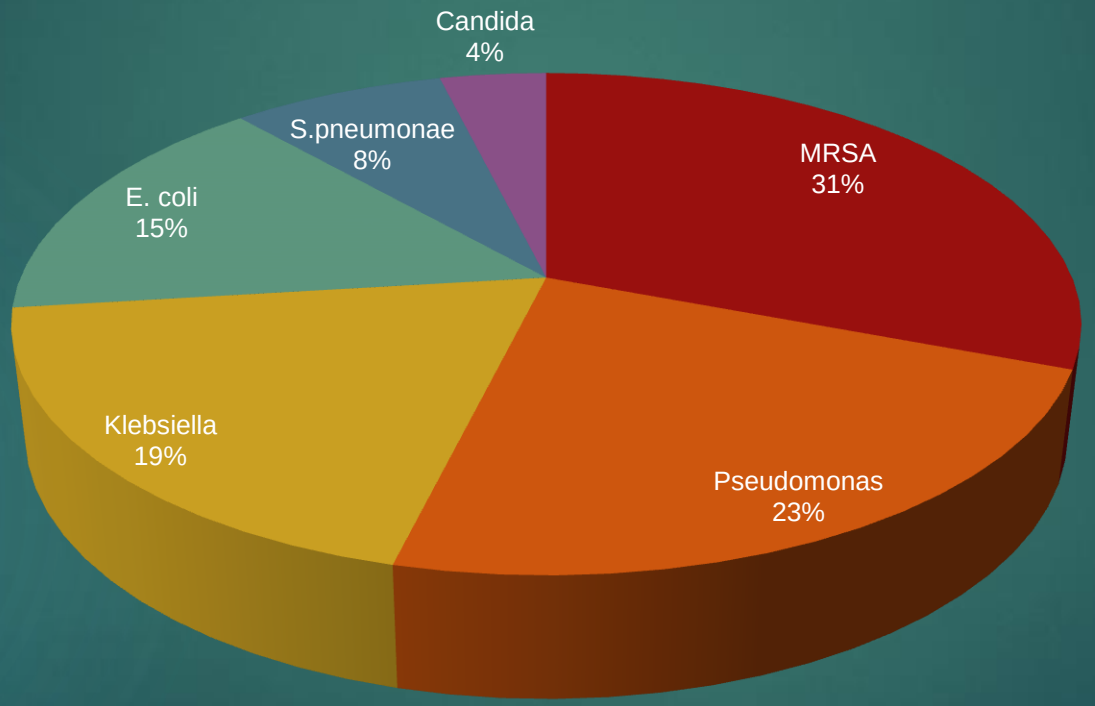
Isolated organisms in Bronchoscopic Bal



- MRSA
- Pseudomonas
- Klebsiella
- E. Coli
- S.Pneumnae
- Candida

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Isolated Organisms in Mini Bal



- MRSA
- Pseudomonas
- Klebsiella
- E. Coli
- S.Pneumnae
- Candida

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Results

- Of the total 60 patients , 22 were females and 38 were males.
- Each group had 11 females and 19 males.
- In patients who underwent minibal 24 out of 30 patients showed growth of organisms (80%) ;
- in patients underwent bronchoscopic bal, 26 out of 30 showed growth(86.6%).
- The isolated organisms in bronchoscopic BAL were

  MRSA -10(41.6%), Pseudomonas -6(25%) , Klebsiella - 4 (16.6%) ,E.coli - 1(4.1%) , S.pneumonae - 2(8.3%) , Candida - 1(4.1%) .
- The organisms isolated by mini BAL were MRSA - 8(30.7%) , pseudomonas- 6(23%) , klebsiella - 5(19.2%) , E.coli - 4(15.3%) , S.pneumoniae - 2(7.7%) , candida- 1(3.8%).

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Discussion

- Pneumonia is the major cause of morbidity in ventilated patients.
- various techniques like tracheal aspirate , bronchoscopic BAL , protected brush specimens , minibal have been used to obtain microbiological samples.
- Invasive tests such as bronchoscopic BAL or protected specimen brush (PSB) may avoid the extended use of antibiotics for clinically insignificant organisms, but no direct consensus or evidence suggests that one test is superior to the other .

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- The advanteges of bronchoscopy procedure are - specifically affected areas of the lung can be visualized and sampled, more accurate than sputum or tracheal aspirates , may enable physician to identify non-infectious lesions.
- The advantages of minibal are - it may be performed by a trained Nurse or Respiratory Therapist, reducing any delay and cost, no assistants or extra equipment are required . Sensitivity and specificity is comparable with bronchoscopic BAL and PSB, and no potential safety concerns of resterilization of equipment

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Conclusion

- In our study , minibal was compared with bronchoscopic BAL in intubated patients.
- Organisms were isolated in 80% of patients who had minibal done and in 86.6% patients who had bronchoscopy done.
- The sensitivities of isolating organisms by minibal and bronchoscopic BAL is almost similar in our study.
- Hence minibal may be used in areas where bronchoscope is not available with minimal cost.

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Thank you



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