ABSTRACT

ETIOLOGY, CLINICAL PROFILE AND PROGNOSIS OF ACUTE RESPIRATORY DISTRESS SYNDROME IN A TERTIARY CARE HOSPITAL

INTRODUCTION

As per American-European Consensus Conference (AECC), acute lung injury (ALI) is a clinical syndrome of severe dyspnea of rapid onset, hypoxemia, and diffuse pulmonary infiltrates leading to respiratory failure, a ratio of arterial oxygen tension to fraction of inspired oxygen (PaO_2/FiO_2) of 201-300 mmHg, in the absence of cardiac failure. Whereas acute respiratory distress syndrome (ARDS) is progression of the ALI, resulting from diffuse lung injury, which may be direct or indirect, and is characterized by an immunologic reaction leading to a diffuse alveolar damage, intense arterial hypoxemia, radiographic evidence of pulmonary edema and stiff and noncompliant lungs, a ratio of arterial oxygen tension to fraction of inspired oxygen (PaO_2/FiO_2) of <200 mmHg, in the absence of congestive cardiac failure.

Various criteria used for the diagnosis ARDS/ALI in critically ill patients are: PaO_2/FiO_2 as per AECC, lung injury score (LIS), etc. Despite recent advances in mechanical ventilation and numerous clinical trials of novel pharmacological agents, understanding of pathophysiology of the disease; the mortality of ARDS remains very high ranging from 40% to 60%. ALI/ARDS results from direct (e.g. pneumonia, aspiration of gastric contents, pulmonary contusion, etc.) and indirect causes (e.g. sepsis, trauma, fractures, pancreatitis, burns, etc.). Although above factors are potential causes of ARDS, studies showing tropical causes as reasons of ARDS is lacking. Hence, we attempted to study medical causes of ALI/ARDS in a tropical country.

Recent reductions in ARDS/ALI mortality are largely the result of general advances in the care of critically ill patients and in ventilatory strategies. Thus, caring for these patients requires close attention to recognition and treatment of the underlying medical and surgical disorders (e.g., sepsis, aspiration, and trauma). Appropriate treatment of any precipitating infection such as pneumonia or sepsis is critical to enhance the chance of survival. In a patient with sepsis and ALI/ARDS of unknown source, an intra-abdominal process should be considered. Timely surgical management of intra-abdominal sepsis is associated with better

outcomes. Minimizing procedures and their complications; prophylaxis against venous thromboembolism, gastrointestinal bleeding, and central venous catheter infections; prompt recognition of nosocomial infections, and provision of adequate nutrition. Lung protective ventilation, which is a low tidal volume ventilatory strategy, reduces mortality. A noninvasive ventilator support through a tight-fitting facemask or a nasal mask for pressure support ventilation or bi-level positive airway pressure ventilation is preferred in selected patients.

AIM

- The study was designed to assess various etiologies of ALI/ARDS in relation with clinical profile & microrganisms involved and its outcome.

OBJECTIVE

- To study the etiology & risk factors for development of ARDS.
- To study the correlation between different microbes causing ards and its associated morbidity.

Number of patients: 30

Place of study: PSG Medical College and Hospitals, Peelamedu, Coimbatore-641004.

Type of study: Prospective observational study.

Inclusion Criteria

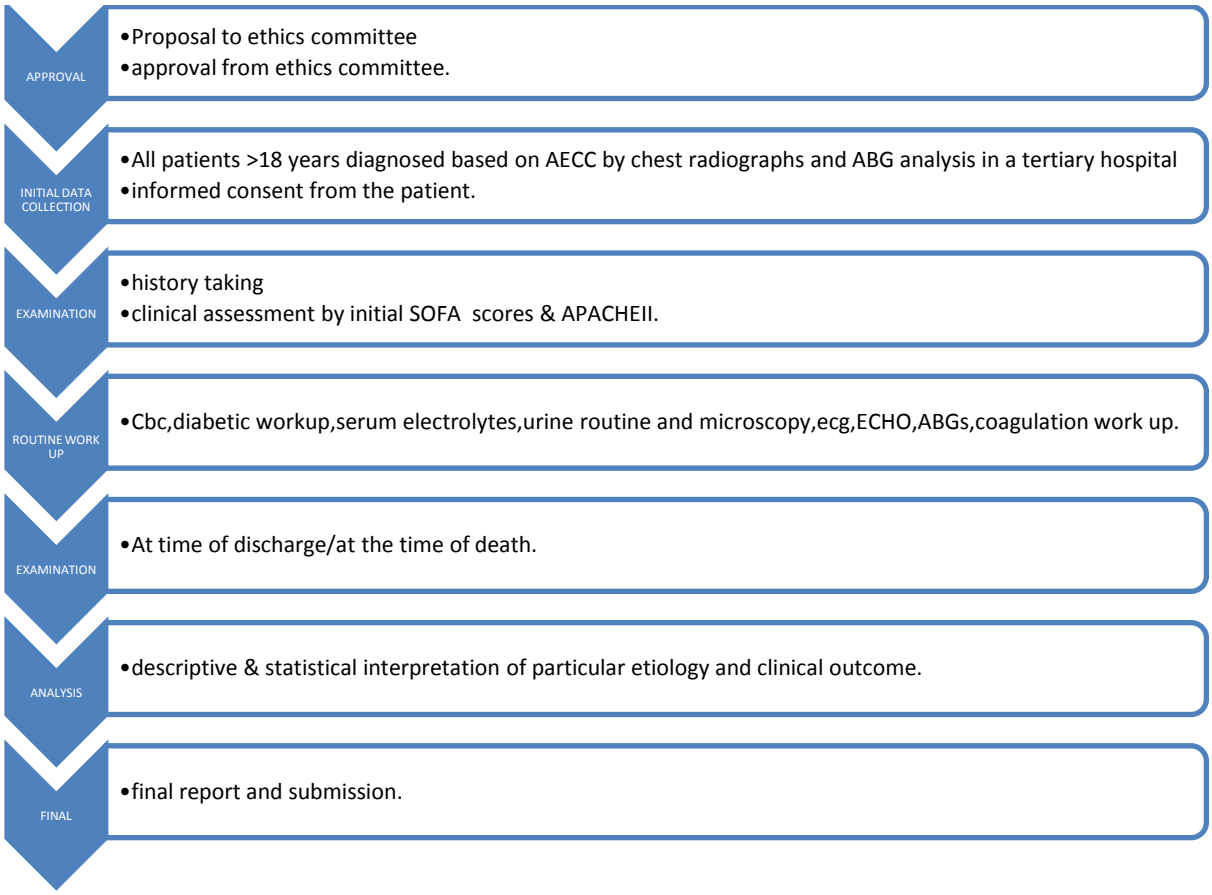
1) Patients fulfilling the AECC criteria for ARDS.
    a. Acute onset of bilateral infiltrates on chest radiograph.
    b. PaO2 / FiO2 < 200.
    c. No cardiac dysfunction r/o by ECHO.
2) Mechanically ventilated patients > 48 Hrs.

Exclusion Criteria

- Patients < 18 years of age.
- Known previous lung pathology.
- Trauma and burns.

Methodology

This study is based on cross-sectional prospective observational study of ARDS in adults >18 years who got admitted in the medical icu a tertiary centred hospital where systematic computercoding for registration is done .The study was conducted at PSG hospitals, peelamedu, Coimbatore in south india. patients were selected based on fulfilling the AECC(American-European Consensus Conference Criteria).history, physical examination, chest radiographs and arterial blood gas analysis will be collected along with CVP monitoring and echocardiography done. the baseline characteristics including comorbidities, microbiological investigations, initial SOFA SCORES & APACHE II (ACUTE PHYSIOLOGY&CHRONIC HEALTH EVALUATION)documentation in excel sheet. The duration of mechanical ventilation& inotope use and hospital outcome were taken into account.



RESULTS:

In this study conducted with 30 patients, 16 patients were male and 14 were female. 5/30 patients in our study died and of them 4/5 patients had diabetes. In our study 3 patients had thyroid disorders and were of female gender with age greater than 55 years and of them 1 patient had a prolonged duration of intubation and hospital stay. In our study 28 of the 30 patients had an infective etiology of ARDS and the remaining 2 patients had non-infective causes. H1N1 ARDS was seen in majority of the patients and contributed to 11 of 30 patients in the study, followed by culture positive, dengue and scrub typhus ARDS with 7,4 and 3 patients respectively. In our study there were 4 patients diagnosed as dengue related ARDS and it has a vast burden in the tropical countries with increased mortality. In our study 3 patients of scrub typhus were diagnosed with ARDS and showed no scrub related mortality. Acinetobacter Baumanni and klebsiella pneumoniae were the commonest organisms causing Hospital acquired pneumonia in our study. Escherichia coli (ESBL), enterococcus species, klebsiella pneumoniae and Acinetobacter species were the gram-negative organisms causing sepsis and ARDS in our study. The non-infectious causes of ARDS were seen in 2 patients one in ethanol related pancreatitis and the other in Oduvanthalai poisoning.

The mean Fio2/Pao2 ratio, Mean arterial pressure, initial SOFA and APACHE II scores were done and categorised by gender basis. In the male group Mean arterial pressure, initial SOFA and APACHE II scores were 99.88, 71.19, 8.63, 17.25 and in the female group were 100.71, 74.29, 8.57 and 14.36 respectively. In our study 17 patients had severe ARDS and remaining 13 patients had moderate ARDS according to the Berlin definition. Mean duration of hospital stay was 15.7 days and the mean duration of duration of intubation was 10.13 days. The mortality rate in our study was 16.66% (5 patients).

CONCLUSION:

The incidence of ARDS studies in India are few and lacking. Early identification and etiology work up for ARDS with timely administration of antibiotics/ antivirals or antimalarial drugs is necessary for the improvement in survival rates in view of increased morbidity and mortality associated with ARDS. More elaborate studies are required to look into the challenges of ARDS and for the benefit of survival outcomes.

Keywords: H1N1, ARDS (Acute Respiratory Distress Syndrome), AECC Criteria (American European Consensus Conference)