HNE Area Intensive Care

Clinical Guideline

Guideline approved for : JHH ICU only

CORTICOSTEROIDS FOR LATE NONRESOLVING ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS)

NB. The evidence for the use of corticosteroids in late nonresolving ARDS is not conclusive, however available studies and this units experience suggest a role in carefully selected patients.

Criteria for Acute Lung Injury (ALI) and Acute Respiratory Distress Syndrome

	Timing	Oxygenation	Chest Radiograph	Pulmonary artery wedge pressure
ALI criteria	Acute onset	PaO2/FIO2 ≤300mmHg (regardless of PEEP level)	Bilateral infiltrates seen on frontal CXR	≤ 18mm Hg when measured or no clinical evidence of left atrial hypertension
ARDS criteria		PaO2/FIO2 ≤200mmHg (regardless of PEEP level)		

Adapted from The American European Consensus Conference on ARDS (Am J Resp Crit Care Med vol 149 pp 818-824,1994)

Patient selection

1. ARDS by above criteria
2. 7 days of ventilation with severe lung injury and minimal improvement (Lung Injury Score > 2.5 and improved less than 1 point since onset of ARDS) - see appendix
3. No evidence of untreated infection (i.e.less than 3 days of antibiotics for infection)
4. ARDS of less than 3 weeks (benefits at this late stage would be expected to be limited due progression of pulmonary fibroproliferation)
5. No Major GIT haemorrhage

Other Considerations

6. Most evidence is for adult patients, case reports of successful use in children only available.
7. High preponderance of ARDS due to direct pulmonary injury in studies, hence less evidence for effectiveness in non direct ARDS

Treatment Protocol

Methyl prednisolone given as iv push dose every 6 hours (one fourth of the daily dose) and changed to single oral dose when oral intake restored

Note use prednisolone for oral dose ,equivalent dose of prednisolone multiply methylprednisolone dose by 1.25

1. Loading dose of 2mg/kg iv
2. 2mg/kg per day divided into four 6 hourly doses from day 1 to 14
3. 1mg/kg per day from day 15 to 21
4. 0.5mg/kg per day from day 22 to 28
5. 0.25mg/kg per day on days 29 and 30
6. 0.125mg/kg on days 31 and 32

If patient extubated prior to day 14, treatment advanced to day 15 of regime and tapered according to schedule.

Precautions

1. Risk of nosocomial infection may be increased with this treatment and that fever may not develop
2. A vigilance for occurrence of infection should be maintained. There should be a high index of suspicion if
3. In ARDS change in CXR appearance is unreliable indication of VAP
4. Consider VAP,sinusitus,catheter related infection, UTI, abdominal pathology
5. Isolation of candida species from multiple sites ,then consider ceasing corticosteroids
6. Ceasing steroids after only a short period (i.e. 2-3 days)may increase pulmonary injury

i) Fever

ii) Deteriorating condition

iii) Unexplained increase in minute ventilation

iv) >0.1 immature neutrophils

References:

Meduri GU et al: Effect of prolonged methylprednisolone therapy in unresolving Acute Respiratory Distress Syndrome. JAMA july 8,1998,vol 280, No 2 pp159-165

Created: 6/2002 by Dr Havill Reviewed: 6/2002 by Dr Havill
Guideline to be reviewed before : 7/2009

Lung Injury Score

	Value
Chest Radiograph	
No alveolar consolidation	0
Alveolar consolidation in one quadrant	1
Alveolar consolidation in 2 quadrants	2
Alveolar consolidation in 3 quadrants	3
Alveolar consolidation in 4 quadrants	4
Hypoxaemia score	
PaO2/FIO2 ≥ 300	0
PaO2/FIO2 225-299	1
PaO2/FIO2 175-224	2
PaO2/FIO2 100-174	3
PaO2/FIO2 < 100	4
Respiratory system compliance score ‡	
(when ventilated) (ml/cm H_2O)	
≥ 80	0
60-70	1
40-59	2
20-39	3
≤ 19	4
PEEP (when ventilated) (cm H_2O)	
≤ 5	0
6-8	1
9-11	2
12-14	3
= 15	4
Final value = total divide by number of componentsUsed (min 3) resp system compliance can be omitted if unable to measure ‡	
No Lung injury	0

Acute lung injury	0.1-2.5
Severe Lung injury (ARDS)	>3.5

Adapted from Establishing the relative accuracy of three new definitions of ARDS: Moss et al: Crit Care Med 1995 1629-1637

‡ Murray - 1976 am Rev Resp Dis: Respiratory system compliance score, measure in relaxed ventilated patient TV/(plat press-PEEP)