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We came, we saw, we cannulated?

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We Came. We Saw. We Cannulated!

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INTRODUCTION

•In patients with refractory gas-exchange abnormalities, extracorporeal membrane oxygenation (ECMO) is considered rescue therapy that aims to decrease ventilator induced lung injury and provide lung rest.

AIM

- To compare the cohort of patients who received ECMO as rescue therapy compared to other forms of rescue therapy at our institution.

METHODS

- We conducted a retrospective study of patients diagnosed with ARDS (N=149) from October 2010 to September 2012 at Thomas Jefferson Hospital.
- All patients mechanically ventilated with on the ARDS protocol were identified. Severity of illness and lung injury were determined based on APACHE II, PaO2 / FiO2 ratio, Oxygenation Index (OI) and Murray score.
- Subjects who required additional therapy became the cohort known as rescue therapy. These patients required the use of- inhaled Epoprostenol, neuromuscular blocking agents and /or Airway pressure release ventilation (APRV) to identified.

RESULTS

•149 patients were identified, 62 patients received rescue therapy and 14 required ECMO.

•Six of 14 patients received Veno-arterial ECMO and the remaining 8 received Veno-venous ECMO.

•Patients with ARDS placed on ECMO had an absolute reduction in mortality of 27% when compared to patients who received other rescue modalities (77% vs. 50%; p = 0.32).

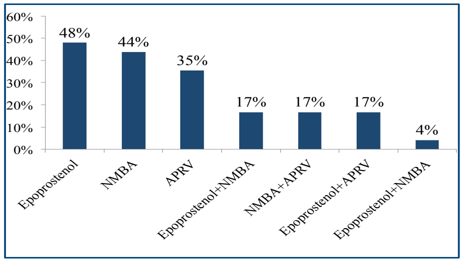
Initial patient characteristics in different treatment groups

Parameters	No rescue therapy	Non ECMO rescue modality	ECMO rescue modality	CESAR Trial
Demographics				
Total patients n=149	87 (59%)	48 (32%)	14 (9%)	90
Age (years)	56 (30-86)	53 (22-91)	47 (17-77)	40
Etiology				
Pneumonia	49%	50%	50%	62%
Sepsis	34%	30%	21%	
Initial Oxygenation				
FiO_2	60 (30-100)	70 (40-100)	100 (70-100)	
Murray Score	2 (1-4)	3 (1.75-4)	3.5 (2.5-4)	3.5
Oxygenation Index	7 (2-23)	15 (3- 41)	26 (11-59)	
PaO_2/FiO_2	94 (60-490)	116 (53-383)	75 (41-144)	76
Initial Lung Mechanics				
Static compliance	30 (17-230)	26 (11-75)	24 (10-60)	28
MAP cmH_2O	9 (7-26)	18.5 (13-30)	21 (26-70)	
PEEP cmH_2O	8 (5-14)	10 (5-20)	15 (5-20)	14
pH	7.40 (7.2-7.5)	7.34 (7.13-7.5)	7.30 (6.96-7.5)	7.10
pCO_2 mmHg	41 30-68)	40 (26-76)	45 (41-144)	
pO_2 mmHg	92 (61-194)	81(48-383)	69 (25-116)	
APACHE II Score	23 (7-42)	24 (8-43)	29 (11-39)	20
Mortality rate	**39%**	**77%**	**50%**	**37%**

Data are number (%) or median (range)

A-a gradient: alveolar arterial gradient; **MAP:** Mean airway pressure, **Oxygenation Index** = FiO_2 x MAP/ PaO_2

Different rescue modalities used in Non ECMO rescue group



DISCUSSION

- Patients with severe ARDS have a high mortality rate and often receive rescue therapy for gas exchange abnormalities.
- There is growing appreciation that ECMO therapy is a valuable rescue therapy but there is controversy about selection of the right candidate.
- There was a trend towards improved survival in the ECMO group.
- Severe hypoxemia coupled with elevated PaCO2 and younger age appeared to be triggers for use of ECMO at our institution.
- These data provide support for using ECMO as rescue therapy in select populations. Hopefully future research will identify parameters to identify patients early who will benefit from ECMO therapy.
- Our outcomes are similar to Cesar trial.

CONCLUSION

- We believe that ECMO may be an important rescue modality in the right clinical setting in patients with severe ARDS.
- Treating physicians should consider ECMO as a treatment modality for severe ARDS patients.