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A Case of Severe Acute Respiratory Distress Syndrome Treated with Extracorporeal Life Support

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The incidence of acute respiratory distress syndrome (ARDS) has been estimated worldwide to range from 1.7 to 75 cases per 100,000. There are many treatments for ARDS, but only the low tidal volume strategy is based on strong clinical evidence from randomized clinical trials. The efficacy of extracorporeal life support (ECLS) in adults remains controversial. Ongoing clinical trials and research have shown a benefit for its use to salvage severe ARDS patients that are in failure with conventional treatment. We encountered a 41-year-old woman who developed ARDS induced by pneumococcal pneumonia. Despite conventional mechanical ventilation in the emergency room, severe hypoxia remained. We treated the patient immediately with ECLS. The patient has almost fully recovered, and was discharged from a 177-day stay at our hospital. (*Tuberc Respir Dis* 2007;63:526-530)

Key Words: Acute respiratory distress syndrome, Extracorporeal life support

서 론

ARDS는 1960년대 말에 처음으로 보고된 이후, 현재까지도 그 원인과 치료에 대해 논쟁이 계속되고 있다. ARDS의 발생률은 1.7~75/100,000으로 추정되며, 치료는 주로 저체적 전략에 기반을 두고 있다. ECLS의 효능에 대해서는 아직 논란이 되고 있다. 최근의 임상시험과 연구는 ECLS의 사용이 중증 ARDS 환자를 구제하는 데 도움이 된다는 것을 보여주고 있다. 우리는 41세 여자 환자를 만났는데, 폐렴에 의해 유발된 ARDS로 인해 중증 저산소증이 지속되었다. 응급실에서 기계적 환기를 시도하였지만, 중증 저산소증이 지속되었다. 우리는 즉시 ECLS로 환자를 치료하였다. 환자는 거의 완전히 회복되었으며, 177일간의 입원 후 퇴원하였다. (*Tuberc Respir Dis* 2007;63:526-530)

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증 례

(extracorporeal life support)

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환 자: ○○, 41세, 여자

주 소: 호흡곤란

현병력: 폐렴, 1주일 전 시작

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가족력: 없음

과거력: 41세

신체검사 소견:

160/80 mmHg,

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142/ , 60/ , 38.3°C,
32% .

검사실 소견: 가 pH 7.31, PaCO₂ 36 mmHg, PaO₂ 19 mmHg, bicarbonate 18.1 mmol/L, 24% 6,670/mm³ (89.4%), AST 72 IU/L, LDH 940 IU/L 5.7 g/dl, 2.9 g/dl INR 1.30 2+

방사선 소견: X- 가 (Figure 1A).

치료 및 경과: 가 24% PEEP 16 cmH₂O, FiO₂ 1.0 pH 7.29, PaCO₂ 42 mmHg, PaO₂ 36 mmHg, 61% A-aDO₂ 628 mmHg, PaO₂/FiO₂ 36 mmHg 가 3 (Figure 2). FiO₂ 1.0 가 pH 7.26, PaCO₂ 23 mmHg, PaO₂ 115 mmHg, 97% 13

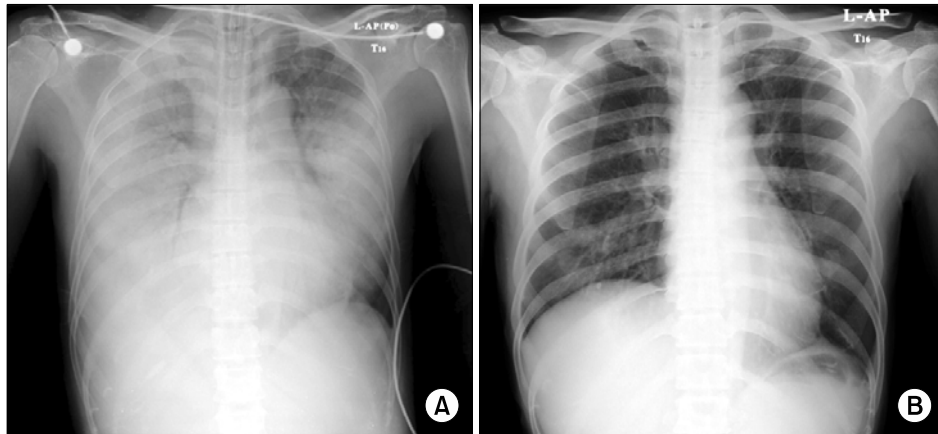


Figure 1. Chest PA at (A) admission and (B) discharge.

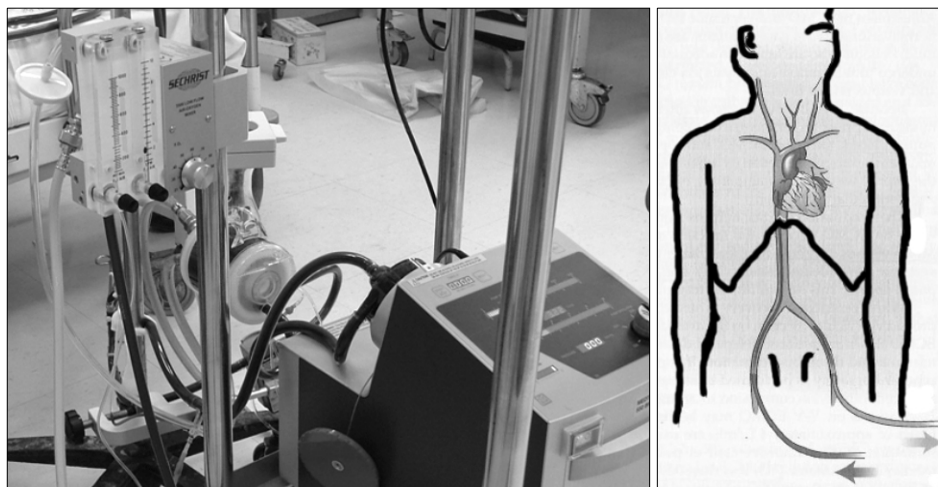


Figure 2. Veno-venous extracorporeal membrane oxygenation.

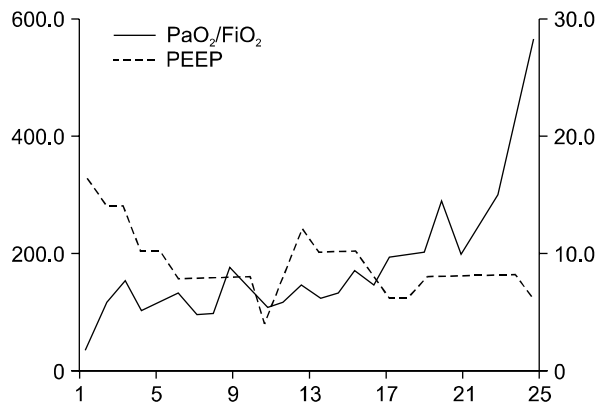


Figure 3. Change of PaO₂/FiO₂ and PEEP (positive end-expiratory pressure).

FiO₂ 0.6, PEEP 8 cmH₂O, pH 7.43, PaCO₂ 41 mmHg, PaO₂ 87 mmHg, $\text{PaO}_2/\text{FiO}_2$ 200 mmHg, $\text{PaO}_2/\text{FiO}_2$ 200 mmHg, 300 mmHg (Figure 3). *Streptococcus pneumoniae*

(SVRI) 1,756 dynes · sec · m²/cm⁵ (1,970~2,390)

107 가 7 가 2 mg 2 mg 4 1 mg 2 가 177 가 3 2 (Figure 1B).

고 찰

1) PaO₂/FiO₂ 300 mmHg 2) 1994 3) X- 4) 18 mmHg

가 가 , 4가 PaO₂/FiO₂ 200 mmHg 7. 1997 71.9% 가 8. 가 1. (prostaglandin), ketoconazole, nitric oxide, lisofylline 가 7 1, 2 가 9. 가 가 1,2 (open lung) 10 ARDS net-work 11. 12 가 1979 , 1994 3,4 가 1979 90 가 90% 1994 40 (vs.) (p=0.8) 67%, 58% 가 24% 48%

Table 1. The indications for extracorporeal life support

Michigan medical center
 $\text{PaO}_2/\text{FiO}_2 < 100$ mmHg or $\text{A-aDO}_2 > 600$ mmHg
 or transpulmonary shunt fraction $> 30\%$
 Age < 70 years
 Time on mechanical ventilation < 10 days

CESAR trial inclusion criteria
 Age (18~65 years)
 Murray score ≥ 3.0 or uncompensated hypercapnea with
 a $\text{pH} \leq 7.20$
 Time on mechanical ventilation ≤ 7 days

후
요

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참 고 문 헌

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2006	가	CESAR
Michigan		Table
1 .		
가		
가 가 . CESAR		
20 cmH ₂ O,		10 cmH ₂ O,
10 / , FiO ₂ 0.3		14
g/dl, > 100,000/ml		.
(dry weight)		6 .
		9 ~ 10 g/dl
가		.
		.
		. CESAR
X-		30
cmH ₂ O , FiO ₂ 가 0.6		
⁶ Hemmilla ⁵		
0.5	FiO ₂	
가 가	.	
가		13

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