

주최·주관 대한심장혈관흉부외과학회

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제56차 추계학술대회

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Surrogate Laboratory Markers for Survival in Extra-Corporeal Membrane Oxygenation Following Major Cardiac Surgeries

- Prognostic indicators in patients requiring extra-corporeal membrane oxygenation (ECMO) support after cardiac surgery have not been yet established.
- We sought to explore multitudes of laboratory markers including cardiac markers (CK-MB and Troponin-I) and blood lactate levels to test their potential prognostic values in patients undergoing ECMO after cardiac surgery.

- Between May 2005 and December 2021
- 364 adult patients who were supported with VA-ECMO after major cardiac surgery

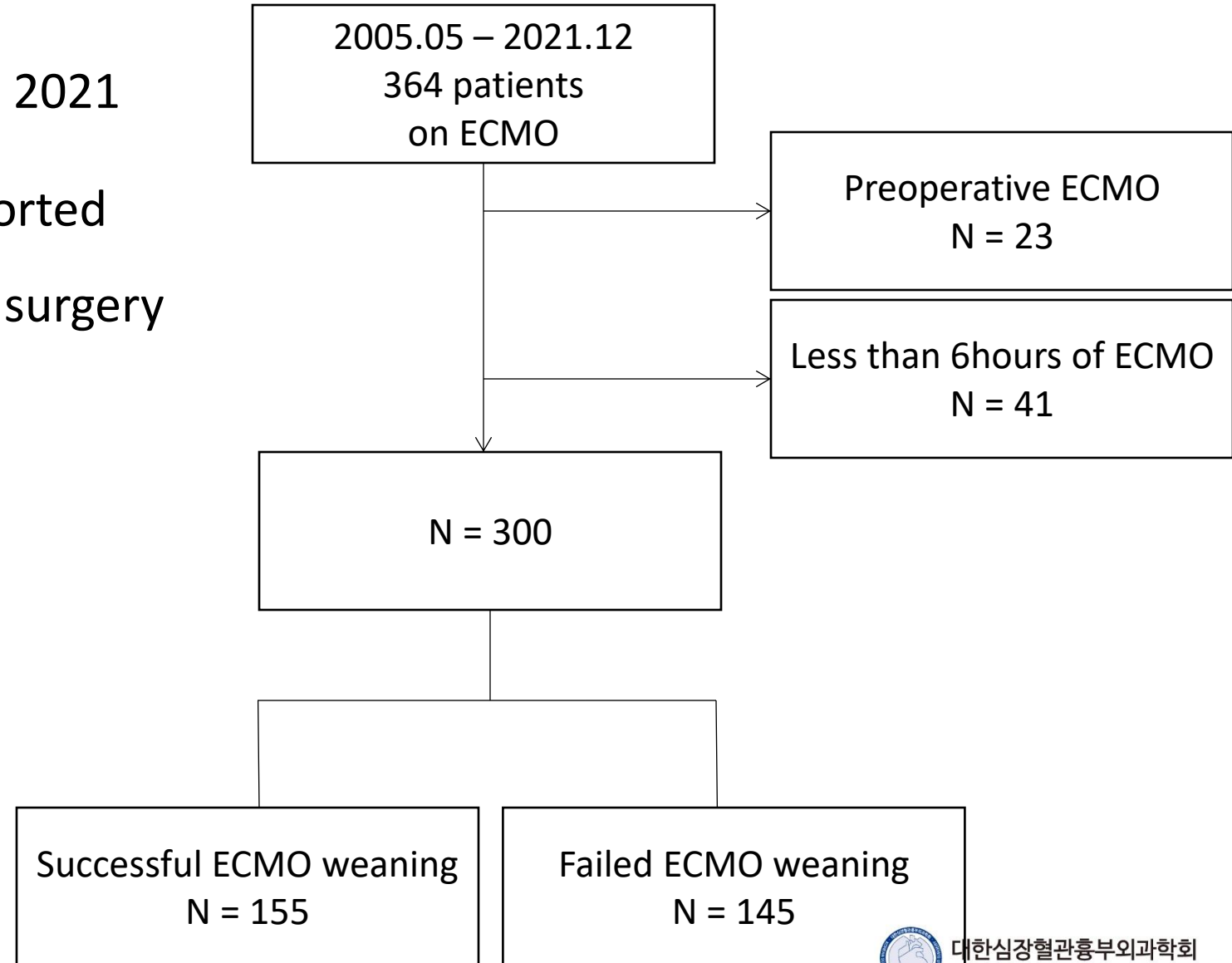


Table 1. Blood Lactate, CK-MB, and Troponin-I Levels Over Time in Successful vs. Failed ECMO Weaning

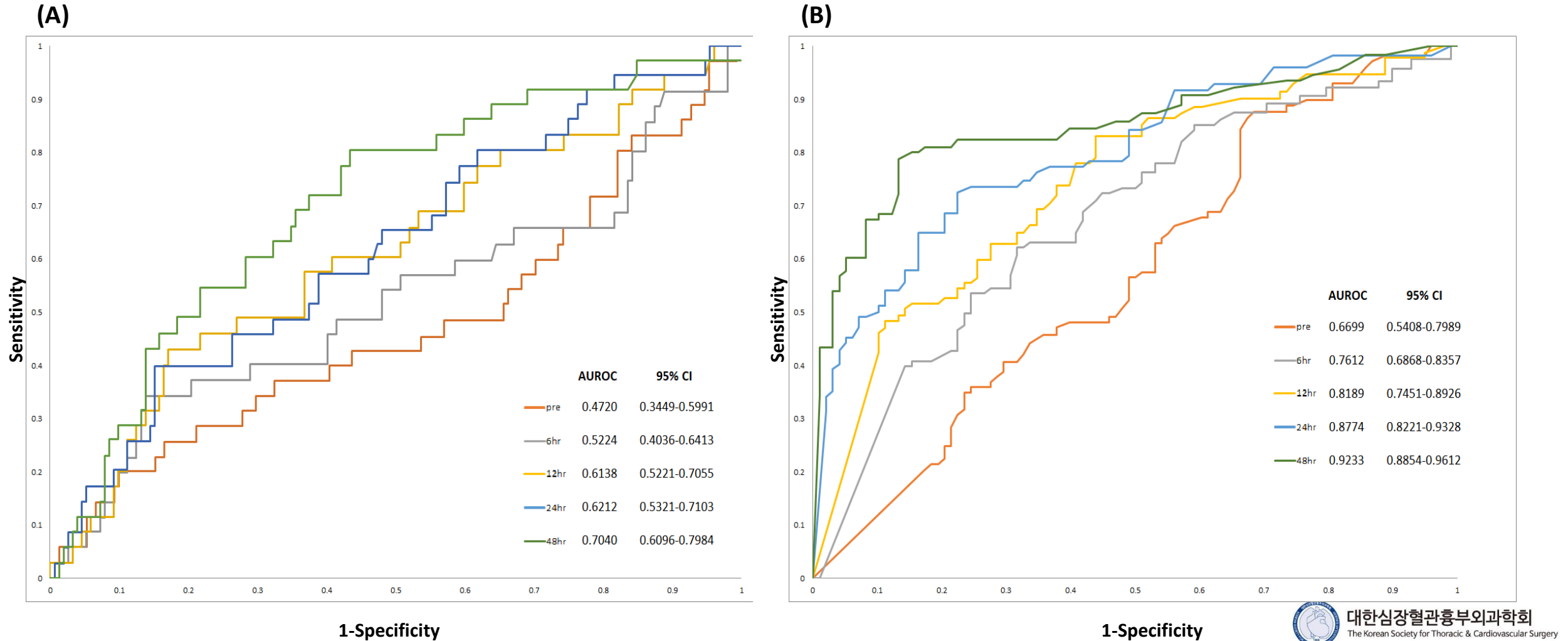
Variables	Successful	Failed	P-value
	ECMO	ECMO	
	weaning	weaning	
	(N=155)	(N=145)	
Blood lactate level, mmol/L			
Before initiating ECLS	7.73 ± 4.2	9.01 ± 4.7	0.013
6 h after ECLS initiation	7.12 ± 3.9	10.69 ± 4.2	<0.001
12 h after ECLS initiation	5.24 ± 3.5	8.94 ± 4.9	<0.001
24 h after ECLS initiation	3.29 ± 2.7	6.64 ± 4.9	<0.001
48 h after ECLS initiation	2.19 ± 1.7	5.67 ± 4.8	<0.001
CK-MB, ng/mL			
Before initiating ECLS	67.12 ± 73.0	104.84 ± 134.3	0.003
6 h after ECLS initiation	84.72 ± 88.1	135.55 ± 159.6	0.002
12 h after ECLS initiation	83.59 ± 84.3	155.24 ± 164.0	<0.001
24 h after ECLS initiation	73.78 ± 97.8	169.25 ± 190.7	<0.001
48 h after ECLS initiation	46.86 ± 67.8	159.7 ± 247.9	<0.001
Troponin-I, ng/mL			
Before initiating ECLS	49.71 ± 120.1	84.34 ± 192.9	0.073
6 h after ECLS initiation	68.19 ± 157.0	170.51 ± 635.6	0.091
12 h after ECLS initiation	57.71 ± 84.0	199.58 ± 474.5	0.002
24 h after ECLS initiation	56.48 ± 151.7	203.93 ± 467.2	0.001
48 h after ECLS initiation	50.36 ± 179.8	168.80 ± 387.3	0.005

- On multivariable logistic regression analyses age, hypertension, BMI, and postoperative CRRT were significant baseline factors for weaning failure
- After adjustments for these baseline risk factors, levels of blood lactate and CK-MB 3 days after ECMO initiation were significantly associated with weaning failure

Table 2. Multivariable risk factors analyses for ECMO weaning failure

Variables	OR	95% CI	P-value
Age	1.02	1.01-1.04	0.0097
Hypertension	1.60	1.01-2.54	0.0436
BMI	1.10	1.04-1.17	0.0023
Postoperative CRRT	2.91	1.77-4.78	<0.0001
Blood lactate level	1.42	1.24-1.63	<0.0001
CK-MB level	1.01	1.00-1.01	0.0040

Figure 1. ROC curves for the predictive value of CK-MB (A) and blood lactate level (B) for ECMO weaning failure at pre ECMO, 6 hours, 12 hours, and 48 hours after the initiation of ECMO



- The study findings suggest that CK-MB and blood lactate levels may serve as surrogate marker for ECMO weaning failure in the setting of Following Major Cardiac Surgeries