

주최·주관 대한심장혈관흉부외과학회

2024 대한심장혈관흉부외과학회 제56차 추계학술대회

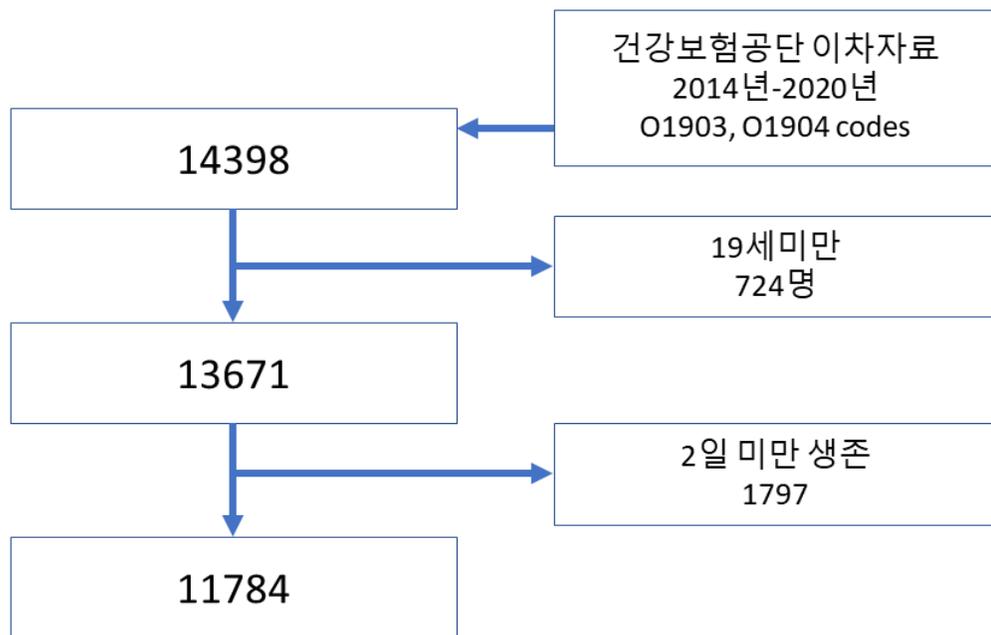
2024. 10. 31 (Thu) - 11. 01 (Fri) 여수 엑스포 컨벤션센터



Association Between Transfusion and Mortality in Patients Undergoing Extracorporeal Membrane Oxygenation

- Transfusion is a critical therapy for managing anemia or bleeding, particularly in patients undergoing complex treatments like Extracorporeal Membrane Oxygenation (ECMO).
- However, transfusions have been identified as potential predictors of adverse outcomes across various medical conditions.
- This study aims to evaluate the impact of transfusions on mortality in patients receiving ECMO for cardiovascular reasons, utilizing both traditional statistical methods and machine learning techniques.

- National health insurance service database
- 2014-2020
- O1903, O1904 codes (ECMO)
- Outcome of interest: 90 day death
- Logistic regression, Extreme Gradient Boosting (XGBoost)



	Total	Survivor	Non-survivor
Female	3881	1146(29.5)	2735(70.5)
Age(mean)	60.117905	54.1	62.6
서울, 경기	5403	1609(29.8)	3794(70.2)
기타 지역	6471	1873(28.9)	4598(71.1)
IHD			
STEMI	1374	442(32.2)	932(67.8)
NSTEMI	1157	291(25.2)	866(74.8)
Angina	2604	804(30.9)	1800(69.1)
Unknown	45	31(68.9)	14(31.1)
PCI	3271	984(30.1)	2287(69.9)
CABG	1165	341(29.3)	824(70.7)
Myocarditis	428	242(56.5)	186(43.5)
PTE	552	219(39.7)	333(60.3)
Cardiomyopathy	1049	377(35.9)	672(64.1)
CHF	2606	781(30)	1825(70)
Shock	2110	527(25)	1583(75)
Cardiac arrest	2561	789(30.8)	1772(69.2)

Variables	Total	Survivor	Non-Survivor
ER admission	8531	2625(30.8)	5906(69.2)
심폐소생술 (응급)			
total	1795	545(30.4)	1250(69.6)
<=15	818	271(33.1)	547(66.9)
15<,<=30	449	144(32.1)	305(67.9)
30<,<=45	291	84(28.9)	207(71.1)
45<,<=60	272	52(19.1)	220(80.9)
ECMO day(mean)	7.5	6.9	7.7
Hospital stay(median)	19	28	15
ICU stay (mean)	28.6	29.9	28.1
Ventilator day (mean)	13.4	12.5	13.7
RBC/hospital stay (mean)	1.3	0.5	1.6
FFP/hospital stay (mean)	1.1	0.4	1.4
PC/hospital stay (mean)	2.2	0.9	2.7



- Logistic regression and XGboost model included Female, age, capital area, period of ECMO, annual cases of ECMO, income quartile, HTN, DM, DL, Ischemic stroke, MI, CHF, Cancer, CRF, Covid19, Charlson comorbidity index in 1 yr, 5yr, ER enter, IHD, STEMI, NSTEMI, Angina, Unknown IHD, PCI, CABG, myocarditis, PTE, cardiomyopathy, HF, Cardiogenic shock, valve surgery, Aorta surgery, lung TP, heart TP, heart lung TP, ventricular assist, ECMO days, RBC/hospital days, RBC/ECMO days, PC/hospital days, FFP/ECMO days, PC/ECMO days, FFP/hospital days, RBC, FFP, platelets, , transfusion

Multivariable Logistic regression model			
	O.R	P-value	Conf. Interval
Age	1.03	<0.001	1.026-1.031
CCI in 1y	0.84	<0.001	0.826-0.845
RBC/hospital days	3.83	<0.001	3.564-4.125
PC/hospital days	1.92	<0.001	1.854-0.9955
FFP/hospital days	3.2	<0.001	2.961-3.461
RBC	1.02	<0.001	1.013-1.017
FFP	1.02	<0.001	1.013-1.019
Platelets	1.01	<0.001	1.009-1.011
Transfusion	1.59	<0.001	1.289-1.961

XGboost model	Feature importance
CCI in 1 year	0.142037
RBC/hospital days	0.120517
Age	0.093257
RBC/EMO days	0.071736
PC/hospital days	0.061693
RBC units	0.061693
ECMO days	0.054519
Heart transplantation	0.041607
Cancer	0.034433
FFP/hospital days	0.032999

- The volume of RBC, FFP, and PC transfusions are key predictors of mortality in patients undergoing ECMO.
- Careful transfusion management is a crucial strategy to improve survival outcomes in this high-risk population.