

Extracorporeal Membrane Oxygenation (ECMO): A Promising Option for Treating Adult Down Syndrome Patients?



Dear Editor,

Down syndrome (DS) remains the most common chromosomal disorder with the incidence of 1 in 700 babies in the United States. DS increases the risk of respiratory and congenital heart defects and therefore, increasing the need for extra life support.¹ Without surgery, congenital heart disease is a major source of morbidity and premature death. The life expectancy of patients with DS without any congenital heart defects is 60 to 70 years of age.² However, patients with congenital heart defects have 5 times higher risk of death as compared with people without any congenital defects.³

We read an article “Extracorporeal membrane oxygenation characteristics and outcomes in adult patients with down syndrome” published by Vicky Duffy et al emphasizing the use of extracorporeal membrane oxygenation in Adult DS patients with heart and respiratory failure which is refractory to all other treatments. The use of an extracorporeal membrane in the pediatric DS population with heart and respiratory failure has been emphasized in previous articles and is also used more often used as a last resort and it showed promising results for cardiac and respiratory support increasing longevity. In this latest article, the use of extracorporeal membrane oxygenation among the DS adult population and its clinical outcomes were evaluated. This study was conducted, using the Extracorporeal Life Support Organization registry database which highlighted the use of extracorporeal membrane oxygenation (ECMO) in 21 adult DS patients with the approximate incidence 0.88/1,000.^{4,5} Among 21 DS patients who were studied, 9 patients were alive, and 12 patients were deceased. This study compared the differences in the characteristics among deceased and alive DS patients who used ECMO and the author did not find any significant difference except fewer incidences of mechanical and neurological changes

among deceased DS patients who used ECMO. Also, the mortality rate was similar when compared with non-DS patients who were placed on ECMO. There were no remarkable outcome differences in ECMO using alive and deceased DS patients with regards to age, weight, gender, initial pH, initial pO₂, duration of the extracorporeal membrane, oxygenation run, ventilator or extracorporeal membrane oxygenation mode, and nitric oxide use.

We would like to share our views as this study has some shortcomings due to the small sample size of adult patients, and not including other important variables. Pediatric DS patients are usually diagnosed early, treated appropriately, and they rarely require ECMO in adulthood. Therefore, in the literature, we have scarce data availability for adult DS patients using ECMO. Further data and more trials are necessary to clarify the actual role of ECMO before expanding its indications. Nevertheless, ECMO should be used in adult DS patients requiring critical life support with heart and respiratory failure which is refractory to all other treatments. It has the potential to alter the current paradigms for refractory cardiac and respiratory failure.

Disclosures

The authors has no conflicts of interest to disclose.

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Clinical Outcomes of Nonagenarians After Transcatheter Aortic Valve Implantation



Stehli et al conducted a follow-up study to evaluate the short- and mid-term outcomes of 71 nonagenarians after transcatheter aortic valve implantation (TAVI).¹ At 1 year, odds ratio (OR) (95% confidence interval [CI]) of nonagenarians against <90-year-old patients for living in an aged-care facility was 5.99 (2.62 to 13.67). I have some concerns regarding their study.

Goudzwaard et al investigated the association between frailty, delirium, and 1-year mortality in 213 older patients with TAVI.² Frailty was present in 61 patients (28.6%) and adjusted OR (95% CI) of frailty for delirium was 3.3 (1.55 to 7.10), and adjusted hazard ratio (HR) (95% CI) of frailty for 1-year mortality was 2.1 (1.01 to 4.52). These data presents that physical and mental illness in the elderly is also useful to evaluate the prognosis of nonagenarians.

Regarding to the first query, Anand et al conducted a meta-analysis to evaluate the association between frailty and clinical outcomes after TAVI.³ Pooled HRs (95% CIs) of frailty for mortality ≤30 days and >30 days after TAVI were 2.35 (1.78 to 3.09) and 1.63 (1.34 to 1.97), respectively. In addition, pooled HRs (95% CIs) of subjective and objective assessment of frailty for mortality >30 days after TAVI were 1.42 (1.28 to 1.59) and 2.63 (1.87 to 3.70), respectively. Prognosis in nonagenarians after TAVI should also be evaluated by frail indicators to prevent subsequent mortality risk.

Second, Stehli et al presented wide range of 95% CI of OR. Although I cannot confirm that the authors conducted multivariate adjustment, Peduzzi et al evaluated the effect of events per independent variable in logistic regression analysis, and events per independent variable value ≥10 are recommended for stable estimates.⁴ Anyway, limited number of events should be paid with caution.