

**Cardiopulmonary Exercise Test (CPET) usefulness for decision making in patients with repaired Tetralogy of Fallot (ToF) and secondary severe pulmonary regurgitation (PR).**

*Rezola E., Eizmendi M, Izquierdo M.A.  
Paediatric Cardiology Division. Hospital Donostia. Spain.*

Background: Patients with severe PR have significantly dilated right ventricle (RV). Its progressive dysfunction and increased volume overload may impact in exercise capacity. The aim of this study is to compare changes in CPET in these patients and consider the implications of these changes.

Methods: Retrospective case-control study was lead in our Paediatric Cardiology Division at Donostia Hospital, comparing severe PR patients secondary to ToF and healthy subjects. All underwent for standardised CPET, using Godfrey ramp protocol as recommended by the European Society of Cardiology (ESC). Measured variables were: work rate (WR), predicted peak oxygen consumption (peak VO<sub>2</sub>), oxygen uptake efficiency slope (OUES), ratio of minute ventilation to carbon dioxide production (VE/VO<sub>2</sub> slope), peak heart rate (pHR) and rate-pressure product (RPP) were registered. Mann Whitney test was used to compare continuous variables and Chi-square test for categorical changes.

Results: Twenty patients (11 girls, 55%) with previous repaired ToF and secondary severe PR (group A, mean age 13,5 ± 2,8 years) were compared to twenty sex-matched healthy teens (group B, mean age 12,2 ± 2,2 years; p=0,1). Group A raised a significantly lower WR (110,3 ± 8,6 vs 125,8 ± 6,3 watts, p=0,04). In the same way, group A had a significantly lower predicted peak VO<sub>2</sub> (81,1 ± 5,1 vs 97,8 ± 2,9%; p=0,017) as well as a lower OUES (1,8 ± 0,1 vs 2,5 ± 0,1; p=0,045), a lower pHR (165 ± 4,7 vs 182,6 ± 2,1 beats per minute; p=0,02), and a lower RPP (20589 ± 1053 vs 34017 ± 7251 beats per minute per mmHg; p= compared to group B. On the other hand, VE/CO<sub>2</sub> slope was significantly higher in group A (31,6 ± 1,3 vs 27,6 ± 1; p= 0,04).

Conclusion: The results of CPET showed that patients with repaired ToF and secondary severe PR had a low maximal exercise capacity, even among asymptomatic patients, suggesting impaired exercise capability. CPET should be considered to assess these patients functional capacity in order to assess the right pulmonary valve exchange timing.