

**Predictive value of right ventricle diameter's Z score to detect normal versus enlarged right ventricles in postoperated Tetralogy of Fallot children**

*G<sup>a</sup> Cuenllas Álvarez L., Rodríguez-López Domingo A., Barreiro Pérez M., Iscar Galán A., Martín García A., Sánchez P.L., Maroto Álvaro E., Medrano López C.  
Hospital General Universitario Gregorio Marañón, Madrid (Spain). Hospital Universitario Torrejón, Madrid (Spain). Hospital Clínico Universitario Salamanca, Salamanca (Spain)*

**INTRODUCTION:** accurate assessment of right ventricle (RV) size is important in treatment and follow up of congenital heart disease. The aim of the study was to assess the predictive value of RV Z-score diameters in identifying enlarged RV in postoperated Tetralogy of Fallot patients (PTF) according to indexed end-diastolic volumes (RVDVi) from cardiac magnetic resonance (CMR).

**METHODS:** 50 PTF were enrolled (24 patients with RVDVi  $\leq 110\text{ml/m}^2$ , 16 had 111-150 and 10 were  $\geq 150$ ). RV end-diastolic diameter: basal, medial and longitudinal were measured. These parameters were tested with RV diameter's Z-score made with a 641 healthy pediatric patients cohort (0-18 years), using body surface area (BSA, Haycock formula) and satisfying the assumption of homoscedasticity and normality of residuals, also considering confounders as gender and inter/intraobserver variability when computed.

**RESULTS:** PTF mean age was  $11\pm 5$  years, mean BSA was  $1.1\pm 0.4\text{m}^2$ , mean RVDV was  $118\pm 38\text{ml/m}^2$ , mean Z-score for basal diameter was  $36\pm 7.6\text{mm}$ , for midcavity was  $34\pm 6.7\text{mm}$  and for longitudinal diameter  $70\pm 12\text{mm}$ . There was weak correlation between diameters and VDVDi (Rho Spearman  $< 33\%$ ). But diameter's Z-scores in ROC curves showed a very good discriminating capacity with AUC  $> 0.8$ , able to determine which RV were normal sized and which were not (dilated PTF). A cut-off point of  $> +2$  z-score provided high specificity ( $> 97\%$ ).

**CONCLUSIONS:** diagnostic validity of RV diameter's Z-scores to discriminate between normal and dilated RV was significant. Diameter's Z-scores can accurately predict RV enlargement in PTF patients. As therapeutic decisions may depend on RV progressive dilatation, we offer an easy tool to guide follow up and decision making in PTF children.