

We should use NT-proBNP with care to decide on candidate for re-surgery in patients with tetralogy of Fallot after definitive repair

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Background. Patients with tetralogy of Fallot (TOF) after repair were sometimes redone right ventricle outflow reconstruction (re-RVOTR). We decide a candidate for re-surgery on the basis of RV overload measured by catheterization or magnetic resonance imaging, both of which cannot be performed frequently. Levels of NT-proBNP were got routinely on an outpatient basis. We investigated whether RV overload which met a requirement for re-RVOTR was predicted by levels of NT-proBNP. Methods. The medical records of 101 repaired-TOF patients aged from 1 to 53 years were reviewed. Cardiac catheterization was performed to grasp hemodynamic status between 2010 and 2015. We stipulated that end-diastolic volume of RV was 150ml/m² or over (hRVEDVI) as indication for re-RVOTR. First, we sought cut-off value to approve them by square test. Second, we calculated each index for predicting indication of re-RVOTR: positive predictive value (PPV), negative predictive value (NPV), sensitivity (SEN), and specificity (SPE). Results. Values of NT-proBNP were significantly elevated in hRVEDVI (967 vs. 340 pg/ml). We decided 945 pg/ml as cut-off value to distribute patients with hRVEDVI to one side most statistically (60% vs. 12%, p=0.00067). Index values were follows: PPV 60%; NPV 88%; SEN 35%; SPE 95%. However, the area under ROC curve for predicting hRVEDVI was 0.55 (95% confidence interval: 0.37-0.73). Moreover, the ratios of patients with degeneration for RV, such as low ejection fraction or increased end-systolic volume, were significantly high in patients with NTpro-BNP over cut-off value. Similarly, the ratios of patients with degeneration for LV, such as increased volume on end-diastole or end-systole, or low ejection fraction, were significantly high in over-cut-off group. Discussion. Our study showed significant cut-off value of NT-proBNP subsisted for predicting re-RVOTR candidate in repaired TOF patients. We could gain high SPE but low SEN with this cut-off value, which indicated that this cut-off value was not suitable for screening. Moreover, we could not distinguish candidate for re-RVOTR by ROC analysis, which pointed out low NT-proBNP values had constant distribution in hRVEDVI. Not only elevated RVEDVI but also other ventricular degeneration rising up values of NT-proBNP would throw out predicting re-RVOTR by NT-proBNP.