Brain natriuretic peptide rises in response to different cardiac performance of every first strategy before Glenn procedure

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Background: The levels of plasma brain natriuretic peptide (BNP) are elevated highly in patients before Glenn procedure (pre-Glenn hBNP). Significant cardiac stress exists in patients with pre-Glenn hBNP. We predicted myocardial impairments were different in each first strategy. The purpose of this study was to investigate the cardiac performances which influenced pre-Glenn hBNP in every first strategy. Method: The medical records of 126 patients before Glenn were reviewed. Cardiac catheterization was performed with Glenn in view between 2003 and 2011. Venous blood samples were obtained at the same point in time. We defined BNP levels 100pg/ml over as pre-Glenn hBNP. First strategies were divided into five categories. We examined what cardiac performances of each strategy affect pre-Glenn hBNP. Results: After multiple logistic regression analysis pre-Glenn hBNP in all 126 patients were significantly associated with moderate atrioventricular valve regurgitation; increased ventricular volume of end-systole (ESV); increased ventricular pressure of end-systole; increased ventricular pressure of end-diastole (EDP); decreased ejection fraction of ventricle (R-square=0.46). In monovariate analysis pre-Glenn hBNP were additionally related to increased ventricular volume of end-diastole (EDV). In separate analysis with first strategy, EDV, ESV and EDP were significantly related to pre-Glenn hBNP in group of shunting from systemic artery to pulmonary artery; EDV in native pulmonary stenosis; EDP in pulmonary artery banding. No cardiac performances were related to pre-Glenn hBNP in groups of systemic flow relaying on ductus arteriosus which underwent bilateral pulmonary artery banding. Conclusion: Our study showed that variant cardiac strains were associated with pre-Glenn hBNP. And cardiac strains were different in every strategy. In ductus-depending groups cardiac performances were not clear which related to pre-Glenn hBNP. There may be latent damages of myocardium which were not represented by cardiac performances. If high levels of BNP were sustained, we should provide relief from different strains in every strategy based on this investigation. This may lead to stable condition before Glenn procedure.