ELEVATED LEVELS OF ET-1 IN PULMONARY CIRCULATION AFTER THE FONTAN PROCEDURE

Poster Contributions
Poster Sessions, Expo North
Saturday, March 09, 2013, 3:45 p.m.-4:30 p.m.

Session Title: Congenital Cardiology Solutions: Prenatal Diagnosis, Coronary Anomalies and More
Abstract Category: 13. Congenital Cardiology Solutions: Pediatric
Presentation Number: 1162-134

Authors: Kazuyoshi Saito, Kazuhiro Watanabe, Sayaka Ozawa, Keiichi Hirono, Naoki Yoshimura, Dirk Foell, Fukiko Ichida, University of Toyama, Toyama, Japan

Background: Endothelin-1 (ET-1) is one of the most potent vasoconstrictors produced from various organs and might be involved in many cardiovascular conditions. As far as we know there are no reports about serum levels of ET-1 in pulmonary arteries after the Fontan procedure.

Methods: Study subjects were divided into three groups: 1) Fontan group (11 cases): patients one year after the Fontan procedure, 2) Glenn group (15 cases): post-operative Glenn procedure patients, 3) Biventricular repair (BVR) group (39 cases): patients who underwent post-operative biventricular repair for congenital heart defects. We assessed various cardiovascular parameters and collected 2-3mls of whole blood samples from the pulmonary artery at the time of post-operative cardiac catheterization. Serum levels of ET-1 were measured using an enzyme-linked immnosorbent assay (ELISA).

Results: 1) Concentration of ET-1: The mean serum levels of ET-1 in the Fontan group was significantly higher than in the Glenn (p<0.05) and BVR groups (p<0.01): Fontan group: 1.72 +/- 1.21, Glenn group: 1.10 +/- 0.574, BVR group: 0.853 +/- 0.528 (pg/ml). 2) Hemodynamics of the Fontan group: Serum levels of ET-1 in the Fontan patients were strongly correlated with mean pulmonary artery pressure (mean PAP) (r=0.7797) and ventricular ejection fraction (EF) (r=0.7603).

Conclusions: We report for the first time that patients have elevated levels of ET-1 in the pulmonary circulation after the Fontan procedure and that these are significantly higher than in the Glenn and BVR group patients. Further, the serum levels of ET-1 in the Fontan group patients were strongly correlated with mean PAP and EF, which might indicate that ET-1 in the pulmonary artery influences hemodynamics after the Fontan procedure.