AORTIC SURGERY IS ONE OF THE RISK FACTORS FOR ENHANCEMENT OF PRESSURE WAVE REFLECTION IN ADULT PATIENTS WITH CONGENITAL HEART DISEASE

Poster Contributions
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Background: Enhancement of aortic pressure wave reflection accompanying aortic aging is one of the risk factors for cardiovascular diseases. After reconstruction of aortic arch in patients with aortic coarctation, the enhancement of aortic pressure wave reflection was reported. Based on advance of surgical procedure and medical therapy, most patients with congenital heart disease can be expected to survive into adulthood today. It means the patients are faced with problems associated with cardiovascular diseases. Therefore, we examined the risk factors for the enhancement of aortic pressure wave reflection in adult patients with congenital heart disease.

Methods: We non-invasively evaluated radial pressure augmentation index (rAI) by using HEM-9000AI (Omron Healthcare Co., Ltd., Kyoto, Japan) in 99 adult patients with congenital heart diseases (36.1 ± 14.6 years, male/female 63/36) and examined the relationship between rAI and patients' demographic information, basic disorders, and the risk factors for hypertension. We especially analyzed the relationship between rAI and history of aortic surgeries, which were classified into two categories. One is direct aortic surgery (20 patients), and the other is systemic-to-pulmonary shunt (23 patients).

Results: The rAI was 77.1 ± 19.1%, and the significant determinants of the value were the history of systemic-pulmonary shunt (t=4.194, p<0.0001), age (t=4.091, p<0.0001), height (t=-3.580, P=0.0010) and the history of direct aortic surgery (t=2.253, p=0.027) by multiple regression analysis. The rAI was elevated in 44 patients (>1SD compared to age and gender matched control). The determinants of the elevated rAI were the history of systemic-pulmonary shunt (Odd ratio (95% CI)=21.319 (5.467-83.142), p<0.0001) and direct aortic surgery (Odd ratio (95% CI)=4.183 (1.376-12.721), p=0.012).

Conclusions: In adult patients with congenital heart disease, the history of aortic surgery is one of the risk factors for the enhancement of aortic pressure wave reflection. It is important to prevent cardiovascular diseases from early life.