Introduction

Double aortic arch (DAA) is a congenital anomaly inducing compressed trachea by vascular ring. This anomaly often lead to diagnosis after dyspnea have developed. Some patients who have severe tracheal stenosis shows serious dyspnea right after birth.

Case

Case 1: The patient was introduced to our hospital at gestational age 30 weeks and 4 days due to indicated abnormal finding of three vessel trachea view. The patient could have been diagnosed to DAA by 9 signs observed in three vessel trachea view at that point. She was born in gestational age 36 weeks and 3 days by spontaneous delivery.

Case 2: The patient was introduced to our hospital at gestational age 27 weeks 4 days because of the suspected right aortic arch and vascular ring by telemedicine. Because thin left aortic arch and 9 signs were observed in three vessel trachea view, she was diagnosed to DAA. She was born in gestational age 36 weeks and 6 days by spontaneous delivery.

Bose cases determined diagnosis of DAA by contrast-enhanced CT. The ratio of cross-sectional area between trachea and vascular ring was calculated prenatal and postnatal. (Figure 1, 2) The ratios of postnatal were higher than prenatal in both cases (case 1: 0.018 to 0.165, case 2: 0.077 to 0.323). (Table 1) There were no respiratory symptoms in both cases, but we performed surgery at 15 day and 23 day, respectively. Because tracheal compression was strengthened by CT after birth.

Discussion

In our cases, it was considered that early diagnosis of DAA at fetal period and strict postnatal managements followed by scheduled arterioplasty could prevent severe complications of tracheal stenosis. The ratios of postnatal were higher than prenatal in both cases. These findings suggested that enlarged aorta by increasing cardiac output and enlarged trachea by started breathing after birth might worsen tracheal stenosis.

Conclusion

We encountered 2 cases of DAA diagnosed and observed from their fetal period, followed by scheduled arterioplasty surgery. The ratio of cross-sectional area between trachea and vascular ring was calculated prenatal and postnatal. The ratios of postnatal were higher than prenatal in both cases.

Fetal Postnatal T V T/V T V T/V Case1 1 55 0.018 11.7 71.2 0.165 Case2 3 39 0.077 18.4 56.1 0.323

Table1. The ratio of cross-sectional area between trachea and vascular ring. T: Trachea area (mm$^2$), V: Vascular ring area (mm$^2$), T/V: Trachea area/Vascular ring area ratio