Objective:
To explore the difference in Z-score reference range for cardiovascular normal and Coarctation of the Aorta (COA) fetuses, in order to improve the rate of prenatal diagnosis.

Methods:
A total of 800 normal fetuses and 50 fetuses with COA were included in this study(Average 18-33 weeks), Nine cardiovascular dimensions were measured during Routine examination. Normal cardiovascular Z-scores formulae were constructed for these measurements based on GA. Finally, 9 z-scores and 6 ratios data were calculated.Then all parameters were compared between the normal and COA groups, follow-up to fetal birth.

Results:
Among 50 fetuses, 5 had abnormal chromosome, RAD, RVID, AO, PA, IAA and DA mean Z-scores and RVID/LVID, PA/AO, DA/IAA, DAO/IAA, AO/IAA, AO/DAO were statistically significantly different between normal fetuses. In the COA group, almost DA/IAA ratios (48/50) outside the normal 95% range. Most of the Ao(41/50),aortic arch isthmus Z-scores (47/50) were<−2, 90% of the PA/AO ratios outside the normal 95% range. However, 64% ductus arteriosus Z-scores were>2, 40% of the RVID/LVID ratios outside the normal 95% range, 24%of the RAD Z-scores were>2, 12% PA Z-scores outside ±2. The method using IAA Z-score had the highest detection rate of COA. AO Z-Score and DA/IAA ratio had good but slightly lower diagnostic accuracy than IAA Z-score.

Conclusion
Fetuses whose Ao, IAA Z-scores are outside -2, PA/Ao ratios is greater than 1.6 and DA/IAA ratios greater than 1.5 at the same time are more likely to suffured from COA.