OBJECTIVE: Right subclavian artery (RSA) usually arises from the brachiocephalic artery of the aortic arch. In a rarer variant, the aortic arch branches into four vessels, and the RSA arises independently from the descending aorta at its junction with the arterial duct, it courses behind the trachea and the esophagus, and then turns towards the right shoulder. This abnormality of the aortic arch is named "aberrant right subclavian artery" (ARSA). This variant is present in 1-2% of the normal population; in fetuses with Down syndrome its incidence ranges between 3% and 100%. This study investigates the incidence of ARSA in a Down syndrome population.

METHODS: This prospective study included a Down syndrome population diagnosed with invasive procedures (amniocentesis or chorionic villus sampling). The position of the RSA was evaluated and the incidence of ARSA was assessed. The ultrasonography was performed during the second trimester of pregnancy (14w-26w of gestation); cases with gestational age less than 14 + 0 weeks were excluded from the study. The presence of ARSA was investigated on the three vessels and trachea view using color or power Doppler.

RESULTS: 32 consecutive fetuses with Down syndrome were included in the study. The median gestational age was 18w + 2d (range, 15w-26w). Assessment of right subclavian artery was feasible in 100% of fetuses. ARSA was detected in 11 of 32 fetuses with Down syndrome (34.4%). In 2 fetuses ARSA was the only abnormal ultrasound finding (18.8%). In 2 fetuses (18,2%) it was associated with an intracardiac echogenic focus plus other extracardiac defects and in only 1 fetus ARSA was associated with an atrioventricular septal defect (9%).

CONCLUSION: ARSA may be an ultrasonographic marker for Down syndrome screening. In our series the incidence of ARSA was 34.4%, which is in agreement with the findings of previous studies.