Fetal aortic arch anomalies
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Objective
To evaluate the prevalence of aortic arch anomalies in an intermediate risk population, and to estimate its association with fetal intra-, extracardiac and genetic anomalies.

Methods
Ultrasound 3-vessels trachea (3VT) view, grey scale and color doppler, was evaluated by imaging the upper fetal mediastinum. The normal left aortic arch appears as a V-shaped confluence of the ductus arteriosus and aortic arch, with the trachea situated on the right. A right aortic arch (RAA) was diagnosed as a mirror branching image (MBI) if the trachea was left-sided, no vascular ring was seen and with aberrant left subclavian artery (RAA-ALSA) if a U-shaped structure was seen behind the trachea. A double aortic arch (DAA) was diagnosed when the trachea was completely encircled by connected segments of the aortic arch. Finally, aberrant right subclavian artery (ARSA) was considered if coursed behind the trachea. Intracardiac, extracardiac and genetic anomalies were studied.

Results
In a retrospective analysis between 2008 and 2017 of 35,651 pregnant women who wer routinely scanned, we identified 230 fetuses (0.65%) with anomalous branching aortic pattern. ARSA was detected in 172 fetuses, all of them after year 2011; cardiac anomalies were seen in 12 patients (7%), and non-cardiac anomalies in nine (5.2%); genetic studies were anomalous in 6/18 (33%) non-isolated cases. DAA was diagnosed in 12 patients, two with cardiac defects (16.7%) and one with extracardiac anomaly (8.3%); genetic data were available in 10/12 cases, none with genetic anomalies. RAA was detected in 46 patients, 32 with MBI or indeterminate, 17 (53.1%) of them had a significant additional congenital heart disease and 14 RAA-ALSA type, two of them (14.3%) with associated cardiac defect; genetic anomalies were seen in 5/29 DAA-MBI (17.2%) and in 1/7 RAA-ALSA (14.3%).

Conclusion
Fetal aortic arch anomalies are rare conditions, but they can be associated with important congenital heart defects and other morphological anomalies of which conotruncal anomalies are the most common. Genetic anomalies are found frequently and the RAA-MBI type is strongly associated with intracardiac anomalies.