



Trends in the prenatal diagnosis of fetal structural defects

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Objective

To investigate the impact of introducing the examination of the fetal tricuspid valve flow and the inspection of the posterior fetal brain in the routine ultrasound scan at 11-13 weeks in the detection of fetal structural defects.

Methods

The detection rate and the timing of the diagnosis of major fetal structural abnormalities was compared between two time periods in the same institution (Leto Maternity Hospital): in the first period (2007-2010) the examination of the four-chamber view of the heart was not included in the protocol of the routine anatomy assessment at 11-13 weeks and the four-line view of the posterior brain was not observed. In the second period (2011-2017) two views were introduced in the protocol of the 11-13 weeks ultrasound examination: the assessment of the four cardiac chambers for tricuspid valve flow study (and optionally the three-vessel view) as well as the examination of the posterior brain in the mid sagittal view.

Results

63 major fetal structural anomalies from the first period were compared with 111 major fetal structural anomalies from the second period. The antenatal detection rate of fetal defects did not change between the two periods (92% in the first period vs 89, 2% in the second period). There was however a trend over time towards more diagnoses being made in the first trimester (41, 2% (26/63) in the first period vs 52, 6% (53/111) in the second period). This difference was pronounced for the cardiac defects (first trimester diagnosis 14, 3% (2/14) in the first vs 38, 7% (12/31) in the second period) and the open neural tube defects (first trimester diagnosis 33, 3% (1/3) in the first vs 71, 4% (5/7) in the second period). In addition 35, 4% (11/31) of the fetuses with cardiac defects had tricuspid valve regurgitation and/or increased nuchal translucency.

Conclusion

Overtime the majority of prenatally diagnoses of fetal anomalies shifted towards the first trimester. This was achieved through the introduction of the tricuspid valve flow and the posterior fetal brain examination.