Variation of safety indices during learning curve for assessment of fetal heart at 11+0 to 13+6 weeks

Nemescu D, Berescu A, Luca Al, Potica I, Onofrescu M.
University of Medicine and Pharmacy “Gr. T. Popa”, Iasi, Romania

Objectives
To assess the safety indices: thermal index (TI) and mechanical index (MI) during the learning curve for fetal echocardiography at 11-13 weeks.

Methods
Prospective, observational study, on 303 normal fetuses.
Singleton fetuses with a CRL>45 mm and normal heart aspect. Trans-abdominal approach, RAB 4-8 MHz, Voluson E8.
Heart evaluated by HD color Doppler: 4-chamber view (4CV), left (LVOT) and right (RVOT) ventricular outflow tract, and 3-vessel-trachea view (3-VTv).
TI and MI were retrieved during color flow Doppler examinations of the fetal heart and from pulsed-wave Doppler assessment of the tricuspid flow (TR) and ductus venosus (DV).

Results
A complete cardiac exam was feasible for 76% in the first 80 cases, for 80% in cases 81-140 and for 98% in the last 163 cases. The learning curve achieved the plateau after 140 cases.

Continuous, significant decrease of MI values from the color Doppler examination of the fetal heart, which happened along the learning phase. Safety indices from the TR evaluation showed an increase at the beginning of the learning phase and stabilized afterwards.

Indices from the DV assessment and TI from color Doppler exam of the heart were remarkably constant.

Conclusion
Acoustic exposure levels vary during the learning curve for fetal heart assessment. The occurrence of the safety indices with constant values suggests the potential for supplementary active reduction of them.