19th World Congress in Fetal Medicine

Fetal cardiac remodeling according to lifestyle intervention. A subanalysis of the IMPACT BCN trial

Youssef L, Crovetto F, Castellani R, Nakaki A, Casas R, Paules C, Castro-Barquero S, Vieta E, Estruch R, Gratacos E, Crispi F. BCNatal, Barcelona, Spain

Objective

To investigate the effect of a Mediterranean diet (MedDiet) or Mindfulness-based Stress Reduction (MBSR) in high-risk pregnancies on cardiac remodeling in fetuses born as Small-for-Gestational-Age (SGA).

Methods

In a randomized clinical trial with parallel-group conducted at a University Hospital in Barcelona, Spain (2017-2020), 1221 pregnant women at highrisk for SGA were randomly allocated at 19-23 weeks' gestation into three groups: a MedDiet intervention, a MBSR program or non-intervention. Participants in the MedDiet group (n=407) received monthly individual and group educational sessions, and free provision of extra-virgin olive oil and walnuts. Women in the MBSR group (n=407) underwent an 8-week MBSR program adapted for pregnancy, consisting of weekly 2.5-hour and one full-day sessions. While primary outcome was prevalence of SGA, fetal echocardiography was considered as a secondary outcome and performed at 33-34 weeks of gestation. B-type natriuretic peptide (BNP) was measured in cord blood collected at delivery.

Results

Fetal echocardiography was performed in 990 pregnancies. Among them, 169 newborns were SGA (n=71 non-intervention, n=48 MedDiet, n=50 MBSR). No differences in Doppler parameters, cardiothoracic ratio or myocardial wall thickness were observed. SGA fetuses exposed to MedDiet during pregnancy showed less spherical hearts compared to non-intervention group (left ventricle longitudinal diameter [mean±SD: 23.5±3.2 vs. 21.6±2.9 mm, p=0.002], right ventricle longitudinal diameter [22.7±3.6 vs. 21.1±3.2 mm, p=0.02]) with a tendency towards lower BNP in cord blood (median [IQR]: 741 [497-1221] vs. 932 [609-1500] pg/mL, p=0.08). Echocardiography and BNP were similar in MBSR and non-intervention groups.

Conclusion

Fetuses born SGA whose mothers followed a MedDiet intervention during pregnancy exhibited less signs of cardiac remodeling than those with nonintervention; future research is warranted to elucidate the mechanism(s) underlying these findings.