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Evaluation of the morphological screening examination of the fetal heart by ultrasonography

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Objective

(1) To determine the frequency of obtaining each pre-defined screening plan of insonation in the studied population, (2) to associate the acquisition of each screening plan with the presence of overweight / obesity and the fetal position at the time of the examination and to propose a protocol for the morphological screening of the fetal heart in usual risk prenatal care.

Methods

Retrospective, observational study, involving pregnant women who underwent morphological obstetric ultrasonography complemented with fetal heart screening at ME / UFRJ, from 2014 to 2018. The year of the scan, maternal age, gestational age (GA) at the screening, pre-gestational maternal body mass index (BMI), parity, fetal position were evaluated, as well the following plane of the fetal heart morphological assessment insonation protocol were described: (1) cardiac situs; (2) cardiac rhythm check; (3) complete assessment of the four chambers which includes: cardiac axis, absence of pericardial effusion, 4 chambers present and proportional, oval foramen leaflet opening to the left atrium (LA), pulmonary veins drainage in the LA, absence of wall hypertrophy ventricular, integrity of the interventricular septum; free opening of the atrioventricular valves and insertion of the valve leaflets; (4) left ventricular (LV) outflow tract; (5) RV outflow tract; (6) transverse section of the plane of the three vessels and trachea; (7) anterograde flow in the ductal arch and transverse aorta; (8) aortic arch and (9) ductal arch. The screening exam was considered complete when all protocol plan were obtained and incomplete in the failure to obtain any of the planes.

Results

1477 patients underwent a morphological screening scan of the fetal heart. The sample characterization ranged from: maternal age: 11 to 49 years; GA at the screening: 17 to 31 weeks; parity: 0 to 10; Pre-gestational BMI: 13.48 to 44.57 kg / m2. The plans were examined in the following proportions: cardiac situs and rhythm: 100%; 4 cardiac chambers: 97.22%; RV output: 98.24%; VE exit: 98.51%; 3VT: 98.78%; anterograde flow: 93.43%; aortic arch: 93.16% and ductal arch: 90.31%. The examination was complete in 85.98% of the cases. There was a significant difference in the success rate of the exam between obese and adequately weighted pregnant women. There was no significant difference when comparing the proportion of complete examinations with fetal positions.

Conclusion

As the years passed, there was an increase in the success rate of the exam. The higher the pre-gestational BMI, the greater the difficulty of morphological evaluation of the fetal heart. The position of the fetal dorsum did not influence the acquisition of the screening plans for the exam. The results make it possible to incorporate the protocol into the universal prenatal routine.