EVALUATING THE CLINICAL BENEFIT OF FETAL ECHOCARDIOGRAMS IN LOW RISK IN VITRO FERTILIZATION (IVF) PREGNANCIES WITH NORMAL CARDIAC VIEWS ON ANATOMY SCAN

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Background
IVF pregnancies are associated with an increased risk of congenital heart defects (CHD). Recent research has not proven the rate of CHD to be equal to the general population [1]. Fetal echocardiogram (echo) is recommended for all IVF pregnancies for CHD screening. Individualized screening recommendations do not exist for IVF pregnancies without additional risk factors for CHD.

Objective
To compare the diagnostic accuracy of the detailed anatomy ultrasound versus fetal echocardiogram in detecting CHD for low risk IVF pregnancies.

Materials and Methods

Ultrasound and live birth data was retrospectively reviewed from January 2021 to December 2023 for 269 IVF pregnancies who underwent fetal echo. Patients were excluded for pre-existing diabetes mellitus, prior child with CHD, first degree relative with CHD and monochorionic twin pregnancies. Patients without these conditions were defined as low risk (N=230). A McNemar's test was performed to assess paired findings from the anatomy ultrasound, fetal echo and live birth findings. Sensitivity, specificity and accuracy of these comparisons were calculated using the fetal echo and birth outcomes as the gold standard. All patients completed a 2nd trimester anatomy ultrasound and completed a fetal echo between 22w0d to 30w0d. A subgroup analysis was performed which only included anatomy ultrasounds performed between 18w0d and 22w0d at an American Institute of Ultrasound Medicine (AIUM) accredited facility and read by Maternal Fetal Medicine (GA; n=140). Data was collected from one Maternal Fetal Medicine group with 16 physicians.

Results

When comparing detection rates for the GA subgroup, anatomy ultrasounds had a sensitivity of 100% (95% CI 15.81% - 100%), specificity of 99.28% (95% CI 96.06% - 99.98%) and accuracy of 99.29% (95% CI 96.11% - 99.98%; p=0.99). Fetal echo in the GA subgroup had a sensitivity of 100% (95% CI 15.81% - 100%), specificity of 99.28% (95%CI 96.06% - 99.98%) and accuracy of 99.29% (95% CI 96.11% - 99.98%; p=0.99). No significant difference was observed for the SV versus NO-SV subgroup (p=0.99). For detecting CHD from all anatomy ultrasounds performed in our study, a specificity of 99.56% (95%CI 97.56% - 99.99%) was found (p=0.99).

Conclusion

Our study suggests overall similar specificity in diagnosing CHD between anatomy ultrasound and fetal echo. No cases of CHD were missed for low risk IVF patients with normal cardiac views on anatomy ultrasound completed between 18w0d to 22w0d gestation performed at a tertiary center with Maternal Fetal Medicine. Fetal echo did not demonstrate a clinical benefit for this group of patients.

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References

1. Kawwass et al. Maternal and fetal risk associated with assisted reproductive technology. *Obstet Gynecol.* 2018; 132: 763-772.