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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Introduction

- IVF pregnancies are still thought to carry an increased risk of congenital heart defects (CHD) and research has not yet proven the rate of CHD is similar to the general population [1].
- Fetal echo is recommended for all IVF pregnancies, including patients at low risk of CHD [2, 3, 4].

Objective

- To compare the accuracy of detailed anatomy ultrasound vs. fetal echo in detecting CHD for IVF pregnancies without additional risk factors for CHD.

Materials/Methods

- US and live birth data reviewed for 269 IVF pregnancies from Jan. 2021 - Dec. 2023.
  - McNemar's test used to assess paired findings from anatomy US, fetal echo and live birth findings. Sensitivity, specificity and accuracy of these comparisons were calculated.
  - Subgroup analysis: only detailed anatomy US between 18w0d to 22w0d at AIUM accredited facility read by MFM (N=140).
- Exclusion criteria: pre-existing DM, prior child with CHD, 1st degree relative with CHD and monochorionic twin pregnancies
- Patients without these risk factors were defined as low risk.
- Patients with suboptimal views on anatomy US were also analyzed.

Results

			Was a Congenital Heart Defect Identified at Delivery?		Total
			Congenital Heart Defect Found	No Congenital Heart Defect Identified	
Anatomy Scan Result	Congenital Heart Defect Found	n	2	1	3
		% within Anatomy Scan Result	66.7%	33.3%	100.0%
		% of Total	1.4%	0.7%	2.1%
	No Congenital Heart Defect Identified	n	0	138	138
		% within Anatomy Scan Result	0.0%	100.0%	100.0%
		% of Total	0.0%	97.9%	97.9%
Total		n	2	139	141
		% within Anatomy Scan Result	1.4%	98.6%	100.0%
		% of Total	1.4%	98.6%	100.0%

Subgroup analysis:

1. Anatomy US from 18w0d to 22w0d

- Sensitivity 100% (95% CI 15.8% - 100%)
- Specificity 99% (95% CI 96.0% - 99.9%)
- Accuracy 99% (95% CI 96.1 - 99.9%)

2. Fetal Echo

- Sensitivity 100% (95% CI 15.8% - 100%)
- Specificity 99% (95% CI 96.0% - 99.9%)
- Accuracy 99% (95% CI 96.1 - 99.9%)

- For detecting CHD from all anatomy scans at any gestational age (N=230), a sensitivity of 66.67% (95% CI 9.4% - 99.1%) and specificity of 99.6% was found (95% CI 97.6% - 99.9%).
- No significant difference in live birth outcomes was observed for patients in the suboptimal cardiac views group (p = 0.99).

Discussion

- Anatomy US between 18w0d to 22w0d demonstrated **100% sensitivity in CHD detection** when performed at an AIUM accredited facility read by MFM.
- No cases of CHD were missed for low risk patients with normal cardiac views on detailed anatomy US between 18w0d to 22w0d gestation.

Conclusion

- **Fetal echo did not show a clinical benefit for low risk patients.**
- Our study suggests similar sensitivity in ruling out CHD based on normal cardiac views on detailed anatomy US vs. fetal echo.

References

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