

Clinical Audit

Clinical Audit on Fetal Echocardiography: Clinical Indications and Outcome

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Background:

Fetal echocardiography helps in early recognition, and hence, prompt treatment of congenital heart diseases. Inability to do so leads to increased morbidity and mortality among children. Standards for fetal echocardiography are provided by the British Congenital Cardiology Association (BCCA) and Fetal Anomaly Screening Program of the NHS. Limited compliance to these standards leads to issues around quality of care.

Aim and objectives: To identify gaps in adherence to the standards and development of action plan to improve compliance to the standards.

Methods: Retrospective analysis was done on patients who had fetal echocardiography from July to December 2017. Source of data included Catalogue of Somatic Mutations in Cancer (COSMIC), Clinical Research Information System (CRIS), and patient notes available at the hospital. Total number of cases who had fetal echocardiography during the six months were forty.

Results: Majority of the patients belonged to the age range of 20-30 years. Ten of the cases who underwent echo were inappropriate referrals while others had different indications, most common being previously affected child followed by diabetes mellitus. According to standards, early echo should be done at 18 weeks. Number of patients who needed an early fetal echocardiography were 14, however, only six of them actually received it. Thus, the compliance to standard was 43%. The eight patients who did not get an early fetal echocardiography did not get it due to delayed booking for echocardiography by the midwife.

Conclusion: There are gaps identified in current practices. Early antenatal bookings for all pregnancies to ensure timely identification and referral of high risk women is required.

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Introduction:

Fetal echocardiography helps in early recognition, and hence, prompt treatment of congenital heart diseases. Inability to do so leads to increased morbidity and mortality among children. Standards for fetal echocardiography are provided by the British Congenital Cardiology Association (BCCA) and Fetal Anomaly Screening Program of the NHS. Limited compliance to these standards leads to issues around quality of care.

CHDs are the most common congenital anomalies, with an estimated frequency of 8 to 10 per 1000 live births, and around a third of these CHDs are severe (fatal or requiring an intervention in the first year of life). They cause severe death and morbidity in the newborn period and infancy, with an overall mortality incidence of 0.7 per 1000 births in Europe.^{1,2} Fetal echocardiography can detect the majority of CHDs before birth. In skilled hands, a prenatal detection rate of 85–95 percent is attainable after

proper screening and referral to specialized institutions).³

Additional cardiac and non-cardiac issues, such as fetal tumors and cardiomyopathies, can be discovered, necessitating more diagnostic interventions and procedures and counselling, and fetal arrhythmias can be reduced by diagnosing and controlling. As the quality of ultrasounds are increasing day by day due to both improved equipment and personnel skills; the number of referrals for specialized fetal echocardiography have increased in number. Verification of referral indications is necessary for optimum resource allocation. It's crucial to understand fetal outcome in order to properly assist parents. The aim of this study is to find and gather data on cardiac diagnoses, non-cardiac abnormalities, and outcomes of those fetuses which has undergone specialized fetal echocardiography. In this study nuchal translucency (NT) was measured with ultrasound examination at 20 weeks gestation.

Aims and Objectives:

The objective was to identify gaps in adherence to the standards and development of action plan to improve compliance to the standards of BCCA.

Methods:

Retrospective analysis was done on patients who had fetal echocardiography from July to December 2017. Source of data included Catalogue of Somatic Mutations in Cancer (COSMIC), Clinical Research Information System (CRIS), and patient notes available at the hospital. Total number of cases who had fetal echocardiography during the six months were 40.

Results:

Majority of the patients belonged to the age range of 18-30 years. Ten of the cases who underwent echo were inappropriate referrals while others had different indications, most common being previously affected child⁹ followed by diabetes mellitus⁷. According to standards, early echo should be done at 18 weeks. Number of patients who needed an early fetal echocardiography were 14, however, only 6 of them actually received it. Thus, the compliance to standard was 43%. The eight patients who did not get an early fetal echocardiography did not get it due to delayed booking for echocardiography by the midwife. Prematurity was observed in one of the 40 cases.

Table 1: Age, Scan findings, anomalies, indications and echo findings in study participants

Variables	Sub Groups	Frequency	Percentage
Age Range	18-24	9	22.5
	25-30	13	32.5
	31-40	18	45
Scan Findings	Increased NT	3	7.5
	Late booker	1	2.5
	Normal	36	90
Anomaly Scan	Cardiac abnormality	2	5
	Normal	38	45
Indication	Inappropriate referral	10	25
	Previous effected child	9	22.5
	Diabetes	7	17.5
	Other indications	14	35
Findings of Echo	Normal	39	97.5
	Single ventricle heart with double inlet and outlet	1	2.5

Discussion:

This study suggests that those who were referred for fetal echocardiography were appropriate, however the number of patients who needed an early fetal echocardiography were 14, while only 6 of them actually received it. Thus, the compliance to standard was 43%. The eight patients who did not get an early fetal echocardiography did not get it due to delayed booking for echocardiography by the midwife. This is in accordance with findings from other similar studies.

Increased NT was discovered in three cases, one of which was a late booker. Because the fatality rate in this group is substantial (28.1 percent overall and 51.4 percent for CHDs), prompt referrals are critical. The most common reason for referral was a rise in NT, which accounted for about a third of the cases. The fact that it was raised in fetuses with CHDs confirms its significance as a robust marker for CHDs. The study's purpose was to report on the appropriateness of referrals and adherence to recommendations, not to evaluate the accuracy of prenatal CHD diagnosis. Our findings are fairly similar to those of other studies, with the majority of cases falling into the more severe and complicated category.^{4,5} This, together with the occurrence of non-cardiac anatomical and genetic abnormalities and defects, has a huge effect on the outcome and should be considered when advising guardians and making management decisions.⁶⁻⁹

Conclusion:

Every referral needs to be reviewed in accordance with the guidelines. Early antenatal bookings for all pregnancies to ensure timely identification and referral of high risk women is required. Medical staff should be oriented on the guidelines so that they adhere to the standards. Refresher trainings and teaching sessions should be organized with community midwives so that they can be made aware of the guidelines and informed about the importance of early identification of high risk cases, appropriate counselling and timely referral for fetal echocardiography. Sensitization of the patients is important to ensure that they get an early diagnosis.

Ethical Approval: Given

Conflict of Interest: The authors declare no conflict of interest

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