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(RESEARCH ARTICLE)

A clinical Study of heart disease among asymptomatic antenatal women detected using Echocardiographic screening

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Abstract

Background: Pregnancy causes reversible changes in the maternal cardiovascular system. Adverse cardiac events during and after pregnancy continue to be the important causes of maternal mortality and morbidity. The signs and symptoms of pregnancy may confuse with signs and symptoms of heart disease. Echocardiography is safe, effective, noninvasive and does not expose the pregnant women to radiation hazards , so it plays a vital role in identifying the hemodynamic and structural changes in cardiovascular disease in asymptomatic antenatal women.

Aim & objective: This study aims to screen asymptomatic pregnant women using transthoracic echocardiography.

Material & Methods: Purposive sampling was done. The study was conducted at Apollo hospital Bilaspur from January 2024 to April 2024 enrolling 50 pregnant women from all trimester. Those with previous history of heart disease were excluded. Data was analysed for descriptive statistics using Microsoft excel and SPSS V 22 and was summarised using proportions, percentages, and contingency tables.

Results: Out of 50 enrolled study participants ,60%(n-30), 28 %(n-14),12%(n-6) were in third, second , first trimester respectively . we found that 6%(n-3) of the patient have either congenital heart disease or acquired heart disease. Out of 3 study participants, 1 had congenital heart disease and 2 had acquired heart disease.

Conclusion: Our study shows screening echocardiography will helpful in identifying the heart disesase and reducing maternal mortality and morbidity related to heart disease & this will justify the routine cardiac assessment in each and every pregnant women even in absence of cardiopulmonary symptoms.

Keywords: 2 D Echo; Heart disease; CHD; ANC

1. Introduction

Pregnancy causes reversible changes in the maternal cardiovascular system. These pregnancy induced anatomical and functional changes in cardiac physiology can have profound effect on underlying heart disease.[1] Rheumatic Valvular Heart Disease and Congenital Heart Disease (CHD) are common. Heart disease associated with pregnancy is a high-risk condition requiring specialist care throughout pregnancy, labor and postpartum period. During pregnancy the plasma volume is increased by 40 to 50%, heart rate is increased by around 10% resulting in increased cardiac output by 40 to 50%. The cardiac output starts increasing by the 6 weeks of pregnancy and by 12 weeks it increase by 40% and reaches peak between 28-32 weeks and remain plateaus till term [2]. Additional cardiac output increase by 10 to 15 % in first stage of labor , and 30 to 50 % in second stage of labor and comes to normal by 2 week post partum .At all these critical points the women suffering from heart disease are at risk of cardiac failure. Adverse cardiac events during and after pregnancy continue to be the important causes of maternal mortality and morbidity and prominent reason for

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obstetrical intensive care unit admission worldwide, with huge variations in burden in different countries and regions. [3].Baby of a woman having Congenital Heart Disease has higher risk of having Congenital Heart Disease .Most pregnant women with Cardiac Disease like small VSD, mild Stenotic condition, mild to moderate MR and AR have a favourable fetal and maternal outcome with minimum care, But condition like Eisenmenger syndrome, Primary Pulmonary Hypertension, Marfan's Syndrome with Aortic involvement ,Coarctation of aorta are absolute contraindication for pregnancy . Congenital Heart Disease amongst Cardiovascular Diseases present during pregnancy comprises the majority in western countries (75-82 %) followed by Rheumatic Heart Disease. In developing countries like India, Rheumatic Heart Disease outnumbers the Congenital Heart Disease (56-89 %). Hence identification of Heart Disease in asymptomatic pregnant women is necessary [3].

In this study congenital and acquired heart disease will be identified antenatally by echocardiography. Echocardiography is safe effective, noninvasive and does not expose the pregnant women to radiation hazards , so it plays a vital role in identifying the heamodynamic and structural changes in cardiovascular disease in asymptomatic antenatal women.

Aims and objectives

- To screen asymptomatic antenatal mothers for cardiac diseases using transthoracic echocardiography
- To estimate the prevalence of cardiovascular disease among asymptomatic pregnant women using echocardiogram.
- To classify the cardiac diseases complicating pregnancy on the basis of echocardiographic findings.
- To identify high risk cardiovascular conditions so as to facilitate the time ,place and mode of delivery of affected mothers.

2. Methodology

- **Study Design**: Observational cross sectional study.
- **Study Site**: Tertiary care center, Apollo hospital Bilaspur Chhattisgarh.
- **Study participants**: Pregnant women irrespective of the trimester, age, parity attending Obstetrics and Gynaecology department, Apollo hospital Bilaspur Chhattisgarh. who fulfill the inclusion and exclusion criteria will be selected.
- **Sampling Method:** After taking the informed consent, all Pregnant women fulfilling inclusion criteria will be the study subjects in the study. Convenient sampling method will be used till the desirable sample size is reached

2.1. Inclusion criteria

All pregnant women attending OPD irrespective of age, parity, and gestational age will be included in the study.

2.2. Exclusion criteria

- Patients with known cardiovascular diseases (RHD / CHD) before pregnancy.
- Patients with comorbidities such as Hypertension, DM, Hyper and Hypo thyroidism.
- Patients not willing to give consent and Those who do not wish to continue in study.

2.3. Material & Methods

Purposive sampling was done. The study was conducted at Apollo hospital Bilaspur from January 2024 to April 2024 enrolling 50 pregnant women from all trimester. Those with previous history of heart disease were excluded. Data was analysed for descriptive statistics using Microsoft excel and SPSS V 22 and was summarised using proportions, percentages, and contingency tables.

3. Results and discussion

Out of 50 enrolled study participants ,60%(n-30), 28 %(n-14),12%(n-6) were in third, second , first trimester respectively . we found that 6%(n-3) of the patient have either congenital heart disease or acquired heart disease. Out of 3 study participants, 1 had congenital heart disease and 2 had acquired heart disease.

4. Conclusion

Our study shows screening echocardiography will helpful in identifying the heart disesase and reducing maternal mortality and morbidity related to heart disease & this will justify the routine cardiac assessment in each and every pregnant woman even in absence of cardiopulmonary symptoms.

Compliance with ethical standards

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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