Case-Based Spectrum of Congenital Heart Diseases in Neonates Evaluated on Two-Dimensional Echocardiography

Authors

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Introduction

Congenital heart disease (CHD) affects approximately 8–10 per 1000 live births, with nearly one-quarter presenting as critical lesions requiring neonatal intervention. Neonates may present with cyanosis, respiratory distress, or shock, but physical examination may be inconclusive due to transitional circulation and absent murmurs. Two-dimensional echocardiography with Doppler is the gold standard for anatomical and hemodynamic assessment of CHD.

Materials and Methods

This hospital-based observational study was conducted in a rural tertiary care center. Neonates aged 0–30 days referred from NICU or postnatal wards with suspected CHD were included. Echocardiographic evaluation was performed using segmental analysis with color and spectral Doppler.

Results

Out of 112 neonates, 61 were male and 51 female (M:F = 1.2:1). Acyanotic CHD accounted for 87.5% cases, while cyanotic CHD constituted 12.5%. VSD was the most common acyanotic lesion, while TOF predominated among cyanotic lesions.

DISCUSSION

Congenital heart disease (CHD) is the most common congenital anomaly in neonates, and early diagnosis is essential due to the high prevalence of lesions requiring prompt intervention. In the present study, two-dimensional echocardiography with Doppler proved to be a reliable and non-invasive modality for early detection and anatomical characterization of neonatal CHDs.

A predominance of **acyanotic CHDs (87.5%)** over **cyanotic CHDs (12.5%)** was observed, consistent with previous Indian studies. **Ventricular septal defect (59%)** was the most common acyanotic lesion, followed by **atrial septal defect (25%)**, reflecting the known predominance of septal defects in neonatal populations. **Tetralogy of Fallot** was the most frequent cyanotic CHD, in agreement with published literature.

Echocardiography enabled early differentiation of duct-dependent and non-duct-dependent lesions, facilitating timely management and referral. In rural healthcare settings, early echocardiographic evaluation plays a crucial role in reducing diagnostic delays and improving neonatal outcomes.

Limitations of the present study include its single-center design and the absence of long-term follow-up data. Additionally, surgical correlation was not available for all cases. Despite these limitations, the study provides valuable insight into the neonatal CHD spectrum in a rural Indian population.

Conclusion

Early echocardiographic screening is indispensable in neonatal care. Strengthening echocardiography services in rural hospitals can significantly improve outcomes in congenital heart disease.

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