EDITORIAL

Outcome of Infants with Prenatally Diagnosed Congenital Heart Defects

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Within the last few decades, the prenatal echocardiographic diagnosis of congenital heart defects has made substantial progresses, allowing the recognition of virtually almost all heart malformations between the 16th and 18th week of pregnancy, with a sensitivity over 96% and a specificity close to 100% [1,2]. It helps in better understanding of congenital heart defects (CHD), and ensures that prenatal medical and interventional management is possible and delivery can be performed safely at a tertiary center. Changlani, *et al.* [3], in this issue of *Indian Pediatrics*, report a systematic analysis of the infants who had prenatal diagnosis of CHD and delivered at their tertiary cardiac center where they could be treated effectively. This study reports the outcomes of 121 infants with prenatally diagnosed CHD undergoing planned delivery in a cardiac facility. Twenty-six percent of all screened fetuses were found to have CHD. This high incidence may be due the referral bias as the fetal diagnosis was done at a tertiary care center where most of the fetal echocardiographies were performed after a suspected heart defect or associated non-cardiac abnormalities.

Since these deliveries were conducted at a tertiary care center, immediate cardiac intervention was possible ensuring better neonatal survival. Many a time, it is not possible to deliver such neonates in tertiary care centers for want of logistics. Some studies from United Kingdom have reported feasibility of delivering infants with prenatally diagnosed CHD outside specialized cardiac center and shifting them to a tertiary care center after initial stabilization [4]. Unfortunately, this is not yet a feasible option in India. We do not have many specialized centers that can take care of such critically ill children, stabilize them and transfer to the tertiary center. In addition, we do not have an organized referral system so that these infants can reach a proper tertiary care center catering to the specialized services. We have to rely on tertiary care centers that can diagnose, deliver, and then treat these children immediately after the birth, if required urgently. Transport of expectant mother with fetal cardiac diagnosis seems to be the safest option in this situation.

As rightly pointed out in this study, it is difficult to get pediatric echocardiography done in a sick neonate, and consequently there is a delay in starting life saving medications like prostaglandins. Neonatal transport program for these critically sick babies is in a very primitive stage. It is very difficult to transport these sick neonates to a tertiary care center, more so if they are born preterm, are low birth weight, or are ventilator-dependent. These children become very sick when they are shifted in a suboptimal state, and the outcome after cardiac intervention is not always good. As the pediatric cardiac care requires a state-of-art infrastructure and expertise from many specialties, the centers are developed only in major cities and the infants have to be shifted to these centers from peripheries. Pediatric cardiac care is resource intense and therefore it is expensive. If the prenatal cardiac diagnosis is not known, it comes as big shock to the parents. Most of the CHDs do not get covered under any insurance schemes, and parents have to bear these expenses which is always not possible for the parents.

In the present study, 20% of infants delivered in the cardiac facility were offered comfort care. The outcomes in this group was poor. This highlights the need to diagnose such complex CHDs in an earlier stage of pregnancy. An earlier diagnosis (<20 weeks) would have given more options to the expectant family, including consideration for termination of pregnancy. Some complex heart defects like hypoplastic left heart syndrome (HLHS) need multistage treatment and a large proportion may later need heart transplantation. In this situation, if the heart defect is known in the early prenatal period, parents can have an option of legal termination. In case the parents decide to continue the pregnancy after fetal diagnosis of complex CHDs, significantly improved outcome is expected if delivery occurs at a tertiary care center. Reduced morbidity and mortality following antenatal diagnosis has been reported for babies with coarctation of aorta, HLHS and transposition of aorta [5].

Most of the studies even recommend chromosomal analysis of all these children diagnosed to have CHD [6].

Knowledge of fetal karyotype permits well-defined postnatal surgical intervention. One of the indications of fetal echocardiography is having a previous child with CHD. In this situation, knowing normal cardiac status of the fetus has a big emotional impact on the family. In other situations, knowing an abnormal heart helps to prepare them emotionally.

Diagnosis of prenatal CHD impacts the mode of delivery and helps delivering these babies safely. There was an increasing trend towards planned delivery in the present study, which is expected in the settings of diagnosed CHD in the fetus. In the setting of significant logistic hurdles for transport and delivering prompt neonatal cardiac care, prenatal diagnosis is a very effective method in improving the outcomes of children with complex heart defects [7]. The strategy of planned delivery in a cardiac facility as reported in this study potentially overcomes all these logistic difficulties. Planned delivery also enables the baby and mother to be admitted in the same facility, offering signifcant pyschological advantage for families.

The prenatal diagnosis of CHD has helped shape our thinking about the development and natural history of congenital heart disease. It has affected the clinical outcomes of patients with congenital heart disease, and has influenced our counselling of families. A new subspecialty of fetal cardiology has developed with this diagnostic modality.

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