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Editorial

Over the past four-and-a-half decades significant advances have occurred in the diagnostic and therapeutic measures available to the infants and children with heart disease. Even during the last decade, the advances are so immense that a 1980 approach to a complicated pediatric cardiology problem in 1991 has become obsolete.

What was clearly a surgical case has now become a balloon valvuloplasty candidate. For example, the therapy of choice for pulmonary valve stenosis is balloon valvuloplasty rather than surgical valvotomy. Similarly, though not as definitive as pulmonic stenosis, balloon intervention is a serious or first option contender for treatment of aortic stenosis, aortic coarctation, mitral stenosis and most, if not all, postoperative stenotic lesions. Lesions such as peripheral plumonic stenosis that could not be effectively dilated by balloons could be improved by placement of stents. Similarly, transcatheter closure of secundum atrial septal defects, some types of ventricular septal defects and patent ductus arteriosus is feasible, although these procedures are performed under a protocol on an investigational basis. Rashkind's balloon atrial septostomy and Park's blade atrial septostomy continue to be helpful in palliation and avoid the need for surgical septostomy. Selective embolization to occlude abnormal and unwanted blood vessels and transcatheter ablation of conduction bundles though have limited use in pediatric patients, have been of help in selected patients. Until recently, pediatric applications of laser have been in animals models or post-mortem specimens, but laser therapy to open atretic pulmonary valves and other obstructive lesions have recently been applied in children. Atherectomy catheter devices have been used for myectomy in tetralogy of Fallot and tricuspid atresia with restrictive ventricular septal defect.

Although the therapy of many of these less complicated defects have moved from surgical to medical (cardiologic) domaine, the number of surgical interventions has not decreased because more complicated, previously "unoperable" defects are being operated upon. The reason for this is a better understanding of physiology and anatomy of the defects and operations, cardiopulmonary bypass/hypothermia techniques, myocardial protection, and intensive care technology. In addition, surgical procedures are being performed at much earlier age than in the past, again for the same reasons as outlined above plus for prevention of potential adverse effects of late surgical intervention.

For patients who hitherto were in the domaine of the pathologist, more complex operations or cardiac transplantation have become reasonable options. Thus, over the last few decades, there has been a gradual change, catheter intervention instead of surgery and surgical intervention instead of allowing a pathologist to look at the heart.

Concurrent with these changes, non-invasive diagnostic techniques have advanced to such a degree that not only anatomic detail by two-dimensional echocardiography but also hemodynamic information can be obtained by Doppler flow analysis. A combination of pulsed, continuous wave and color Doppler data is helpful in this regard. These studies have resulted in decrease in the need for both the first and repeat cardiac catheterization. Transesophargeal echocardiography has made it possible to visualize areas that are difficult to image. Intravascular echocardiography has just become available and may become useful. Nuclear magnetic resonance (NMR) imaging, though not used to its fullest potential in congenital heart disease evaluation, has applications of significance. With the availability of cine mode and flow imaging, NMR may have more applications than in the past. Myocardial metabolism can also be studied by spectroscopy. Other modalities of imaging such as position emission tomography have been useful, although full impact of these modalities has not yet been realized. Three dimensional reconstruction of some of these noninvasive studies has been accomplished and may be of value after these methods are simplified and become generally available for the practising cardiologist.

It is also possible to study the fetal heart by echo-Doppler studies. Apart from screening for abnormalities, details of complex cardiac anomalies can also be scrutinized. Trans-vaginal echocardiography may, in selected cases, improve the ability to image structures not clearly delineated by transabdominal studies. Treatment of arrhythmia in the fetus is a common place. Surgical treatment and catheter interventions in the fetus are on the horizon for defects which are lethal if allowed to continue in-utero.

Other recent advances include prostaglandins, newer inotropic agents (amrinone), mechanisms of arrhythmia, anti-arrhythmia drugs, transplantation immunology, cellular and subcellular mechanisms of cardiac contraction, cardiac embryogenesis, and gene control of muscle protein synthesis, to mention a few.

Many but not all the issues reviewed above have been either discussed in the last symposium (Jan. - Feb. 1988) or included in the current symposium. We have also included reviews on simpler and time-honoured techniques as well. Although we have addressed general topics initially, we now began to discuss individual diseases/defects also. We hope that these papers on pediatric cardiology topics are of interest to and useful for the pediatricians and the physicians taking care of children in the Indian sub-continent.

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