Centre For Congenital Heart Diseases

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The Little Heart

Centre For Congenital Heart Diseases

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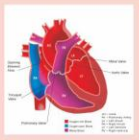
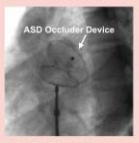
CONGENITAL HEART DISEASE IN NUTSHELL

Congenital heart disease is a major health problem and it accounts for 3rd commonest cause for infant mortality rate. With the help of recently available treatment modalities more than 75% of infant with CHD survive and live normal life. With a view to change old belief, I would like to highlight few of the common cardiac problems occurring in children.



Atrial Septal Defect(ASD)

ASD - Occluder Device



ASD - Device Closure

ATRIAL SEPTAL DEFECT

Atrial septal defect is the most benign lesion among the congenital heart disease. If timely treated gives normal life expectancy. Ideal age for ASD closure is 2-4 years of age i.e. preschool age with few exceptions.

Most children with an ASD remain active and asymptomatic. If a large defect is untreated, CCF, pulmonary hypertension and atrial arrhythmias develop in adults who are in their 20s and 30s with few exceptions.

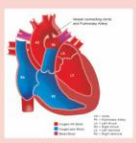
With the help of newer techniques more than 80 % of secundum ASD can be closed without surgery i.e. with the help of septal occluder device in same costing as surgery with only one day hospital stay.

PATENT DUCTUS ARTERIOSUS

PDA is the third most common of congenital heart disease. Any PDA if not closed in 1 month of life never closes spontaneously. Silent PDA [ECHO suggestive of tiny PDA and clinically no murmur] dose not need closure.

Large PDA needs closure by 3-6 month of age, moderate size PDA needs closure by 6-12 month of age & small PDA should by closed by 1-2 years of age.

More than 95 % of PDA can be close safely without surgery with the help of special device called PDA duct occluder.



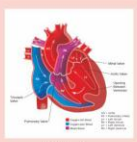
Patent Ductus Arteriosus(PDA)

PDA Occluder Device

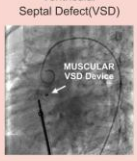
PDA Device Closure

VENTRICULAR SEPTAL DEFECT

VSD is the most common congenital heart disease. Large VSD presents as early as 1- 2 month of age with features of CCF, failure to thrive, recurrent respiratory tract infection, excessive sweating, tachypnoea, subcostal indrawing and tachycardia. Small VSD are usually asymptomatic and are diagnosed as incidental finding of murmur.



Ventricular Septal Defect(VSD)



VSD Device Closure

- 99% of small VSD closes spontaneously by 3-5 years of age.
- 85 % of moderate VSD closes spontaneously.
- Large VSD are less likely to become restrictive with time.
- Perimembranous and muscular VSD are more likely to close.
- Inlet VSD, outlet VSD, Malaligned VSD, Swiss cheese VSD never closes.
- Large VSD needs surgical closure by 3-6 month of age depending on symptomatic status of child.
- Moderate VSD if shows feature of failure to thrive and cardiomegaly, needs surgical/ device closure by 1-2 years of age, otherwise natural course of VSD can be followed if child is asymptomatic.
- Asymptomatic small VSD can be followed life long but with quotient for infective endocarditis and newly developing aortic regurgitation (2-4 % of cases).

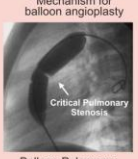
TETRALOGY OF FALLOT

Tetralogy of Fallot (TOF) is the commonest cyanotic heart disease in children. If surgically corrected, they have near normal life expectancy. Corrective surgery for TOF commonly known as intracardiac repair (ICR) is usually done in most centers at 1-2 years of age. If child becomes severely cyanotic and have recurrent episodes of cyanotic spells in early infancy then such patient needs modified BT shunt and ICR can be done later. Those who remain relatively asymptomatic and maintain spO2 > 70-75% in air should undergo ICR directly at 1-2 years of age.

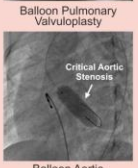
TRANSPOSITION OF GREAT ARTERIES

Transposition of Great Arteries (D-TGA) is the commonest cyanotic heart disease occurring in newborn. They manifest with cyanosis from first day of life. Arterial switch operation done timely within 1 month of life, leads to normal life. Timely diagnosis is very much necessary because left ventricle may regress (thinned out) after 4-6 weeks in which case arterial switch operation is not possible.

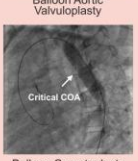
Mechanism for balloon angioplasty



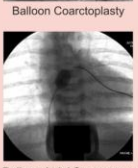
Balloon Pulmonary Valvuloplasty



Balloon Aortic Valvuloplasty



Balloon Coarctoplasty



Balloon Atrial Septostomy for TGA Intact IVS

NEONATAL CARDIAC EMERGENCIES

Symptomatic neonate presenting with features of cyanosis, shock or CCF should be suspected to have CHD after ruling out common neonatal problem. In majority of cases murmur is usually absent.

Commonly presenting neonatal heart diseases are:

- Left sided obstructive lesions like Critical AS, Critical COA, Aortic atresia, Hypoplastic left heart…
- Right sided obstructive lesions like critical PS, pulmonary artesia intact ventricular septum, pulmonary atresia VSD, Ebstein anomaly…
- Mixing lesions like d-TGA, Truncus arteriosus…
- Other CHDs like obstructed TAPVC and various complex CHD.

All neonatal CHD if diagnosed and intervened timely will have near normal life expectancy with few being high risk.

Balloon angioplasty in conditions like critical aortic stenosis, critical pulmonary stenosis & critical coarctation of aorta with severe LV dysfunction are life saving intervention and will lead to near normal life expectancy.

Only conditions with single ventricle physiology, complex CHD with multiple defects are likely to have guarded prognosis.

Pediatric Cardiology services at clinic :

- Pediatric echocardiography
- Fetal echocardiography
- Contrast echocardiography
- Counseling for antenatally detected CHD
- ECG

Specialist in :

- ASD/PDA/VSD device closure
- Emergency procedures like
  - Balloon Aortic Valvuloplasty for critical Aortic Stenosis/COA
  - Balloon Pulmonary Valvuloplasty for critical Pulmonary Stenosis
  - Balloon Atrial Septostomy for TGA babies.
  - PDA stenting for duct dependent congenital heart disease
- Pediatric diagnostic catheterization
- Permanent Pacemaker implantation