

Clinical Diagnosis of **Congenital Heart Disease**

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*Dedicated
to
the memory of my parents*

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Preface

Congenital heart disease is generally thought to be a difficult and challenging subject. Due to limitations of diagnostic facilities and suitable treating hospitals, many souls have departed their bodies prematurely, undiagnosed and untreated. Physicians, pediatricians and cardiologists give less attention to congenital heart diseases, as this branch of cardiovascular science is less alluring and rewarding.

As a teacher when I aimed at the postgraduate students in medicine I found there is a definite place for a book on congenital heart disease which should be comprehensive and also with strong clinical bias because it is essential on the part of treating physicians caring for the newborn, the infant and the children to have early diagnosis with accuracy so as to prevent high morbidity and mortality. Recently many pediatric cardiology units have come up and tremendous advances in percutaneous interventions and surgical techniques have been made, so the outlook for congenital heart disease looks brighter today. As a matter of fact, without basic knowledge of anatomy and pathophysiology it is difficult to develop a clinical acumen to make early accurate diagnosis. Further, correct interpretation of recent investigatory procedures will be more difficult. Early diagnosis, initiation of treatment with existing facilities and decision for referral to a standard cardiac center at the right time can definitely save many precious lives.

Although, there are many books available on this subject, they are referral books of very high standard and are expensive for individual possession. Keeping this in mind, I felt the need of a book on congenital heart disease, which can be affordable and cater to the basic need of postgraduate students, medical teachers, pediatricians and practicing cardiologists.

Prominent cardiologists across the country have contributed many chapters from their vast experience and knowledge. I have attempted to describe all aspects of these congenital heart diseases in a uniform pattern. Elaborate description has been made on common diseases. Illustrations with simple hand drawn sketches are given wherever necessary depicting the abnormal anatomy and pathophysiological consequences for clear understanding of the anomaly. Controversial points and details of advanced imaging modalities are deliberately omitted. I have made a sincere effort to use simple teaching language and clear description of the basic clinical findings. Wherever necessary the mechanisms are explained using short bracketed notes. I have tried to keep a link between pre-echo era and present day investigatory tools as regards clinical diagnosis is concerned.

Being a basically clinical book, management of diseases are described in brief (elaborate management schedules are beyond the scope of this book).

References are deliberately omitted to reduce the bulk of the book, as ready references are available in these days of advance information technology. A separate chapter is included on the incidence of congenital heart disease in India and the present status of management facilities available across the country.

I have put my hard and sincere efforts in giving a definite shape to this book. My dream and vision will be fulfilled if this book becomes useful for the students of medicine, pediatrics and physicians dealing with cardiovascular science related to congenital heart disease.



M Satpathy

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I am greatly indebted to my late teachers Dr PL Wahi, Dr PS Bidwai and Dr HN Khattri whose art of teaching convinced the students that reaching at a correct bedside diagnosis in Congenital Heart Disease is not that difficult. I owe my gratitude to all my teachers particularly to Dr U Kaul and Dr JP Das. Their master teaching on the subject gave me the inspiration for writing a clinical book for the students of medicine.

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My daughters Sanghamitra and Anuradha and their husbands Bhawani and Debasis deserve special thanks for their constant encouragement for the last three years. I must thank my wife Swachhala and youngest daughter Madhulekha and her husband Rajesh for their full-hearted cooperation and patience all throughout the period of preparing the manuscript.

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Contents

PART ONE: BASIC

1. **Basic Embryology of Congenital Heart Diseases** 3
ML Kulkarni, SN Rahiman
2. **Fetal and Neonatal Circulation** 11
AK Samal, BR Mishra
3. **Bedside Diagnosis and Classification of Congenital Heart Diseases** 14
IB Vijayalakshmi, M Satpathy
4. **Electrocardiogram—Clinically Relevant to Congenital Heart Diseases** 27
ML Kulkarni, M Satpathy
5. **Radiological Diagnosis of Congenital Heart Diseases** 33
K Sharada, V Gouthami

PART TWO: ACYANOTIC LESIONS

6. **Clinical Approach to Diagnosis of Cardiac Malpositions** 45
M Behera, BR Mishra
7. **Left Ventricular Inflow Obstruction** 53
B Dalvi, S Venkatesh, SS Prabhu
8. **Mitral Valve Prolapse** 60
PC Manoria, SK Trivedi
9. **Congenital Mitral Regurgitation** 67
M Satpathy
10. **Primary Endocardial Fibroelastosis** 71
M Satpathy
11. **a. Atrial Septal Defect (Secundum Type)** 74
PK Dash, M Satpathy
b. Atrial Septal Defect (Primum Type) 83
Sunita Maheshwari
c. Atrial Septal Defect (Sinus Venous Type) 87
Sunita Maheshwari, M Satpathy
d. Atrial Septal Defect (Coronary Sinus Type) 89
Sunita Maheshwari, M Satpathy
12. **Atrial Septal Defect with Associated Common Anomalies** 91
M Satpathy
13. **a. Ventricular Septal Defect** 98
PR Gupta, M Satpathy
b. Ventricular Septal Defect with Aortic Regurgitation 108
BR Mishra

c. Ventricular Septal Defect with Pulmonary Stenosis	111
<i>M Satpathy</i>	
d. Left Ventricle to Right Atrial Communication	113
<i>M Satpathy</i>	
14. Patent Ductus Arteriosus	115
<i>M Jayarajah, M Satpathy</i>	
15. Aorto-pulmonary Window	124
<i>CG Bahuleyan</i>	
16. Complete Atrioventricular Septal Defect	129
<i>R Juneja, S Shah</i>	
17. a. Congenital Aortic Stenosis	143
<i>S Guha, M Satpathy</i>	
b. Congenital Aortic Regurgitation	156
<i>M Satpathy</i>	
18. Coarctation of the Aorta	160
<i>N Sudhayakumar, BSJ Nair, M Satpathy</i>	
19. Aneurysms of Sinuses of Valsalva	170
<i>UA Kaul, J Yusuf</i>	
20. a. Congenital Coronary Artery Anomalies	178
<i>BR Mishra</i>	
b. Congenital Coronary Arterial Fistula	182
<i>CG Bahuleyan</i>	
c. Anomalous Left Main Coronary Artery from the Pulmonary Artery	187
<i>Naveen Garg</i>	
21. Aortic Arch Anomalies and Vascular Rings	192
<i>BR Mishra, M Satpathy</i>	
22. a. Congenital Pulmonary Stenosis	199
<i>N Desai, R Kumar, C Mahadevan, VS Prakash</i>	
b. Congenital Pulmonary Regurgitation	208
<i>N Desai, R Kumar, C Mahadevan, VS Prakash</i>	
c. Idiopathic Dilatation of Pulmonary Trunk	212
<i>BR Mishra</i>	
d. Peripheral Pulmonary Artery Stenosis	214
<i>BR Mishra</i>	
23. Congenitally Corrected Transposition of Great Arteries	218
<i>Rohit Manojkumar</i>	

PART THREE: CYANOTIC LESIONS

24. Common Atrium	227
<i>M Satpathy</i>	
25. Tricuspid Atresia	230
<i>SR Mittal</i>	
26. Ebstein's Anomaly	240
<i>AK Bhattacharyya, M Satpathy</i>	

27. Pulmonary Atresia with Intact Ventricular Septum	249
<i>V Gouthami</i>	
28. a. Tetralogy of Fallot	257
<i>PK Pati</i>	
b. Absent Pulmonary Valve Syndrome	268
<i>BR Mishra</i>	
c. Pulmonary Stenosis with Interatrial Septal Defect	270
<i>M Satpathy</i>	
29. Pulmonary Atresia with Ventricular Septal Defect	273
<i>V Gouthami, M Satpathy</i>	
30. Double Outlet Right Ventricle	280
<i>AN Patnaik</i>	
31. Single Ventricle	290
<i>AN Patnaik</i>	
32. Truncus Arteriosus	297
<i>Anita Saxena</i>	
33. Complete Transposition of the Great Arteries	304
<i>Rohit Manojkumar, M Satpathy</i>	
34. Hypoplastic Left Heart Syndrome	312
<i>N Sudhayakumar, G Rajesh</i>	
35. Total Anomalous Pulmonary Venous Connections	317
<i>CD Gupta, M Satpathy</i>	
36. Anomalous Systemic Venous Connections	325
<i>BR Mishra</i>	
37. Congenital Pulmonary Arteriovenous Fistula	331
<i>SN Routray, BR Mishra</i>	
38. Complete Interruption of Aortic Arch	335
<i>BR Mishra, M Satpathy</i>	
39. Eisenmenger Syndrome	339
<i>SR Anil, M Satpathy</i>	

PART FOUR: Miscellaneous

40. Fetal Echocardiography	351
<i>HN Mishra, BR Mishra</i>	
41. Transcatheter Interventions in Congenital Heart Diseases	355
<i>BRJ Kannan</i>	
42. Congenital Heart Disease in India	361
<i>Balu Vaidyanathan</i>	
<i>Index</i>	367

Abbreviations

A ₂	— Aortic component of second heart sound
AA	— Aortic arch
AF	— Atrial fibrillation
ALCAPA	— Anomalous left coronary artery from pulmonary artery
AMI	— Acute myocardial infarction
Ao	— Aorta
AP window	— Aorto pulmonary window
AR	— Aortic regurgitation
AS	— Aortic stenosis
ASD	— Atrial septal defect
AV	— Aortic valve
AV valve	— Atrioventricular valve
AVSD	— Atrioventricular septal defect
BP	— Blood pressure
CA	— Common atrium
CHB	— Complete heart block
CHD	— Congenital heart disease
CHF	— Congestive heart failure
CoA	— Coarctation of aorta
cTGA/l-TGA	— Congenitally corrected transposition of great arteries
DOLV	— Double outlet left ventricle
DORV	— Double outlet right ventricle
DTGA	— Dextro-transposition of great arteries
ECG	— Electrocardiogram
ECD	— Endocardial cushion defect
EDM	— Early diastolic murmur
ESM	— Ejection systolic murmur
FiO ₂	— Fractional inspired oxygen
HCM	— Hypertrophic cardiomyopathy
HLHS	— Hypoplastic left heart syndrome
ICU	— Intensive care unit
IVC	— Inferior vena cava
JVP	— Jugular venous pulse
LA	— Left atrium
LAD	— Left anterior descending (artery)
LAE	— Left atrial enlargement
LBBB	— Left bundle branch block
LCA	— Left coronary artery
LCX	— Left circumflex (artery)
LPA	— Left pulmonary artery

LPSB	— Left parasternal border
LSB	— Left sternal border
LSVC	— Left superior vena cava
LV	— Left ventricle
LVF	— Left ventricular failure
LVH	— Left ventricular hypertrophy
LVIO	— Left ventricular inflow obstruction
LVOT	— Left ventricular outflow tract
M ₁	— Mitral component of first heart sound
MPA	— Main pulmonary artery
MR	— Mitral regurgitation
MRI	— Magnetic resonance imaging
MS	— Mitral stenosis
MVP	— Mitral valve prolapse
MVR	— Mitral valve replacement
P ₂	— Pulmonary component of second heart sound
PA	— Pulmonary artery
PA	— Pulmonary atresia
PAH	— Pulmonary arterial hypertension
PAPVC	— Partial anomalous pulmonary venous communication
PDA	— Patent ductus arteriosus
PFO	— Patent foramen ovale
PND	— Paroxysmal nocturnal dyspnea
PPH	— Primary pulmonary hypertension (arterial)
PR	— Pulmonary regurgitation
PS	— Pulmonary stenosis
PSM	— Pansystolic murmur
PV	— Pulmonary vein
PVH	— Pulmonary venous hypertension
RA	— Right atrium
RAE	— Right atrial enlargement
RBBB	— Right bundle branch block
RCA	— Right coronary artery
RHD	— Rheumatic heart disease
RPA	— Right pulmonary artery
RSOV	— Rupture of sinus of Valsalva aneurysm
RV	— Right ventricle
RVF	— Right ventricular failure
RVH	— Right ventricular hypertrophy
RVOT	— Right ventricular outflow tract
S ₁	— First heart sound
S ₂	— Second heart sound
S ₃	— Third heart sound
S ₄	— Fourth heart sound
SV	— Single ventricle

SVC	— Superior vena cava
SVT	— Supraventricular tachycardia
T ₁	— Tricuspid component of first heart sound
TA	— Tricuspid atresia
TAPVC	— Total anomalous pulmonary venous communication
TEE	— Trans esophageal echocardiography
TGA/dTGA	— Complete transposition of great arteries
TS	— Tricuspid stenosis
TTE	— Transthoracic echocardiography
TR	— Tricuspid regurgitation
VSD	— Ventricular septal defect
WPW	— Wolff-Parkinson-White syndrome