

Cardiovascular Examination

Sept 2014

Cardiovascular Examination List	Comments
Rapport with patient	<input type="checkbox"/> Introductions
Positioning of patient to 45 degrees	<input type="checkbox"/>
Exposure of precordium	<input type="checkbox"/>
Inspection of patient & surroundings	<input type="checkbox"/> Discomfort <input type="checkbox"/> IVaccess <input type="checkbox"/> Infusions
Asking for relevant Vitals	<input type="checkbox"/> BP <input type="checkbox"/> Temp <input type="checkbox"/> O2 Sat
Examination of Hands	<input type="checkbox"/> Clubbing <input type="checkbox"/> Splinter Haemorrhages <input type="checkbox"/> Osler's nodes <input type="checkbox"/> Janeway lesions
Palpation of Radial Pulse	<input type="checkbox"/> Collapsing test
Comparison	<input type="checkbox"/> Radioradial delay <input type="checkbox"/> Radiofemoral delay
Examination of Eyes	<input type="checkbox"/> Conjunctival pallor <input type="checkbox"/> Jaundice
Examination of Oropharynx	<input type="checkbox"/> Palate <input type="checkbox"/> Petechiae <input type="checkbox"/> Cyanosis <input type="checkbox"/> Dentition
Carotid palpation	<input type="checkbox"/> Observing for syncope <input type="checkbox"/> Character
Assessment of JVP	<input type="checkbox"/> JVP height <input type="checkbox"/> Character
Inspection of Precordium	<input type="checkbox"/> Scars <input type="checkbox"/> Pacemakers
Palpation of Apex	<input type="checkbox"/> Counting interspaces <input type="checkbox"/> Volume-loaded <input type="checkbox"/> Pressure-loaded
Palpation of Precordium	<input type="checkbox"/> Heaves <input type="checkbox"/> Thrills <input type="checkbox"/> Palpable heart sounds
Auscultation of Murmur	<input type="checkbox"/> S1 <input type="checkbox"/> S2 <input type="checkbox"/> S3 <input type="checkbox"/> S4 <input type="checkbox"/> Splitting <input type="checkbox"/> Rubs
Mitral valve	<input type="checkbox"/> Systolic <input type="checkbox"/> Diastolic <input type="checkbox"/> Thrill <input type="checkbox"/> Left Axilla
Tricuspid valve	<input type="checkbox"/> Systolic <input type="checkbox"/> Diastolic <input type="checkbox"/> Thrill <input type="checkbox"/> Liver
Parasternal area	<input type="checkbox"/> Systolic <input type="checkbox"/> Diastolic <input type="checkbox"/> Thrill
Pulmonary valve	<input type="checkbox"/> Systolic <input type="checkbox"/> Diastolic <input type="checkbox"/> Thrill
Aortic valve	<input type="checkbox"/> Systolic <input type="checkbox"/> Diastolic <input type="checkbox"/> Thrill <input type="checkbox"/> Carotids
Repositioning to left lateral for Mitral	<input type="checkbox"/> Palpation for thrill <input type="checkbox"/> Auscultation bell
Repositioning sitting forwards for Aortic	<input type="checkbox"/> Valsalva with palpation <input type="checkbox"/> Valsalva with auscultation
Other Dynamic Maneuvers	<input type="checkbox"/> Inspiratory <input type="checkbox"/> Squatting
Examination of Back with legs over bed	<input type="checkbox"/> Palpation for sacral oedema <input type="checkbox"/> Percussion for effusion <input type="checkbox"/> Auscultation
Examination of Abdomen lying supine	<input type="checkbox"/> Liver <input type="checkbox"/> Spleen <input type="checkbox"/> AAA <input type="checkbox"/> Percussion of ascites <input type="checkbox"/> Femoral pulses
Examination of Lower Limbs	<input type="checkbox"/>
Pulses	<input type="checkbox"/> Popliteal <input type="checkbox"/> Dorsalis Pedis <input type="checkbox"/> Posterior Tibial
Oedema	<input type="checkbox"/> 10 secs pressure <input type="checkbox"/> Defining upper limit
Calves	<input type="checkbox"/> Swelling <input type="checkbox"/> Tenderness
Feet & Toes	<input type="checkbox"/> Ulcers <input type="checkbox"/> Embolic phenomena
Others	<input type="checkbox"/> Urinalysis <input type="checkbox"/> Fundoscopy
Summary & Interpretation	

Syndromes: Marfan's, Turner's, Down's

HANDS:

Clubbing: Cyanotic congenital heart disease; Infective Endocarditis

Endocarditis: Splinters (also 2° to trauma, vasculitis, RA, PAN, Sepsis, Haem malignancy)

Osler's Nodes (pulpes)

Janeway lesions (palms)

Tendon xanthomata



RADIO-FEMORAL DELAY: Coarctation

RADIO-RADIAL INEQUALITY: Subclavian artery stenosis, atherosclerotic plaque, aneurysm

COLLAPSING (bounding): Aortic Regurg

PULSUS ALTERNANS (weak/strong): Severe LVF

FACE:

Jaundice: Severe CCF & hepatic congestion

Haemolysis 2° prosthetic valve

Xanthelesma: incr lipids

Anaemia: pale conjunctiva

Mitral Facies: Rosy cheeks with bluish tinge = Mitral stenosis

Mouth:

High Arched Palate: Marfan's

Teeth: condition (endocarditis risk)

Tongue/lips: central/peripheral cyanosis

Mucosa: petechiae (endocarditis)

JVP:

A wave: atrial contraction

X descent: atrial relaxation

V wave: atrial filling (closed tricuspid valve)

Y descent: tricuspid opening/ventricular filling

CANNON a-waves:

Complete heart block

Atria contracting against closed tricuspid valve

GIANT a-waves (large but not explosive)

Pulmonary hypertension

Pulmonary stenosis

Tricuspid stenosis

LARGE v-waves:

TRICUSPID REGURG "should never be missed"

Reliable sign

Visible welling up into neck with each ventricular systole

APEX BEAT:

PRESSURE LOADED: hyperdynamic, heaving, systolic overloaded)

Aortic stenosis

HT

VOLUME LOADED: Thrusting, diffuse, displaced, non-sustained

Severe MR

Cardiomyopathy

DYSKINETIC: unco-ordinated impulse, larger than usual area

LV dysfunction (eg anterior AMI)

DOUBLE IMPULSE: two impulses felt

HOCM

TAPPING: palpable S1

MS (or rarely TS)



IMPULSES:

PARASTERNAL IMPULSE: heel of hand rested to left of sternum
Heel of hand: RV enlargement, severe LA enlargement
Fingers: palpable P2 in Pulm HT

THRILLS: "palpable murmurs"

Feel over: Apex, LLSE, Aortic & Pulm (together)

APICAL THRILLS:

Best felt with patient on left

AORTIC/PULMONARY

Sitting up in full expiration

IMPORTANT TO TIME S1 & S2 WITH CAROTID PULSE

S1: Mitral & tricuspid closure, beginning of ventricular systole

S2: Aortic & Pulmonary closure: end of systole/beginning of diastole

Normal Splitting: A2 then P2 (lower pressure in pulm system)

Increased by inspiration (↑ VR to right side)

Increased normal splitting: (wider on inspiration)

Delayed RV emptying: RBBB, pulmonary stenosis, VSD

Fixed splitting: no resp deviation

ASD (equalisation of volume loads between atria)

Reversed splitting: P2 before A2, increased on expiration

Delayed LV depol (LBBB)

Delayed LV emptying: (AS, coarctation)

↑ LV volume load (PDA, but machinery murmur will obscure heart sounds)

S3: Rapid diastolic filling:

May be physiologic in children/young

Pathological: = ↓ LV COMPLIANCE:

Assoc with ↑ Atrial pressure

LV S3: Louder at apex, on expiration

↑ CO: Pregnancy

Thyrotoxicosis

LVF/LV dilation

AR, MR, VSD, PDA

RV S3: Louder LLSE, on inspiration

RVF

Constrictive pericarditis

S4: Late diastolic noise

High pressure atrial wave reflected back from a poorly compliant ventricle

∴ Absent in AF

LV S4: = ↓ LV compliance

AS, MR, HT, ↑ age

IHD: USA/AMI

RV S4: ↓ RV compliance

Pulm HT

Pulm Stenosis

S3 & S4 present = "Quadruple rhythm" = severe LV dysfunction



MURMURS:

PANSYSTOLIC:	Mitral Regurg Tricuspid Regurg VSD Aorto-pulmonary shunts
MIDSYSTOLIC:	Aortic stenosis Pulmonary Stenosis HOCM ASD (pulm flow murmur)
LATE SYSTOLIC:	MVP Papillary muscle dysfunction (AMI or HOCM)
EARLY DIASTOLIC:	Aortic Regurg Pulmonary Regurg
MID-DIASTOLIC	Mitral Stenosis Tricuspid stenosis Aortic Regurg (Austin Flint)
	Atrial Myxoma
PRE-SYSTOLIC: (LATE DIASTOLIC)	Acute Rheumatic Fever (Carey Coombs) Mitral Stenosis Tricuspid Stenosis Atrial Myxoma
CONTINUOUS:	PDA A-V Fistula

AREA OF GREATEST INTENSITY & RADIATION:

SYSTOLIC:

AS:	Aortic - carotids
MR:	Apex - axillae & rest of precordium/back
HOCM:	LLSE
PS:	Pulm area
VSD:	LLSE

DIASTOLIC:

AR:	Aortic - LLSE
MS:	Apex
S3:	Apex
PR:	Pulm - LLSE
PDA:	Left infra-clavicular

GRADING OF MURMUR INTENSITY

LEVINE'S GRADING SYSTEM:

1/6	Very soft/inaudible
2/6	soft but immediately detected (by experienced operator)
3/6	Moderate, no thrill
4/6	Loud, thrill just palpable
5/6	Very loud, thrill easily palpable
6/6	Very very loud, heard without stethoscope!!

DYNAMIC MANOEUVRES

RESPIRATION

Right sided: louder on INSPIRATION

Left Sided: Louder on EXPIRATION

DEEP EXPIRATION: sitting forward:

FOR AORTIC REGURG (may miss if you don't do it)



DYNAMIC MANOEUVRES:

	AS	MR	HOCM	MVP
VALSALVA (Strain phase)	Softer	Softer	Louder	Longer
SQUATTING (↑ preload)	Louder	Louder	Softer	Shorter
HAND GRIP (↑ afterload)	Softer	Louder	Softer	Shorter

HOCM:

Valsalva: ↓ LV volume = ↑ obstruction to flow = LOUDER

Squatting: ↑ VR & ↑ LV volume/dilation = ↓ obstruction to flow = SOFTER

Most other murmurs LOUDER EXCEPT HOCM

Hand grip (20-30 seconds): ↑ SVR, BP & heart size: ↓ obstruction to flow = SOFTER

Most other murmurs LOUDER EXCEPT HOCM

PERICARDIAL FRICTION RUB:

LOUDEST: SITTING FORWARD

EXPIRATION

HAMMAN'S CRUNCH:

Crunching sound

Systolic & diastolic components

In time with heart beat

Causes: Pneumo-mediastinum

Post CAGS/heart surgery

PTX

Aspiration of pericardial effusion

EXTRA'S:

VITAL SIGNS: In particular Temp for Endocarditis

URINE: For: Glycosuria

Proteinuria (co-existing renal disease or reno-vascular disease)

FUNDOSCOPY: for signs of hypertension