TTE Echo Report

Date:

Name of operators (student and senior):

Type of echo machine:

Reason for TTE request:

Technical conditions:
- Ventilation: Mode of ventilation (peak/plateau pressure, PEEP)
- Rhythm
- Vasoactive / inotropic agents: Name and dose (µg/kg/min)

Results:

Pericardium
- Adhesive pericarditis
- Pericardial fluid (measure maximum diameter)
- Describe any 2D signs of tamponade (RA or RV collapse)

LV
- Standard 2D measurements
  - LV dimensions (parasternal view): Systolic and diastolic internal diameters, septal and posterior wall thicknesses (syst, diast), and LV outflow tract diameter
  - Shortening Fraction of LV diameter (understanding limitations)
  - If possible, obtain EF according to Simpson formula from an apical 4-chamber view (± 2-chamber biplane view)
  - Mitral annular plane systolic excursion (MAPSE)
- Obtain aortic VTI measurement (Stroke volume and cardiac output calculations). Repeat this measurement before and after a fluid challenge or a passive leg raising test to assess fluid responsiveness.
- Describe respiratory variability of aortic VTI with reduced sweep speed in ventilated patients.
- Tissue Doppler Imaging: S wave velocity of the mitral annulus (lateral or septal)
- Describe segmental wall motion: homogeneous or not. In case of wall motion abnormality, describe which territory is impaired and degree of impairment (hypokinesis, akinesis, dyskinesis)
- Describe position of IV septum in relation to the RV (evidence of diastolic or systolic overload). Describe whether paradoxical septal motion is present.
• Describe other abnormal features of the LV (LVOT obstruction, mid cavity obstruction, LV aneurysm, intra-cavity thrombus …)

RV

• Standard 2D measurements:
  o RV dimensions (measured from apical 4-chamber view): RV diameter and surface of RV chamber. RV free wall thickness.
  o RV/LV end-diastolic basal diameter ratio
  o Tricuspid annular plane systolic excursion (TAPSE)
  o RV ejection fraction
• Describe segmental wall motion: RV free wall and septal motions
• RA/RV gradient if TR present
• Tissue Doppler Imaging: S wave velocity of the tricuspid annulus (lateral)
• Acceleration time of the RV ejection flow?

Atria and inter-atrial septum (IAS)

• Standard 2D measurements: In case of atrial dilatation, measure left and right atrial area (apical 4-chambers)
• Describe potential IAS anomaly: aneurysm, patent foramen ovale (PFO), or septal defect. If the search for a PFO is the main reason to perform the TTE, perform a contrast injection and describe potential manoeuvres used to increase sensitivity (Valsalva manoeuvre, release of PEEP at the time of contrast injection)

Valves

• Describe each valve, presence of anatomical (2D) and/or functional (Doppler) anomaly.
• Precise quantification of a valvular regurgitation or stenosis as well as the exact underlying mechanism is not expected from a non-cardiologist performing critical care echocardiography. However, a gross estimation of severity should be provided, especially if the valvular problem can contribute to a situation of hemodynamic compromise.
• Look at each valve carefully for the presence of mobile vegetations. If endocarditis is suspected a cardiology opinion is required, but try and report the 2D appearance and presence of regurgitation and assess for progressive changes such as aortic root abscess. This is better seen on TEE.
• Systematic Doppler analysis
  o Aorta: cf supra, measure aortic VTI in each patient (if applicable: prior and after therapeutic interventions)
  o Mitral: LV filling pattern and TDI of the mitral annulus (lateral and septal E’ plus average). Calculate E/E’. Provide an estimation of the LV filling pressure (elevated, low, «grey zone»). If mitral regurgitation is present, provide the best possible description of the leaflets and regurgitant jet.
Tricuspid: if regurgitation is present, measure peak velocity to estimate systolic pulmonary pressure. Map to RV size and function.

Pulmonary: if regurgitation is present, measure end-diastolic velocity to estimate diastolic pulmonary pressure. Describe systolic pulmonary flow envelope in case of pulmonary hypertension (time to peak, biphasic aspect).

**Inferior vena cava**
- Diameter and respiratory variability, by doing the difference between spontaneously breathing patients (collapsibility) or ventilated patients (distensibility).
- Supra-hepatic vein velocity recording (pulsed Doppler)

**Pleura and lungs**
- Systematic search for pleural effusion and/or lung condensation.
- Pleural sliding
- Search for echo signs of pulmonary oedema (B lines)

**Diaphragm**
- Check mobility of each hemi-diaphragm using 2D, and quantify diaphragmatic excursion using M-mode or anatomical M-mode.

**Therapeutic response**
- Describe fluid challenge volume and type administered and index of fluid responsiveness
- Describe response to pharmacotherapy including inotropes, vasoconstrictors, mechanical support

**Conclusions**

1. Answer to the question prompting TTE study
2. Describe any other relevant findings and significant measurements
3. Describe changes observed in response to therapeutic management – this may include fluid challenge and response to inotropic and vasoconstrictors.

Report whether images downloaded onto Hospital PACS system