Epworth HealthCare

Echo Assessment I

Echo Assessment I

This is an assessment to test your understanding of the material that has been taught over the last 2 months. The questions consists of basic ultrasound principles as well as standard basic echocardiographic views.

1. Please enter your name. This information is collected for research identification purposes.

2. The following describe the features of ultrasound (US) EXCEPT

- The formation of soundwaves generated by piezoelectric crystals.
- The images seen on the screen of the ultrasound machine is due to reflection, refraction and attenuation of the US waves by tissues.
- US waves is a longitudinal wave that can travel through air, solid and vacuum.
- The properties of US creates image artifacts

3. Artifacts are

- Expensive
- Can be caused by inappropriate machine settings
- True representations of structures being interrogated
- Mostly due to poor quality equipment

4. Regarding wavelength and frequency:

- They are directly related.
- Can affect image resolution for a given US probe.
- A high frequency probe allows good tissue depth penetration.
- Frequency is measured in millisec.

5. The frequency range of US probes that are commonly use in medical diagnostic equipment are:

- 20 – 20,000 Hz
- 20,000 – 200,000 Hz
- 2,000,000 – 15,000,000 Hz
- None of the above

6. Which of the following is TRUE

- A 15 MHz probe can generate sound waves with a long wavelength to penetrate deeper structures
- A 3.5 MHz probe is useful for identifying valvular vegetations
- A 12 MHz probe will provide good image resolution of abdominal aortic artery
- A 3.5 MHz probe is not useful for lung ultrasound because soundwaves do not travel through air

7. The US modality that has been taught over the last few weeks consisted of:

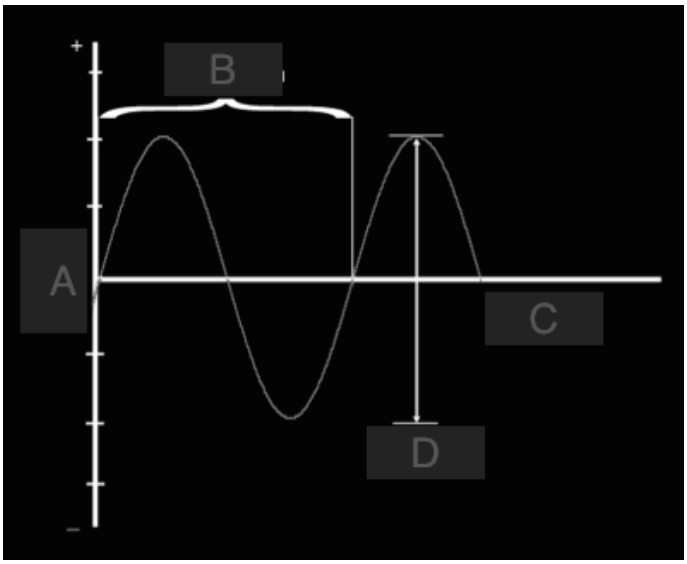
- M-Mode
- B-Mode
- Colour Mode
- Spectral Doppler

8. Regarding the use of phased array, echo probe for imaging:

- The ultrasound beams are straight and parallel to one another.
- Results in good depth penetration
- Allows visualisation of the internal jugular vein
- Has a small footprint for smaller size patients

9. When imaging a deep structure:

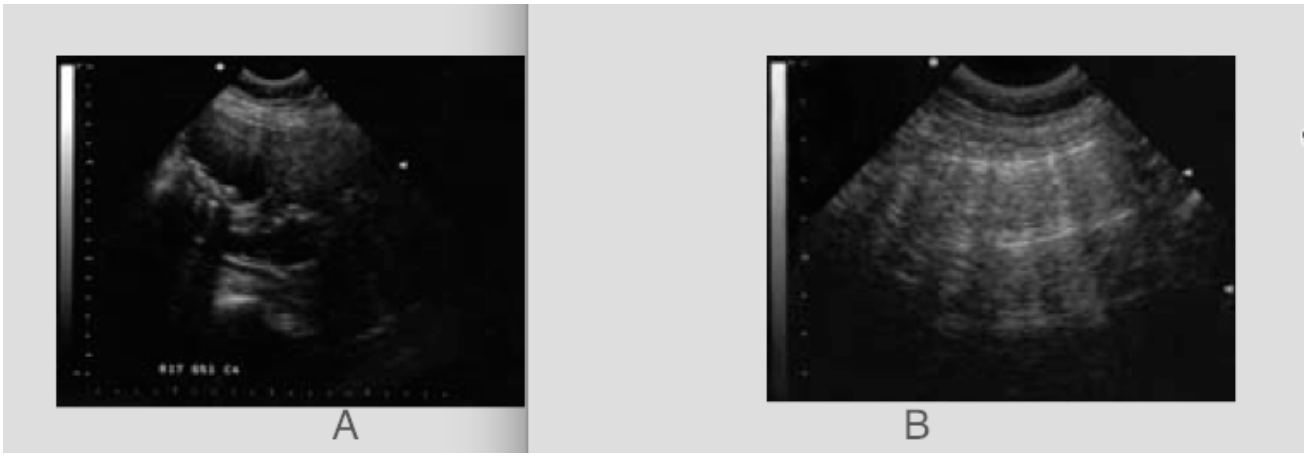
- A high frequency probe would provide good image resolution due to the short wavelength of the US waves.
- The US probe will have a low pulse repetition frequency (PRF) due to the delay in returning echoes towards the probe.
- The probe marker should be orientated to the patient's right shoulder.
- The patient should be fully sedated.



10. Regarding the diagram above, label the following:

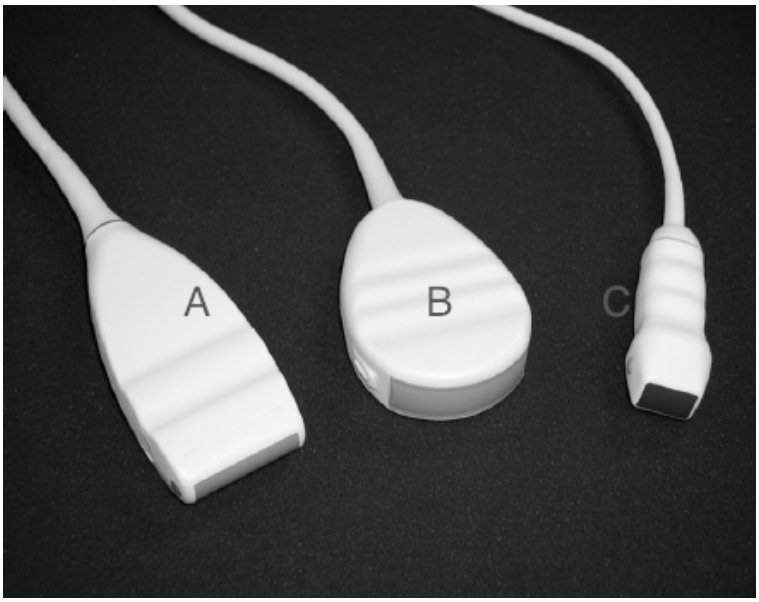
A	Pressure
B	wavelength
C	amplitude
D	time

Artifacts A, B



11. Regarding the artifacts A and B above:

- Artifact A is a type of reverberation artifact, and B is enhancement artifact
- Artifact A is a type of ring down artifact, and B is mirror artifact
- Artifact A is a type of comet tail artifact, and B is ring down artifact
- Artifact A is a type of accoustic shadowing artifact, and B is reverberation artifact



12. Regarding ultrasound probes shown above, select the correct statement

- Probe A is useful for visualising deep structures
- The frequency of probe B is 15MHz
- Probe C has a small ultrasound footprint
- Probe C produces a linear beam

13.

Regarding this echo loop, select the TRUE statement:

- This view is obtained from the apical window
- This view is obtained with the probe positioned beneath the xiphisternum with the probe marker positioned in the 9 o'clock orientation
- This view shows the mitral valve clearly
- This view is useful to assess LV contraction

14.

Echoloop2 from Epworth ICU Echo on Vimeo.

Regarding this echo loop, the following statement is TRUE

- This view can be obtained from the parasternal window
- This loop shows the mitral valve
- The LV is contracting well
- This is called the RV outflow view

15.

Regarding this echo loop, the following statement is TRUE.

- This is the parasternal short axis mid pap view
- This is the only window to obtain this view
- The LV systolic function appears to be impaired
- The mitral valve can be obtained by tilting the probe inferiorly

16.

Regarding this echo loop, the following statement is TRUE

- The right atrium is seen clearly
- Regurgitation of mitral and aortic valve can be seen in this view
- This image can also be obtained through the subcostal window.
- This view is best obtained with the probe marker pointing towards the patient's right hip

17.

Regarding this echo loop, the following statement is TRUE

- The abdominal aorta can be seen
- There is a pericardial effusion
- The three leaflets of the aortic valve can usually be seen in this view
- The RV appears dilated

18.

Echoloop6 from Epworth ICU Echo on Vimeo.

Regarding this echo loop, the following statement is FALSE

- The anterior leaflet of the mitral valve is smaller than the posterior leaflet
- This view is commonly referred to as the fish-mouth view
- This view is obtained with the probe marker towards the patient's left shoulder
- This view can also be obtained via the subcostal window

19.

Echoloop7 from Epworth ICU Echo on Vimeo.

Regarding this echo loop, the following statement is FALSE

- The RV is 1/3 the size of the LV
- The atrioventricular valves are well seen
- By tilting the probe inferiorly, the apical 5 chamber view can be obtained
- The LV and RV systolic function here is normal

20. The following statements are TRUE regarding the apical 3 chamber view EXCEPT:

- The left ventricular outflow tract can be seen
- The anterior mitral leaflet can be seen
- The right ventricle can be seen
- The left atrium can be seen

21. Regarding visualisation of the inferior vena cava, the following statement is FALSE

- This can be achieved by the subcostal window
- The probe marker is rotated anti-clockwise from the subcostal 4 chamber, with a tilt towards the liver and pointing inferiorly
- The abdominal aorta can be mistaken for the inferior vena cava
- Collapses when the patient is volume overloaded

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