

ULTRASOUND LECTURE SERIES

Basic Imaging of the Normal Fetal Heart

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Objectives

At the conclusion of this presentation, students will be able to:

1. Discuss why it is important to know how to examine the normal fetal heart on prenatal ultrasound.
2. Describe how to establish the normal fetal cardiac axis and position.
3. Describe the characteristics of normal cardiac structures on prenatal ultrasound.
4. Discuss why evaluation of the cardiac outflow tracts is important.

Topics

1. Four-chamber view
 - Orientation
 - Abdominal situs
 - Normal structures visualized
 - Atria
 - Ventricles
 - Moderator band
 - Interventricular septum
 - Interatrial septum
 - Foramen ovale and flap
 - Atrioventricular valves
 - Chordae tendinae
2. Outflow tracts
3. Aortic and ductal arches
4. Inferior vena cava and superior vena cava

Review Questions

1. Which of the following statements about congenital heart defects is true?
 - A. It is the second leading cause of infant mortality.
 - B. The incidence is 20 per 1000 live births.
 - C. They are among the most frequently missed abnormalities by prenatal sonography.
 - D. Prenatal detection of congenital heart disease does not affect the pregnancy outcome of fetuses.
2. Which of the following statements is true?
 - A. Fetal cardiac size occupies approximately one-third of the fetal thorax.
 - B. The angle of the fetal heart relative to the midline should be $45^\circ \pm 20^\circ$.
 - C. *Dextrocardia* is the term used when the heart is located in the right side of the chest, and the cardiac apex points to the right.
 - D. The foramen ovale flaps into the left atrium.
 - E. All of the above.
3. Which of the following cardiac associations is not correct?
 - A. Left atrium – pulmonary veins.
 - B. Aortic arch – bifurcation.
 - C. Right ventricle – moderator band.
 - D. Ductal arch – “hockey stick” appearance.
4. Which of the following statements about the mitral valve is not correct?
 - A. The mitral valve has 3 leaflets (anterior, posterior, septal).
 - B. The mitral valve is always associated with the left ventricle.
 - C. The mitral valve is located closer to the base of the heart, as compared to the tricuspid valve.
 - D. The chordae tendinae of the mitral valve prevent the valve flaps from being everted into the left atria during systole.
5. Assuming there is adequate visualization of the fetal 4-chamber view, which of the following cardiac structures can be seen from this view?
 - A. Foramen ovale flap.
 - B. Moderator band.
 - C. Ventricular septum.
 - D. Tricuspid valve.
 - E. All of the above.