



Screening for Pulmonary Arteriovenous Malformations (PAVM) - Contrast Echocardiography

- Contrast echocardiography (CE) is a relatively simple test, performed by a cardiologist, which is non-invasive and does not require sophisticated equipment nor any radiation exposure
- CE is performed after placing an intravenous (IV) line in the arm
- A small amount of saline (salt water) is agitated, creating “microbubbles” (not air), and injected into the vein through the IV
- The bubbles go up the arm and pass through the right-sided chambers of the heart (right atrium and ventricle) and into the blood vessels of the lungs (pulmonary circulation)
- The bubbles are detected with an ultrasound transducer, placed on the chest wall
- Individuals without PAVM will have a negative CE - the bubbles will be “trapped” in the capillaries (small blood vessels between arteries and veins) in the lungs and will not return to the left-sided chambers of the heart (left atrium and ventricle)
- Individuals who have a negative CE will not require antibiotics before dental visits or further PAVM screening
- Individuals with a PAVM, will have a positive CE - the bubbles will pass through the PAVM (direct connection between artery and vein without capillaries in between) and will appear in the left-sided chambers of the heart within 3-5 heartbeats of their appearance in the right-sided chambers
- A positive CE indicates that a person has PAVM but does not give information about the size, location, or number of PAVM, or whether treatment is recommended
- Individuals with a positive CE should have a thin section spiral chest CT without contrast to determine whether treatment is recommended
- Individuals with positive CE should take antibiotics before dental visits or operative procedures following the American Heart Association Guidelines to prevent brain abscess
- CE for PAVM screening requires that the cardiologist performing the test be aware that they are looking for a shunt in the lungs, not the heart
- Left-sided chamber bubbles, due to PAVM, appear 3-5 cardiac cycles (heartbeats) after they first appear in the right-sided chambers. Left-sided bubbles, due to intra cardiac (heart) shunts, appear immediately after they first appear in the right-sided chambers. So, the ultrasound transducer must be left on the chest at least 3-5 heartbeats to detect PAVM

References:

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