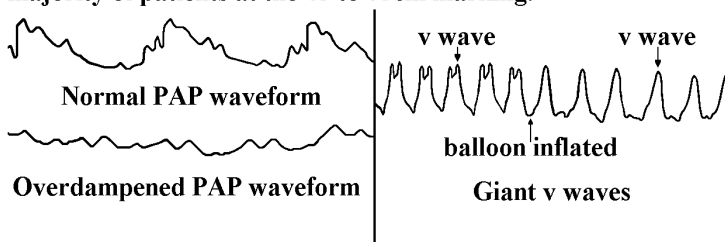


Recognizing the spontaneous wedge waveform

When a pulmonary artery pressure waveform (PAP) suddenly looks dampened, check your patient for a change in status and determine if the waveform has become overdampened. If the catheter is wedged the Partial pressure of oxygen in arterial blood (SaO₂) will exceed the Mixed venous oxygen saturation (SvO₂) and there will be a narrowing gap between systolic and diastolic pressures.

Corrections

Attempt repositioning maneuvers first by having the patient roll from side to side. Validate the waveform by two RN's before and after repositioning the catheter. Document the pressure waveform, pressure readings, and the cm position of the catheter before and after positioning. The catheter is not to be advanced after 24 hours unless ordered by the physician. Assure that the balloon is deflated and slowly retract the catheter until a pulmonary waveform is obtained. Inflate the balloon to obtain a wedge. Secure catheter when done. The catheter is properly positioned in the majority of patients at the 45 to 65cm marking.



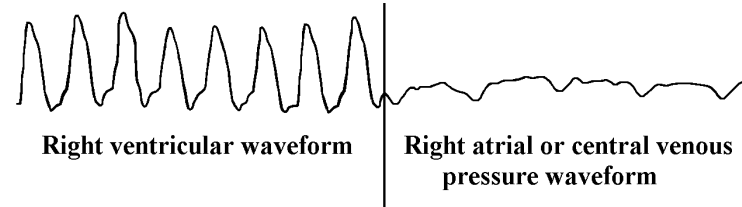
Recognizing giant v waves

The sudden appearance of large v waves may cause the wedge tracing to take on the appearance of a pulmonary artery waveform. Use the ECG as a reference to locate the v waves. On a simultaneously recorded ECG strip the v wave roughly corresponds to the terminal portion of the T wave to the p wave of the succeeding beat. Mitral regurgitation is the only clinical situation in which the mean arterial pressure (wedge) is actually greater than the pulmonary artery diastolic pressure. The reversal of the normal hemodynamic relationship is due to the regurgitant jet. A v wave peaks at least twice the value of the mean wedge. Left ventricular end-diastolic pressure is best estimated by measuring the crest of the a wave if the patient is in normal sinus rhythm, or measuring the pre-v wave if the patient is in atrial fibrillation.

Respiratory artifact

As the patient breathes, mechanical pressure of the lungs on the heart affects hemodynamic pressure. Thus it is essential to always measure the pulmonary artery wedge pressure at end-expiration when the pleural pressure is closest to zero. End-expiration in the spontaneous breathing patient is found just before the waveform drops. End-expiration of mechanical breathing is just before the waveform rises.

Pneumonic: Patient-peak Ventilator-valley



Recognizing the right ventricular waveform

When the catheter migrates to the ventricle, you will notice a drop in the diastolic value, a change in the waveform and there may also be ectopy caused by irritation of the catheter.

Corrections

Attempt repositioning maneuvers first by having the patient roll from side to side. Validate the waveform by two RN's before and after repositioning the catheter. Document the pressure waveform, pressure readings, and the cm position of the catheter before and after positioning. If the catheter is positioned 20cm or less, do not reposition. Call the physician. The catheter is not to be advanced after 24 hours unless ordered by a physician. Obtain the last chest x-ray and observe for placement, kinks, knots, or curling in the right ventricle. If curling or knots are present, do not advance the catheter. Call the physician. Inflate the balloon 1.5ml. and slowly advance until a wedge waveform is obtained or the catheter has been advanced 10cm. Terminate the procedure if resistance is met. Re-inflate balloon to determine amount of air needed to obtain a wedge. If this is <1ml deflate the balloon and pull back on the catheter. When proper position has been verified by waveform analysis secure catheter. If after 5 minutes you are unable to position the catheter, deflate the balloon and pull back until the waveform changes from right ventricle to right atrium. Secure catheter and call physician.