Specificity of UPV in cardiovascular diseases/SŠ (nurse)

Template:School

Purpose of UPV in Cardiac

- Reduction of systemic/myocardial O2 consumption – cardiog. shock, acute or insufficiency.
- Decreased work of breathing.
- Stabilization of the patient's condition.
- Already at the time of intubation, we have to think about disconnection.
- Patients with a failing heart are very difficult patients to disconnect! (GDP>375!).

Hypertension

- Increases the afterload of the left heart → UPV facilitates the work of the left ventricle by increasing intrathoracic pressure.
- Stress that precedes intubation and initiation of UPV worsens hypertension.
- Decompensated hypertension can improve (reduction of preload and increase intrathoracic pressure) and worsen (shallow sedation, increase of vegetative tone) by connecting to UPV.

Left-sided heart failure

- After connecting to the UPV, the milker may develop hypotension due to:
    - Pharmacologically maintained hypovolemia (diuretics).
    - Preload dependent left ventricle.
    - After connecting to the UPV, the intrathoracic pressure increases → this increases the work of the right ventricle → lower output.
    - Decrease in left ventricular filling → venous return and right ventricular filling decrease → left ventricle cannot pick up CO (CO = TO x TF) (cardiac output = stroke volume measured on ECHO x pulse rate) .
    - There is also the effect of anesthetics, to which the patient is very sensitive in this state → vasodilation.

Solution

- The solution is circulatory disadvantageous tachycardia (CO = TO x TF) → but this is often not enough and the circulation collapses into hypotension with tachycardia.
- Adequate hydration !!!
- Vasopressors - if vasodilatation dominates (Noradrenaline).
- Inotropic if low cardiac output dominates.

!!!!Caution - if we give noradrenaline to a patient with a poorly filled heart, we will indeed increase the pressure, but this will increase the load on the ventricle and the failing unfilled heart is able to hold CO again only at the cost of TF !!! → This is the cause of a number of tachycardias after the use of noradrenaline.

Positive effects of UPV

- If pulmonary congestion dominates (i.e. the left ventricle does not keep up and blood accumulates in front of it) UPV can bring significant relief → right ventricular output decreases (increased loading and intrathoracic pressure) → venous return decreases → less inflow into the left ventricle.
    - Increased intrathoracic pressure causes the left ventricle to work against less resistance (decreased workload) → left ventricular relief.
- UPV with PEEP will improve oxygenation → better oxygenated heart has better function = more CO.

    → PEEP helps to “squeeze” edema fluid out of the alveoli
- Sufficient but not too deep sedation.

Right-sided heart failure

- When connected to the UPV, the intrathoracic pressure rises → more strain → more work for the right ventricle.

- By reducing venous return, inflow to the right ventricle is reduced.
- Failing right ventricle needs sufficient i.v. to increase CO. volume, low loading and low intrathoracic pressure.

!!! UPV is always harmful to the right heart. → try to ventilate with the lowest possible pressures and with the smallest possible PEEP.

- Sufficient intravascular volume required (the right ventricle is more volume dependent than usual).
- Try using inotropics (uncertain result) - watch out for arrhythmias.

Left and right ventricular failure

- Balancing between the needs of both chambers.
- UPV is a good servant but a bad master → non-aggressive ventilation modes must be used.
- Intravascular volume as a compromise between left and right ventricular needs.
- Inotropic support if indicated.== Acute myocardial infarction ==
- Often the necessity of UPV (non-invasive pulmonary ventilation) when pulmonary edema occurs.
- This is often congestive failure → UPV ensures good oxygenation as a priority, and also relieves the left ventricle (see above).
- !!!Watch out for the AIM of the right ventricle! (see above).
- !!!Warning UPV causes a change in the vegetative tone and thus the risk of arrhythmias, with AIM already increased, good sedation (sedation) is necessary.

Pulmonary embolism

- UPV for pulmonary embolism is mostly needed by patients with massive pulmonary embolism.
- Poor oxygenation during obturation of a large part of the pulmonary vascular bed.
- Circulation in this situation is very unstable on its own, endotracheal intubation and UPV will worsen the already difficult work of the right ventricle (failing!) and LV filling (circulatory collapse!).
- On the other hand, it is often not possible to ensure oxygenation otherwise.
- In addition, often impaired consciousness (necessary intubation).
- Non-aggressive ventilation modes.
- Inotropics, vasopressors and fluids very sensibly.

Sister ARIPka's task

- The nurse is the best monitor.
- For cardiac patients, the position is strictly observed.
- Rehabilitation with balance (excessive exercise can worsen heart failure).
- Checking consistency, appearance of sputum (pulmonary edema!).
- Regular CVP measurement (report rise).
- In the event of a sudden onset of arrhythmia, know how it arose (e.g. during suctioning) what it looked like (regular x irregular),...
- Monitor swelling – quantification – mainly DK.
- Monitor the patient's subjective perceptions of UPV - he is more often in contact than the doctor - shortness of breath, spastic breathing, breathing mechanics.
- Be able to work well with devices (PiCCO, monitors, mechanical parts of the ventilator) – theoretically, a doctor should be able to do this, but...
- The patient's water balance is important (low x high diuresis, total balance 6, 12, 24 hours).
- Keep calm in adrenaline situations.
- Know basic procedures (CPR, defibrillation, cardioversion).
- **The doctor does not expect from you a discussion of the latest studies, but knowledge of procedures, manual dexterity, prepared equipment, speed and calmness!**== Resource ==
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Incomplete citation of lecture.

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