Anesthetic Emergencies in the Parturient Patient

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Case 1

- 30 yr old morbid obese patient 30 week gestation transferred from another hospital with severe uncontrolled hypertension 180/100.
- 11 g of Proteinurea swelling of the legs with weeping sores
- Episodes of shortness of breath
- Blood pressure hard to obtain due to size of her arms
- Consult to ICU for blood pressure management and respiratory issues started on $MgSO_4$ infusion and hydralazine
- Patient admitted to ICU arterial line placed

- Blood pressure 200
- Decision made to transfer patient to Halifax. Shortly after she became short of breath, cyanotic, arterial blood pressure was 270 systolic
- At this point she was agitated and flailing around
- Diagnosis flash pulmonary edema due to acute hypertension

Treatment Flash Pulmonary edema

- This is a medical emergency requiring immediate action
- We gave her oxygen using a bag and mask
- Simultaneously she received IV morphine in incremental doses until she became less short of breath and her pressure fell a total dose of 20 mg was administered. IV lasix 40 mg was given.
- A central line was placed in the RIJ and vasodilator therapy was started

Congestive Cardiac Failure

- Can have a rapid onset or more slow
- Can be systolic or diastolic dysfunction
- Hypertensive cardiac failure causing acute pulmonary edema is a vascular disease
- The patients look sick, they need vasodilator therapy, and they may euvolemic or hypovolemic
- Acute hypertensive crisis with flash pulmonary edema is the most common. An echocardiogram will often be normal once the crisis is over.

- Morphine acts as a vasodilator and relieves anxiety and agitation and relieves shortness of breath
- It suppresses the release of endogenous catacholamines which make the situation worse
- This is the number 1 intervention in this situation
- Lasix's main benefit is vasodilatation which occurs within five minutes of administration. The diuresis occurs after about 30 minutes. Maximal vasodilatation occurs with 20 mg. Large doses just cause more diuresis later and may make the clinical situation worse.

Specific vasodilator therapy

- Hydralazine is a vascular dilator given in intravenous bolli. The main problem is it's not that potent and patients get reflex tachycardia
- Nifedipine is a calcium channel blocker without too much effect on heart rate. It's a direct muscle relaxant working on the arterial and venous side. It can be given IV, but no preparation available here, orally or sublingually. It is fast acting and more potent. Doses of 5 or 10 mg can be given. It is tocolytic.

Intravenous Infusions

- Nitroglycerine is primarily a venous dilator but is an arterial dilator at high doses.
- Sodium nitropruside is an arterial and venous dilator. It is very potent and will predictably drop the blood pressure. It must be given as an infusion with arterial pressure monitoring.
- Labetalol is a mixed alpha and beta blocker often used PO or IV to lower blood pressure. It provides some vasodilatation but is not the drug of first choice here.

Ventilation

- Ventilation initially can assist with a bag and mask or just oxygen if not too severe.
- Consider CPAP mask or BiPAP.
- Intubation and mechanical ventilation.

Other Causes of Acute Pulmonary Edema

- Peripartum cardiomyopathy is a disease of unknown etiology and may be associated with severe preeclempsia.
- Valvular heart disease eg. Aortic stenosis, mitral stenosis especially if associated with arythmias.
- Multiple other rare or congenital cardiac issues which we will not deal with here but hopefully have been worked up antenatally.

Subsequent Treatment

- She went for cesarean section which was done under spinal anaesthetic. Apart from the technical difficulties of her size, there were no further problems and she and the infant made a good recovery.

Other issues with management of preeclampsia

- Fluid management. There may be a transient improvement in cardiovascular parameters with a fluid load but patients given extra fluids have a higher incidence of pulmonary edema.
- Usually there is no need for central venous monitoring. Low urine output in the presence of normal renal function is not an indication for extra fluid.
- $MgSO_4$ is the drug of choice for seizures.
- The number needed to treat seizures in mild preE is 100.

Case 2

- 34, G3, P1, A1 female with IVF. IUGR labor induced.
- An epidural was placed in labor and delivery without difficulty. 30 minutes later, the nurse called to say she experiencing dizziness and loss of vision and shortness of breath with contractions. When I arrived she was normal, feeling better with a good block to the low thoracic region and good pain control. An oxygen saturation monitor was applied and SaO2 was normal. With repeat contractions, she had the same symptoms with anxiety, shortness of breath, and eyes rolling back. Still normal SaO2 and symptoms remitted at the end of contractions.

- Diagnosis unknown.
- Elected cesarean section under general anaesthetic. Uneventful course.
- Post-op patient taken to the ICU for further monitoring. She had one episode of stridor and desaturation to SaO2 83 on room air. This responded to oxygen and humidity.

- She made a good recovery. Maternal blood was sent for fetal cells and a spiral CT was done of the chest, which was normal.
- A neurology consult was sought, CT of the head was normal.

Local Anaesthetic Toxicity

- Depends to a certain extent on the drug used; can vary for mild symptoms such as auditory changes, circum oral numbness, metallic taste in the mouth to agitation, seizures, and coma.
- Direct cardiac depression especially with bupivacaine can lead to cardiac arrest.
- Total spinal anaesthetic can occur with injection of a large dose of LA intrathecally. This is most likely to occur with an inadvertent intrathecal catheter when the patient is being topped up for C section.

- Total spinal
- Rapid fall in blood pressure and possibly heart rate, loss of consciousness, and respiratory arrest. The pupils will be fixed and dilated and will remain so for about four hours. During this period, intubation and ventilation will be necessary. Circulatory support will be necessary with vasopressors. If this is done the patient will probably recover.

Intravenous Toxicity

- For seizure activity, benzodizapines should be given and the patient ventilated with 100% oxygen.
- For cardiac toxicity leading to arrest, CPR should be started.
- Mechanism of cardiac toxicity likely due to Na channel blocking.
- Lipid emulsion therapy should be started bollus 1.5 mg or 100 ml. Then 0.25 mg per minute. Continue CPR until they recover. It may take a long time.

- Consideration should be given to C section while CPR is being performed as CPR is more effective without the fetus.