CHKD

Patient X

By: Katie La Londe

History

- Patient has a history of pneumothorax
- cardiac arrest
- cerebral hemorrhage
- born at 37 weeks gestation via vaginal delivery after mom labored for 2 days

- single family home
- dad is not in the picture
- grandma is very involved in patient care

- there are no specific cultural considerations at this time

Hospitalization

Chief reason for hospitalization: diaphragmatic hernia This was found during fetal scans while baby was still in uturo

pathophysiology: birth defect, abnormal opening in the diaphragm. This muscle keeps the thoracic cavity and abdominal cavity separate. In the thoracic cavity we have the lungs and heart, while in the abdominal cavity we have the intestines, liver, spleen, stomach, kidneys, and other abdominal organs. When there is an opening it allows the abdominal organs to enter into the thoracic cavity putting pressure on the heart and lungs. This makes breathing, gas exchange, and circulation/perfusion hard for the baby. This eventually leads to organ failure and death due to inadequate oxygenation if not treated. S/S include bluish colored skin, tachypnea, and tachycardia. This patient also had a previous cardiac arrest, has a pneumothorax, and a brain hemorrhage although these are not the main diagnosis.

Treatment

VA Ecmo
Diaphragmic reconstruction surgery

This baby was put on VA ecmo which will do the work of the heart and lungs for the baby. Allowing for the organs to get perfused. The ecmo consists of 2 cannulas. 1 canula is used to draw deoxygenated blood out of the body after it has gone through the body and the other canula is used to put oxygenated blood back into the body. With this patient the cannulas were placed in the superior vena cava. Within the ecmo machine itself the machine will take out the CO2 and replace it with oxygen before placing it back into the body. It does the complete work of gas exchange for the baby. Based on the babies needs you can also add more oxygen in the blood or decrease the oxygen. This baby only needed minor help so we were giving him 50% oxygen. For reference room air is 21% oxygen. They are also planning on fixing the hernia tomorrow morning at bedside while the patient is still on ecmo. This will be challenging as the baby will be at a greater risk of bleeding. However, it is important that they move the organs back to their anatomical positions and close up the hole as to help the baby heal and prevent further complications. These procedures will help the baby be able to have adequate circulation and ventilation.

Secondary Diagnosis

Pneumothorax

This babies pneumothorax was caused by too much pressure being placed on the lungs by the abdominal organs. This lead to poor oxygenation of the blood which is why baby needed to be on ecmo

The combination of needing both heart and lung help is why it is VA because with VA the pump does the heart and lungs job while with VV it only does respiratory support

Cardiac Arrest

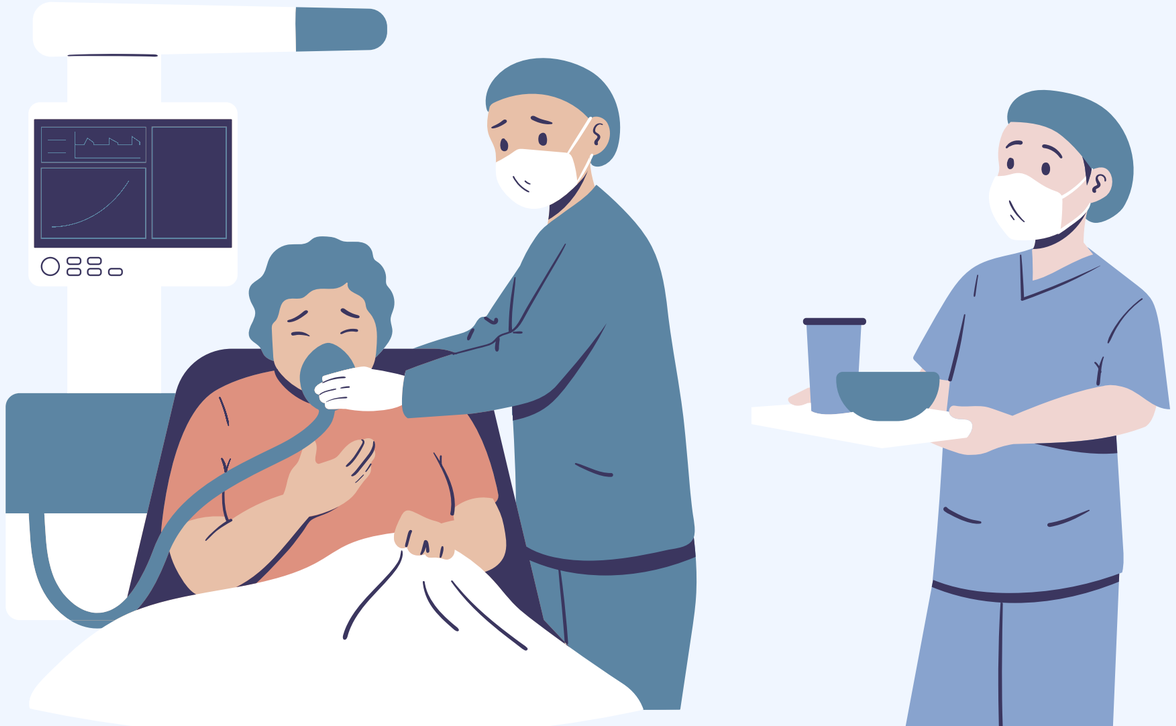
This babies cardiac arrest was caused by too much pressure being placed on the heart by the abdominal organs which caused the heart to not be able to pump effectively. There could have been other factors, but they are not clear at this time. This poor perfusion lead to the need to be put on ecmo

Developmental Stage

Infant

This patient does not meet the norms. In a normal baby they are able to breath and perfuse their body on their own. This baby need VA ecmo to achieve that. Since this baby is sedated and paralyzed it is hard to measure if it meets the other requirements. Baby does not suck, root, grasp, touch, cry, move arms or legs, or have other reflexes. They are untestable at this time

Due to the baby being an infant all questions and concerns were directed to mom. While caring for the baby we did talk to him although he could not talk back he can still hear us.



Assessment

Per RN

neuro- sedated, paralyzed, pupils pin point

respiratory-chest tube, pneumothorax, ventilator support to keep lungs open

cardiovascular- VA ecmo, arterial line, UVL

GI- NPO, no bowel movement, no bowel sounds heard

GU- Foley

Musculoskeletal- paralyzed, sedated

skin- there are 2 incision on patient right side of the neck, arterial line in right arm, and a uvl in umbilical cord which are the only (places that the skin is not "intact")

lines-UVL, arterial line, va ecmo, foley, chest tube

fall risk- patient is a fall risk, however, is sedated and paralyzed

pain- normal

psychosocial- dad is not in the picture, pt's mom wanted a password to gain access to any information on the child which was granted, social workers are involved, there is positive parent and family (grandma) interaction and contact and interest in healthcare, parent is no longer at bedside due to being a pt herself at SNGH, single parent household, both mom and grandma will be staying at Ronald McDonald house.

Research

This research is pertinent when it comes to the baby and his poor perfusion and poor oxygenation. VA ecmo will do the work of the heart and lungs for the baby. Allowing for the organs to get perfused. The ecmo consists of 2 cannulas. 1 canula is used to draw deoxygenated blood out of the body after it has gone through the body and the other canula is used to put oxygenated blood back into the body. With this patient the cannulas were placed in the superior vena cava. Within the ecmo machine itself the machine will take out the CO2 and replace it with oxygen before placing it back into the body. It does the complete work of gas exchange for the baby. Based on the babies needs you can also add more oxygen in the blood or decrease the oxygen. This baby only needed minor help so we were giving him 50% oxygen. For reference room air is 21% oxygen.

Risk of Bleeding

- Surgery to place the VA ecmo
- Diaphragmatic Reconstruction Surgery
- Cerebral Hemmorhage
- surgery will take place while baby is on ecmo
- Hemoglobin of 8.1
- Hematocrit of 26
- 2 units of blood were given
- a unit of platelets was given
- FFP
- cryoprecipitate

Inadequate Tissue Perfusion

- Abdominal Organs pressing on heart
- cardiac arrest
- cerebral hemorrhage
- occlusions to the arteries
- patient was put on VA ecmo
- diaphragmatic reconstruction will take place
- sedated and paralyzed
- albumin
- expected that patient will be able to perfuse on their own and come off of ecmo

Altered Parent-Infant Attachment

- Baby is not allowed to be moved or held
- Family can only hold and touch his hand
- He is not being bottle or breast fed due to his condition
- We are allowing family to touch and be as close as possible
- once all procedures are done it is expected that they will be able to bond properly

Inadequate Oxygenation

- Abdominal Organs pressing on lungs
- pneumothorax
- patient put on VA ecmo
- patient will recieve a diaphragmatic reconstruction surgery
- patient on ventilator
- on lung rest
- sedated and paralyzed
- expected outcome is that after surgery the baby will be able to breathe and oxygenate on his own and will come off of the ventilator and ecmo

Risk for Infection

- chest tube
- arterial line
- umbilical vein line
- foley
- VA ecmo
- surgery to place ecmo
- scheduled diaphragmatic reconstruction surgery
- receiving antibiotics (vancomycin)
- expected outcome is that with antibiotics and proper safety techniques the baby will have no infection

Nursing Care

Holistic Care

In order to give this baby the best place to heal we are making sure that his room is as low stimulus as possible. This means that the room is at a warm temperature so that he does not get cold, he has a warmer underneath him, the lights are always off or dimmed, the blinds are closed, and we keep noise to a minimum when talking. We also make sure to get to pumps as soon as they are done so they are not beeping

General Care

We have a machine that is constantly taking his vitals so that we can notice any change and immediately take action, we are checking his blood levels for blood gas, H&H, PT/INR, ApTT, and any other tests that are ordered, and we are making sure to give all meds as ordered and on time

Collaborative

We are working closely with surgery, physicians, residents, respiratory, and ecmo specialists to give the patient the best care that he can receive. In order to make sure that all the equipment is running smoothly and that all the meds that patient needs are being given. We all have to work together as a team. Nurses are giving meds, assessing, getting vitals, and labs. Respiratory and ecmo are working together with the ecmo machine and vent, as well as, reading the blood gas readings and making adjustments. Surgery is prepping for the reconstruction and watching over the ecmo. Physicians are ordering meds and tests as needed.

Relationships

Inadequate Oxygenation

Due to the inadequate oxygenation the baby had to have surgery, this leads to a risk for infection due to the need to have incisions and having openings for bacteria to enter. This is also connected to inadequate tissue perfusion because without perfusion you are unable to deliver oxygen to the organs even if the oxygen is adequate

Inadequate Tissue Perfusion

Due to inadequate tissue perfusion the baby will have to have surgery, this leads to a risk for infection due to the need to have incisions and having openings for bacteria to enter, this is also linked to inadequate oxygenation because without proper perfusion you cannot deliver oxygen to the body even if you had an adequate amount

Risk for Infection

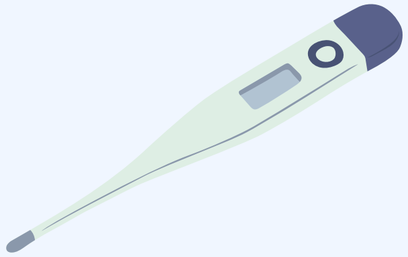
This is connected to both inadequate oxygenation and inadequate tissue perfusion due to these to factors leading to the baby having surgery which gives an opening for infection

Risk of Bleeding

Due to the need for surgery for both inadequate oxygenation and perfusion this leads to a risk of bleeding, as well as the baby needing to be on VA ecmo which has a risk of bleeding due to the means of putting it in and for the fact that the blood has to be thinned as to not cause clots in the lines of the machine or the body

Altered Parent-Infant Attachment

Due to all actual and potential nursing problems the baby is to fragile to be moved and handled. Because of this family is unable to move and touch the baby beyond babies hand. This leads to potential for altered attachment,



Discharge Planning

Skin

Another big things we want to watch for is his skin. Because he has a history of cardiac arrest and respiratory issues, as well as chest tube and surgeries we want to watch for any skin breakdown, cyanosis, sutures that have come out, drainage, or rash,

I&Os

It is going to be important for any baby, but especially this baby that we are watching his intake and output. This is because this will be a large indicator that something could possibly be going wrong if he is not eating or going to the bathroom. He could be having respiratory issues or even cardiac issues. He may also have stomach and bowel issues after surgery so we want to continue to monitor those.

Weight

Weight is going to be another thing we are going to want to watch. After his surgery he may have issues with his bowels and stomach. We want to make sure he is gaining weight because it will tell us he is getting the nutrition he needs to meet his milestones