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Pathophysiology Assignment

1.)My patient during clinical presents as a 40 year old female that came in with Cardiac arrest. Patient was initially found by EMS in asystole and had received two rounds of CPR and achieved return of spontaneous circulation. According to police patient was given 12 rounds of Narcan. Patients last known wellness was at 3 AM which then was later found by her daughter at 11 AM and patient was hunched over with a cyanotic face and unresponsive. Patient's daughter did report that her mother has been getting into drugs again such as Fentanyl. Patient was diagnosed with anoxic encephalopathy due to cardiac arrest. Patient does not have an extensive medical history but has anxiety and epilepsy. The patient's epilepsy has been effected during this event due to having cerebral edema which can be playing an effect with having seizure episodes when their neck is flexed up.

2.) My patient has an anoxic brain injury which according to the Shepherd Center it is "caused by a complete lack of oxygen to the brain, which results in the death of brain cells after approximately four minutes of oxygen loss" (Shepherd Center, 2024). Since my patient was found 8 hours later from when her last being known as well their really is no way of knowing how long she has been without a pulse and oxygen perfusing throughout her body. After further more investigations it appears that "One of the hearts responsibilities is to keep blood circulating through the body and if the heart stops working properly, oxygen and other vital nutrients may no longer be circulated at a rate that adequately supplies other organs, including the brain"(Cleveland Clinic, 2023). My patient came was found as a cardiac arrest and was immediately started with chest compressions by her daughter until squad came in but It really isn't known what time the patient fell into cardiac arrest but it was for sure more than 4 minutes. My patient had cerebral edema related to her anoxic event and upon looking at her imaging there was little to no rugae left and the ventricles of the brain were pretty much non-exist and according to the Cleveland Clinic "Cerebral edema is the medical term for brain swelling or swelling that happens in part or all of your brain because of excessive fluid buildup in the tissue"(Cleveland Clinic,2023). Because of this swelling in the brain it caused some brain herniation which contributes to the loss of control over their respiratory system.

3.)The signs and symptoms that my patient had related to her event starting with the Neuro system they were unresponsive without sedation on the ventilator and does not withdraw to stimuli and this is due to the deprivation of oxygen that the patient has experienced and the length of time related to that as well the patient can be in a comatose state for short term or long term and from the patient I received it wasn't acute. The patient also had hypothermia related to the poor perfusion that the patient had and was later hooked up to urethral thermometer because the patient came in with a temperature of 89F. Patient had fixed and dilated pupils related to the brain injury.

4.) The patient's related labs in regards to having anoxic encephalopathy would include their abg's status and their pH being 7.34, PC02 45.2, P02 293.2, and HC03 23.9 which would respiratory acidosis and since the patient has to be placed on a mechanical ventilator for not having adequate ventilation this would contribute to the patient's condition. My patient also had elevated WBC's at 18.3 which would be considered high and since the patient did have an aspiration event this can be the start of an infection most likely in the respiratory tract and a long with the risk of getting an infection the patients neutrophils were also elevated to 15.7 as well as their monocyte distribution which was 35.44 which was high. In regards to Abgs we would like to see in a patient would be a pH of 7.35-7.45, PC02 35 to 45, P02 would be 75 to 100 mmHg, and HC03 of 22 to 26. When it comes to a patients WBC's would be 4.5 to 11.0, monocyte distribution of 2-8%, and neutrophils of anything above 7 would be considered high.

5.)

Diagnostic	Rationale and why each test was provided.	Normal test in the absence of diagnosis
chest-xray	try and take a look at the patients lungs and right basillar atelectasis was found and mechanical ventilation from the patient can	"According to the Cleveland Clinic a normal chest x-ray shows clear lungs, a healthy heart and clearly outlined chest cavity"(Cleveland Clinic,2023).

	contribute to this because of the high oxygen concentration	
head CT	is related to the suspected cerebral edema the patient could have since the neuro assessments were aligning with a possibility of this especially her pupil assessments and being in a decorticate posture and did confirm a Pseudosubarachnoid hemorrhage.	According to MSD manuals a normal Head CT there is “no intra or extra axial fluid or hemorrhage”(MSD Manuals, 2025).
chest CTA	rule out for a pulmonary ebolism but it looks as if the imaging did not find one but this did need to be ruled out since the patient is not being moved from being ventilated and could have gotten some sort of clot to be dislodged in the lungs but the good thing Is that these were clear upon inspection.	According to radiology info a “CT shows a very detailed image of many types of tissue as well as the lungs, bones and blood vessels” (Radiology info,2024). These would all be clear in the absence of a PE.
Cardiac	My patients cardiac	-This exam determine the status of the

Catheter	catheter they had went down for was to clear her heart to be a candidate to be an organ donor and upon finishing the exam they had a strong heart according to the doctor.	heart so that it meets requirements to be donated. The vessels of the heart were open and flowing which is what they want to see in a healthy heart so they did not detect any blockages.
Echocardiogram	My patients echocardiogram showed no issues with the hearts ability to pump. This would also help them see if the patient is a good candidate for heart donation as well but in a noninvasive way.	According to UCSF health “A normal echocardiogram reveals normal heart valves and chambers and normal heart wall movement” (Medline Plus,2023).
EKG	My patients EKG showed Sinus tachycardia and this is monitored to make sure the patient doesn’t fall into any rhythms like this which can be related to the patient’s heart trying to work harder to compensate for the decreased perfusion.	According to mount sinai “It should show that your heart is beating at even rate of 60-100 bets per minute”(Mount Sinai, 2025).

All Related Medications	Rationale for each medication	Medications correlating with current diagnosis
Cefepime 2gm in 50 mL @ 100 mls/hr Q12hr	The rationale for this medication would be to fight against bacteria.	-In regards to my patient this would be to combat any respiratory tract infections.
Methylprednisolone sofsucc 1350 mg in sodium chloride 0.9% 100 mL IN 100ML @121.6 mL/hr IV daily	Suppression of inflammation and modification of the normal immune response.	The unlabeled use for the medication would be management of acute spinal cord injury and this would be from the herniation the patient had.
Sodium Chloride 0.9% 10mL injection Q4hr PRN	Mineral and electrolyte replacements/supplements	-The patient was on this medication to raise their blood pressure.
Albuterol HFA 6 puff vent Q6hrs	Relaxation of airway smooth muscle with subsequent bronchodilation	-This is a bronchodilator so this allows for the patient to be able to breath easier.
Piperacillin/ Tazobactam 3.37gm-DS, 3.375 gm in 100 mL @25 mLs/hr IV Q8H	The rationale for this medication would be the death of susceptible bacteria.	-This medication would be specific to my patient because of their mechanical ventilator and this would slow the

		chances of acquiring something called Ventilator associated pneumonia.
Chlorohexidine Gluconate 0.12% 13 mL Mucous membrane BID	“Chlorhexidine is used to treat gingivitis and it helps reduce the inflammation and swelling of your gums and to reduce gum bleeding”(Mayo Clinic, 2024)	-This medication reduce the risk of growing bacteria from the oral entry and also reduced the risk of pneumonia but most specifically ventilated assisted pneumonia (VAP)
Levetiracetam 500mg in dextrose 5% in water 100mL @420 mLs/hr IV BID	-This medication would be given to decrease the incidence and severity of seizures.	-The patient has a history of seizures and due to the neurological issues such as cerebral edema it can cause her to have recurrent seizures.
Pantoprazole 40mg Iv-push daily	-This medication would be given to treat stomach acid like heartburn, stomach ulcers and reflux disease.	-The primary reason for giving this medication to my patient would be to decrease the risk of stress ulcers and GI bleeding.
Enoxaparin 30mg SQ daily	-This medication prevents the risk of thrombus formation.	-This medication would be used to prevent the patient getting a Pulmonary embolism related to immobility
Lorazepam 1mg IV push Q1hr PRN	-This medication helps with sedation, decreased anxiety, and decreasing seizures.	-This medication would help reduce anxiety in a intubated patient so that compliants with the mechanical ventilation increases.
Metoprolol Tartrate 2.5 mg IV push Q2hr PRN	-This medication can help lower blood pressure and heart rate.	-In regards to my patient this will help lowering the blood pressure and heart rate. This would reduce

		the workload of the heart that could be a problem with trying to compensate for the low oxygen levels the patient is having.
Morphine Sulfate 4mg IV push Q1hr PRN	-This alters the CNS system and alters the painful stimuli that the patient would have so this would depresses the CNS.	-Even though my patient isn't verbally able to say it does not mean their in pain so this will help manage the pain my patient may have.
Vancomycin (pharmacy dosing)	-"Vancomycin is used to treat infections caused by bacteria"(Mayo Clinic,2024).	-In regards to my patient this prevents the growth of bacteria in the patient's respiratory tract

7.)The patient does not have much of an extensive medical history but she does have a history of epilepsy and with anxiety. In regards to the patient having a history of epilepsy this contributes to the patients current status because of an already interference with their neurological status the anoxic encephalopathy adds even more to it. When the patient was assisted in the bed and their head was in a flexed position this position irritated the brainstem which cause the patient to have a seizure so one had to be very careful when moving the patient In bed. As far as their history of anxiety went if the patient would have been more alert and oriented we could have potentially seen issues as far as the patient being placed on a mechanical ventilator just due to the high chances of the patient might fight the ventilator.

8.)
Assess Vital signs frequently with the Continuous monitor hooked up in the room
Rationale: One needs to assess for any changes in the patient's status that is stearing away from baseline such as their 02 status making sure they are being ventilated adequately and their blood pressure doesn't drop since they had a Central Line placed on their groin.

Assess the Patient's tube placement Q2 hrs and as needed

Rationale: This would be done to ensure safety and detect a change in the patient's exit mark that could affect the patient's ventilation.

Assess Patient's Urethral Thermometer every hour
Rationale: This is protocol in the hospital to chart on the patient's temperature and make sure patient is able to keep their temperature up at a normal level. Patient had dropped to 89 degrees Fahrenheit when they went down for a procedure.

Assess Patient's Neurological status Q2hrs.
Rationale: With the patient's diagnosis of having anoxic encephalopathy it is important go check for further neurological deterioration, motor function impairment and any abnormal posturing.

Assess Patient's Vent settings every hour.
Rationale: This would be to ensure that the ventilator settings are at the prescribed rate and are able to adequately able to perfuse the patient's tissues and organs.

Implement Foley Care BID and PRN
Rationale: Doing foley care will minimize the chances of the patient acquiring a hospital acquired infection.

Implement Oral Care Q2hrs
Rationale: I would make sure to Wash the patient's mouth with a chlorohexidine solution 0.12% 13 mL to prevent any bacterial infection from forming.

Implement Skin Care and PRN
Rationale: Since the patient can't do any activities of daily care one needs to make sure the patient is comfortable and clean.

Implement rolling patient Q2hrs.
Rationale: Since the patient is immobile this will prevent the patient from acquiring a pressure injury.

Suction the patient PRN

Rationale: The patient can develop some mucous buildup that can make it difficult to breath and be breeding grounds for bacteria this will help with this issue.

Administer Cefepime 2gm in 500mL @1000 mLs/hr IV Q12H to my patient.
Rationale:This will prevent my patient from acquiring a respiratory infection.

Administer Morphine Sulfate 4mg IV push Q1hr PRN
Rationale: This would help with my patient's pain. Even though my patient cannot tell me their pain level one can assess this with objective findings such as Vital Signs, respiratory rate, and any movements.

Administer Albuterol HFA 6 Puff went Q6hrs
Rationale: According to Respiratory care "in mechanically ventilated patients albuterol significantly decreased the expiratory resistance and increased the rate of lung emptying at the end of expiration" (Kondili et al.,2011)

Implement psychological care PRN
Rationale:This can be very difficult news for the patient's family so trying to educate and assess for further assistance the family may need such as community resources for grieving groups.

9.) There were all different departments from within the hospital involved in the care of my patient. A hospitalist was involved in the care of my patient and their role with my patient is to diagnose my patient, coordinate care and involve other specialist to come take a look at her for example pulmonology would have been consulted to come see my patient as well as would be involved in the discharge of my patient if the outcomes are favorable. Respiratory therapy was also involved in the care with my patient and they assisted with helping make sure the patient's mechanical ventilator settings were at the correct level, assisted with administering my patient's albuterol, provided percussion to loosen secretions, and help transfer the patient with mechanical ventilator down to the cardiac cath lab. Another specialty that was involved was Neurology and they were able to rule out and confirm some diagnosis such as a brain herniation and able to guide treatment for the patient with that diagnosis such as comfort care and make sure to educate to put orders in to decrease the patient ICP. Pulmonology was also involved in my patients care with performing a inserting of a central line in my patients groin so there could be continuous blood pressure reading but these are

more accurate in real time, they also monitored the ABG's and saw what status the patient would be on and how frequently they want to check it as well which brings back the respiratory therapist which were the ones that collected this blood. The pulmonologist also performed a apnea test to confirm if the patient was bread dead and this can help guide to help give the patients family some confirmation on the patient's status and let the patient begin the organ donation process. Cardiology stepped in for the patient and we went down into the Cath lab and they were able to see that status of the patient's heart and by the end of testing we were able to find out that the patient's heart was healthy and able to donate it to another life. In regards to patient's comfort level and not having the patient do curative measures Palliative stepped in to give the patient comfort care and have the patient be comfortable rather than try and do all of these invasive measures that might cause more stress to the patient than good. The nursing department stepped in and were the ones that educated the family about organ donation, transported the patient down to the cath lab, provide oral care, medication therapy and make sure the patient was vital signs were stable to ensure that their wasn't any physiological issues that might affect the process of organ donation. I believe there is other departments that should be involved in the care of my patient. Grief counseling should be involved in the patients case because of the feelings that may be associated with the organ donation process and the patient's children being confused on how they should feel since they are younger which the youngest was 5. I think that physical therapy can also be involved in the patient's care to provide help in decrease the risk of the patient's getting a DVT. Infectious disease can also be involved In the patient's care to decrease the risk of the patient getting any kind of infections related to being immobile such as pneumonia.

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