

STUDENT NAME: _____

Case Study Simulated Virtual Clinical-Summer 2020 Medical Surgical I Week #2: Hypovolemia

Scenario

The wife of C.W., a 70-year-old man, brought him to the emergency department (ED) at 0430 this morning. She told the ED triage nurse that he had had dysentery for the past 3 days and last night he had a lot of “dark red” diarrhea. When he became very dizzy, disoriented, and weak this morning, she decided to bring him to the hospital. C.W.’s vital signs (VS) were 70/- (systolic blood pressure [BP] 70 mm Hg, diastolic BP inaudible), 110, 20. A 16-gauge IV catheter was inserted, and a lactated Ring-er’s (LR) infusion was started. The triage nurse obtained the following history from the patient and his wife. C.W. has had idiopathic dilated cardiomyopathy (IDCM) for several years. The onset was insidi-ous, but the cardiomyopathy is now severe, as evidenced by an ejection fraction (EF) of 13% found during a recent cardiac catheterization. He experiences frequent problems with heart failure (HF) because of the cardiomyopathy. Two years ago he had a cardiac arrest that was attributed to hypoka-lemia. He also has a long history of hypertension (HTN) and arthritis. Fifteen years ago he had a peptic ulcer.

An endoscopy showed a 25 ¥ 15 mm duodenal ulcer with adherent clot. The ulcer was cauterized, and C.W. was admitted to the medical intensive care unit (MICU) for treatment of his volume deficit. You are his admitting nurse. As you are making him comfortable, Mrs. W. gives you a paper sack filled with the bottles of medications he has been taking: enalapril (Vasotec) 5 mg PO bid, warfarin (Couma-din) 5 mg/day PO, digoxin 0.125 mg/day PO, KCl 20 mEq PO bid, and tolmetin (an NSAID) 400 mg PO tid. As you connect him to the cardiac monitor, you note that he is in atrial fibrillation (A-fib). Doing a quick assessment, you find a pale man who is sleepy but arousable and oriented. He is still dizzy, hypotensive, and tachycardic. You hear S₃

and S₄ heart sounds and a grade II/VI systolic murmur. Peripheral pulses are all 2+, and trace pedal edema is present. Lungs are clear. Bowel sounds are present, midepigastic tenderness is noted, and the liver margin is 4 cm below the costal margin. A Swan-Ganz catheter and an arterial line are inserted.

1. What medication probably precipitated C.W.'s gastrointestinal (GI) bleeding?

- Coumadin and Tolmetin (NSAID's). NSAID's have an adverse effect of causing GI bleeding. In addition, administration of NSAID's and anticoagulants cause prolonged bleeding.
- Coumadin has an adverse effect of hemorrhage from any tissue/organ. However, overdosage of this drug causes internal or external bleeding.

2. What is the most serious potential complication of C.W's bleeding?

- anemia, shock, kidney failure. A person with anemia has reduced RBC levels which contain HgB, therefore reducing the amount of O₂ available. A person in shock has a life threatening condition that prevents heart and blood stream to deliver O₂. Prolonged shock leads to death of cells.
- A person with kidney failure has lost the ability of kidney to remove waste and concentrated urine without losing electrolytes.

3. From his history and assessment, identify five signs and symptoms (S/S) (direct or indirect) of GI bleeding and loss of blood volume.

- Low BP (hypotension)
- tachycardia (weak rapid pulse)
- dizziness
- weakness
- disoriented
- pale skin

CASE STUDY PROGRESS

C.W. receives a total of 4 units of packed RBCs (PRBCs), 5 units of fresh frozen plasma (FFP), and many liters of crystalloids to keep his mean BP above 60 mm Hg. On the second day in the MICU, his total fluid intake is 8.498 L and output is 3.660 L for a positive fluid balance of 4.838 L. His hemodynamic parameters after fluid resuscitation are

pulmonary capillary wedge pressure (PCWP) 30 mm Hg and cardiac output (CO) 4.5 L/min.

4. What is the significance of maintaining a mean BP of 60 mm Hg or greater?

- to prevent hypovolemia shock because she is experiencing GI bleeding

5. Why will you want to monitor his fluid status very carefully?

- monitor fluid excess volume because it is the contributing factor to heart and renal failure.

6. List six things you will monitor to assess C.W.'s fluid balance.

- weight changes
- I's and O's
- evidence of edema
- any decrease in skin turgor
- Level of consciousness
- labs and V.S.'s

7. Explain the purpose of the FFP for C.W.

- it is an un-concentrated form of plasma containing all of the clotting factors except for platelets. It can be used to supplement RBC's when whole blood is not available for exchange transfusion or to a bleeding problem.

CASE STUDY PROGRESS

As soon as you get a chance, you look at C.W.'s admission laboratory results: K 6.2 mmol/L, BUN 90 mg/dl, creatinine 2.1 mg/dl, Hgb 8.4 g/dl, Hct 25%, WBC 16 thou/cmm, and PT 23.4/INR = 4.2. Other results are within the normal range.

8. Are you worried by the elevated potassium (K)? Why or why not? Explain your answer.

- Yes, hyperkalemia can lead to arrhythmia's. Increased potassium is usually caused by kidney disease. As disease progresses, the kidneys lose their ability to filter excess potassium from blood. Kidney infection or renal failure can create increased K+ levels.

9. In view of the elevated K, what diagnostic test should be performed and why?

- an ECG because it is used to diagnose hyperkalemia since increased K⁺ levels can cause the heart to function abnormally.

10. Why do you think BUN and creatinine are elevated?

- elevated BUN can mean kidneys are impaired. It can also indicate problems in heart, dehydration, or intestinal bleeding.

- elevated Cr suggest that the kidneys are damaged or infected.

11. What do the hemoglobin (Hgb) and hematocrit (Hct) levels indicate about the rapidity of C.W.'s blood loss?

- low H/H indicates anemia as a result of GI bleeding

12. What is the explanation for the prolonged PT/INR?

- increased K⁺ may be a reason as well as a possible liver disease.

13. What should be your response to the prolonged PT/INR?

- Due to all of his existing conditions, a prolonged PT/INR is normal.

- Recommend blood work and possible liver scan

14. What safety precautions should be considered in light of his prolonged PT/INR?

- monitor for possible hemorrhaging or jaundice from impaired liver.

15. How do you account for the elevated WBC count?

- it is probable that this patient has an infection

CASE STUDY PROGRESS

Mrs. W. has been with her husband since he arrived at the ED and is worried about his condition and his care.

16. List four things you might do to make her more comfortable while her husband is in the MICU.

- explain to her the procedure and length of time it will take

- offer her a place in the waiting room to relax
- reassure her that he is under professional care and that all is being done to make him feel better
- make sure that she is taking care of herself as well.