

Critical care clinical case study

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ischemic brainstem stroke

* Demographic data:

Name: F.A age: 67y gender: female

* Chief complaint: lower limb pain of four months duration.
* History of present illness:

4 months before hospitalization her shortness of breath become more prominent upon walking associated with lower limb pain with muscle spasm on the posterior upper two third of calf muscle, posterior thigh and buttock that relieve by rest.

One month ago she noticed painful changes in the color of her lower limb followed by blisters formation with other multiple ulceration in different stage of healing process bilaterally mainly on dorsal aspect of her left foot and medial aspect of her right leg, with persistent of the pain and claudication occur sometimes at rest.

Also she has hx of central chest pain, heaviness in nature, radiating to the neck and relive by rest.

During hospitalization there were changes in the level of consciousness.

* Past medical and surgical history:

- DM of 15 years duration with last HbA1c 8 last month and complicated by multiple microvascular complications as retinopathy, nephropathy and neuropathy.

-HTN of 1 year duration.

-RF and end stage kidney disease, on HD 3 times a week with baseline creatinine 5, insertion of tunneled permcath in the right jugular vein for hemodialysis with no hx of fever, hypotension or blood transfusion at any of her HD sessions.

-HF with reduced ejection fraction, last echo showed EF 30%.

-Diagnostic cardiac cath 15 years ago and it was normal.

* Nutritional history: pt has DM, so she was on diabetic diet, but now she’s on ensure+.
* Allergy: NKDA
* Physical assessment:

-Musculocutaneous: lower limb muscle cramping and spasms.

-Skin: lower limb skin ulceration.

-Neurologic: numbness and paresthesia due to neuropathy.

-Lungs & thorax: symmetrical chest movement, no visible pulsation, no dilated veins. Centralized trachea, good chest expansion. Normal breathing sound bilaterally no wheezing or crackles. She had right internal jugular permcath. She’s on MV due to brainstem stroke (SIMV mode, FIO2: 25%, set rate:10 , total rate:13, TV: 430/401, PEEP:5, Ps:15, PAP:22, MV:5.1)

-Heart: cardiomegaly r/t HF (CTR 65% on CXR), apex beat felt in left 5th intercostal space midclavicular line, normal heart sound, no murmur.

-Extremities: +1 lower limb edema. barely palpable pulses on dorsalis Pedi’s, anterior tibialis, popliteal and femoral arteries, multiple ulcers in different healing stages on dorsal aspect of left foot and medial aspect of her right calf muscle area with redness and tenderness.

-GI system: pt has NGT due to stroke and she’s on ensure plus.

* Diagnostic procedure:

-ECG: poor R wave progression, T wave inversion in AVL, v1 to v3 and st depression on v6, she diagnosed with NSTEMI.

-CXR: CTR 65% cardiomegaly r/t HF.

-CT brain without contrast to R/O acute insult (decreased LOC), she diagnosed with ischemic brain stem stroke syndrome.

-EEG: the first EEG shows status epilepticus so they gave her propofol 5mg/kg/hr and midazolam 0.2mg/kg/hr.

In the second EEG status epilepticus was disappeared.

* Pathophysiology:

An ischemic brainstem stroke happens when blood supply to the base of the brain is stopped. This can affect many functions in the body, such as heart rate, breathing, and blood pressure.

Cause: An ischemic stroke happens when blood flow is blocked by a blood clot.

Risk factors: Lack of physical activity, smoking, obesity, type 2 diabetes, high blood pressure, high cholesterol and heart diseases or injury such as previous heart attack, atrial fibrillation or enlarged heart.

Symptoms: muscle weakness, hearing and vision problems, sensory changes, breathing problems and chewing, swallowing, and speaking problems.

* Lab tests:

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| Test name | Normal range | Result |  |
| WBC | 4.60- 10.2 K/uL | 14.6\* K/uL | Stroke & HF are associated with high WBCs count |
| PLT | 142- 424 K/uL | 268 K/uL | - |
| HGB | 12- 16 g/dl | 9.35\* g/dl | Due to chronic kidney disease |
| BUN | 6- 20 mg/dl | 49.9\* mg/dl | Due to RF |
| Creatinine | 0.5- 0.9 mg/dl | 5.32\* mg/dl | Due to RF |
| RBS | 80- 120 mg/dL | 130 mg/dl | - |
| Chloride- serum | 95- 110 mmol/L | 99.0 mmol/L | - |
| Sodium- serum | 133- 146 mmol/L | 139.0 mmol/L | - |
| Potassium- serum | 3.5- 5.5 mmol/L | 5.13 mmol/L | - |
| Cultures | Mid-stream urine culture | Yeast in the urine |  |

* Medications:

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| --- | --- | --- | --- | --- | --- |
| Name | class | Dose | Route | SE | Contraindications |
| ASA | NSAIDs | 100mg | PO | upset stomach, heartburn, bleeding, drowsiness or mild headache | Contraindicated in pts with known allergy to NSAIDs and in pts with asthma, stomach ulcers and GI bleeding. |
| Lipitor | Antihyperlipidimic | 40mg | PO | diarrhea, upset stomach, muscle and joint pain | Contraindicated in pregnancy, liver failure and decreased kidney function. |
| Plavix | Antiplatelet agents | 75mg | PO | Bleeding, bruising, stomach upset and diarrhea | Contraindicated in pt with active bleeding and hypersensitivity. |
| Orfiril | Anticonvulsant | 600mg | IV | nausea, vomiting, stomach pain, diarrhea;  and dizziness | Contraindicated in pregnancy and pt with liver disease. |
| Clexane | Anticoagulant | 80mg | S.C | Bleeding, anemia,  pain and bruising at the site of injection and fever | Active bleeding  ,gastric or duodenal ulcers, severe uncontrolled hypertension and  hepatic disease |
| Meropenem | Antibiotic | 500mg | IV | Swelling, redness, pain, or soreness at the injection site ,upset stomach, headache, nausea and vomiting | Hypersensitivity and seizures |

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| **Diagnosis** | **Assessment** | **Intervention** | **Rational** |
| Dx1: Impaired Physical Mobility r/t neuromuscular impairment | -Monitor the lower extremities for symptoms of deep vein thrombosis.  -Observe the affected side for color, edema, or other signs of compromised circulation.  **Planning:**  Patient will maintain skin integrity. | -Inspect skin regularly, particularly over bony prominences. Gently massage any reddened areas and provide aids such as sheepskin pads as necessary.  - Change positions at least every 2 hr.  - Elevate arm and hand  - Provide full range of motion four or five times a day | -Pressure points over bony prominences are most at risk for decreased perfusion. Circulatory stimulation help prevent skin breakdown and decubitus development.  - Frequently changing the position of the patient can reduce the risk of tissue injury.  - Promotes venous return and helps prevent edema formation.  - to maintain joint mobility. |
| Dx2: Impaired Swallowing r/t neuromuscular impairment | -Review individual pathology and ability to swallow, noting the extent of the paralysis: clarity of speech, tongue involvement, ability to protect the airway, episodes of coughing, and presence of adventitious breath sounds.  -Maintain accurate I&O; record calorie count.  **Planning:**  Patient will demonstrate feeding methods appropriate to individual situation with aspiration prevented. | -Administer IV fluids and tube feedings.  - Feed slowly  - Provide oral care based on individual needs  -ensure should be at normal temperature  -Elevate head of bed 30-45 degree during tube feeding | -It may be necessary for fluid replacement and nutrition if the patient is unable to take anything orally.  -to avoid diarrhea  -to moisturize the mouth if it’s dry or to remove excessive saliva  - to avoid diarrhea  -to decreases the risk of aspiration by gastric content. |

* Care plan: