**UNIVERSITY OF HEALTH AND ALLIED SCIENCES, HO.**

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**SCHOOL OF PHARMACY**

**DEPARTMENT OF PHARMACY PRACTICE**

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**INDEX NUMBER: SP/PHA/16/0026**

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**PATIENT PROFILE**

|  |  |  |  |
| --- | --- | --- | --- |
| Patient Initials: R.G | Address: Suhum | Occupation: Trader | Weight: N/A |
| Age: 77 | Ethnic Origin: Ewe | Religion: Christian | Date: 20/11/2021 |
| Sex: Female | Marital Status: Widowed | Height: N/A | Ward: Opoku |

**PRESENTING COMPLAINTS**

* Difficulty in breathing
* Cough

**HISTORY OF PRESENTING COMPLAINTS**

Patient is a known hypertensive for over 20 years, on Amlodipine 10mg, Lisinopril 20mg and Bendro 2.5mg. She was diagnosed with Peptic Ulcer Disease(PUD) 2 weeks ago and on Cap Omeprazole and Nugel O. Two weeks ago, patients started having difficulty in breathing which was sudden in onset and worse on exertion. She was sent to Suhum Government Hospital where she was treated and discharged the same day but patient admits that she was not better. Two days later, difficulty in breathing got worse and was sent back to Suhum Government Hospital and was admitted for 3 days on account of Cardiomegaly and PUD. Two days ago she started having difficulty and productive cough. Signs and symptoms have been progressively worse so they decided to report to 37 Military Hospital for further management.

**ON DIRECT QUESTIONING**

The following were **present**

Fever, Orthopnea, PND, Easy fatigability, pleuritic chest pains.

Chills was absent

**SOCIAL HISTORY**

Patient does not smoke nor drink alcohol. She is widowed and stays with children at Suhum.

**PAST MEDICAL HISTORY**

This patient is a known hypertensive for over 20 years.

**PAST DRUG HISTORY**

* Tab Amlodipine 10mg daily
* Tab Lisinopril 20mg daily
* Tab Bendro 2.5mg daily
* Cap Omeprazole 20mg bd
* Syr Nugel O 15mls tds

**FAMILY HISTORY**

No history of chronic illness

**ALLERGIES**

No known allergies

**ON EXAMINATION**

An elderly woman, looks unwell, not in any obvious respiratory distress, hydration fair, not warm to touch, mild pedal edema up to mid shin, not pale, not jaundiced, afebrile.

**VITALS**

Temperature: 36.9 0C

Pulse rate: 50bpm

Respiratory rate: 26cpm

SPO2: 97% ORA

RBS: 9.7mmol/l

**CHEST**

Expands symmetrically with respiration

No chest walls tenderness

Percussion notes are resonant

Occasional crepitations at middle and lower lung zones

B/S-Bronchial

**CVS**

Apex beat at 6 ICS MCL

Heart sounds S1 S2 S3

Raised JVP

Peripheral pulses are palpable, regular, good volume

**ABDOMEN**

Full, moves with respiration, soft, mild tenderness at epigastric region, no RT

**CNS**

Patient is alert and conscious, GCS 15/15

No focal neurological deficit

**INVESTIGATIONS**

**FULL BLOOD COUNT**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DESCRIPTION** | **RESULTS** | **UNITS** | **REFERENCE** | **FLAG** |
| RBC | 5.83 | 106/Ul | 3.8-6.5 |  |
| HGB | 17.3 | g/Dl | 13.0-18.0 |  |
| HCT | 47.2 | % | 36.0-54.0 |  |
| MCV | 81.0 | Fl | 80.0-100.0 |  |
| MCH | 29.7 | Pg | 27.0-32.0 |  |
| MCHC | 36.7 | g/Dl | 32.0-36.0 | **H** |
| RDW-SD | 41.1 | Fl | 37.0-54.0 |  |
| RDW-CV | 14.3 | % | 11.0-16.0 |  |
| PLT | 150 | 103/Ul | 150.0-400.0 |  |
| MPV | 12.2 | Fl | 6.0-11.0 | **H** |
| PDW | 15.7 | Fl | 9.0-17.0 |  |
| WBC | 10.84 | 103/Ul | 3.5-10.5 | **H** |
| NEUT % | 75.4 | % | 40.0-75.0 | **H** |
| LYMPH % | 12.2 | % | 21.0-40.0 | **L** |
| MONO % | 10.5 | % | 2.0-10.0 | **H** |
| EOSI % | 1.1 | % | 1.0-6.0 |  |
| BASO% | 0.8 | % | 0.00-0.10 |  |
| NEUT# | 8.17 | 109/L | 2.00-7.00 | **H** |
| LYMPH# | 1.32 | 109/L | 1.00-3.00 |  |
| MONO# | 1.14 | 109/L | 0.20-1.00 | **H** |
| EOSI# | 0.12 | 109/L | 0.04-0.40 |  |
| BASO# | 0.09 | 109/L | 0.02-0.10 |  |

**BUE-/RFT**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DESCRIPTION** | **RESULTS** | **UNITS** | **RANGE** | **FLAG** |
| CREATININE | 151 | umol/L | 80-115 | **H** |
| UREA/Creatinine ratio | 13 | mmol/L | 10-20 |  |
| Na+ | 148 | mmol/L | 135-150 |  |
| Potassium(plasma/urine) | 3.4 | mmol/L | 3.5-5.2 | **L** |
| Chloride | 107 | mmol/L | 95-110 |  |
| eGFR | 52.7 | ml/min/1.73m2 |  |  |

**LIVER FUNCTION TEST**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DESCRIPTION** | **RESULTS** | **UNITS** | **RANGE** | **FLAG** |
| Albumin | 47. 00 | g/l | 35.00-52.00 |  |
| ALP | 80.00 | U/l | 34.00-105 |  |
| ALT | 17.00 | U/l | <34.00 |  |
| AST | 26.00 | U/l | 3.0-40.0 |  |
| GGT | 46.00 | U/l | <38.00 | **H** |
| Direct bilirubin | 17.40 | umol/L | 0.00-5.20 | **H** |
| Total bilirubin | 65.00 | umol/L | 1.70-21.00 | **H** |
| Total protein | 74. 00 | g/L | 66.00-88.0 |  |

**ESR-** 9mm fall/hr (3-10mm fall/hr)

**LVEF** -28%

**CURRENT MEDICATIONS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **MEDICATION NAME AND STRENGHT** | **DOSE/FREQUENCY** | **START DATE** | **END DATE** | **REASON FOR USE** |
| Tab Lasix(Furosemide) 40mg | 40mg bd | 16/11/21 | Ongoing | Fluid retention |
| Tab Spironolactone 25mg | 25mg daily | 19/11/21 | Ongoing | Fluid retention |
| Tab Lisinopril 5mg | 5mg daily | 19/11/21 | Ongoing | Heart failure |
| Tab Forxiga(Dapagliflozin) 10mg | 10mg daily | 19/11/21 | Ongoing | Heart failure |
| Tab Xarelto(Rivaroxaban) 10mg | 10mg daily | 22/11/21 | Ongoing | Heart failure |

**MEDICAL PROBLEMS**

* Congestive heart failure due to hypertensive heart disease
* Dilated cardiomyopathy

**PHARMACEUTICAL CARE ISSUES**

Adverse drug reaction of Lisinopril(cough)

**OPTIMIZING THERAPY FOR CONGESTIVE CARDIAC FAILURE AND DILATED CARDIOMYOPATHY**

**SOAPO**

**SUBJECTIVE DATA**

1.Difficulty in breathing

2. Chest pain

3. Pedal edema

4. Easy fatigability

**OBJECTIVE DATA**

1. LVEF=28%

**ASSESSMENT**

**Confirmation of Diagnosis**

According to the 2021 European Society of Cardiology(ESC) guidelines for the diagnosis and treatment of acute and chronic heart failure, Heart failure is not a single pathological diagnosis, but a clinical syndrome consisting of cardinal symptoms (e.g. breathlessness, ankle swelling, and fatigue) that may be accompanied by signs (e.g. elevated jugular venous pressure, pulmonary crackles, and peripheral edema). It is due to a structural and/or functional abnormality of the heart that results in elevated intracardiac pressures and/or inadequate cardiac output at rest and/or during exercise. It is usually caused by hypertension. Cardiomyopathy is a heart muscle condition which reduces the heart’s ability to pump blood and oxygen throughout the body. It often leads to heart failure, a serious condition in which the heart does not pump enough blood to meet the needs of the body. Heart failure has been divided into distinct phenotypes based on the measurement of left ventricular ejection fraction (LVEF) and they are Heart failure with preserved, mildly reduced, and reduced ejection fraction. Reduced LVEF is defined as <40% i.e. those with significant reduction in left ventricular systolic function. This is designated as HFrEF. Patients with a LVEF between 41% and 49% have mildly reduced LV systolic function, i.e. HFmrEF. Heart failure with reduced ejection fraction(HFrEF) is the most common type of heart failure. It occurs when the left ventricle, the heart’s main pumping chamber, weakens and cannot pump blood effectively. This condition is also often called dilated cardiomyopathy. Those with LVEF >50% is considered HEpEF. (Brian et al, 2013). This patient has an LVEF of 28% which suggests HFrEF. The subjective and objective data obtained confirms the diagnosis.

**APPROPRIATENESS OF THERAPY**

**Tab Lasix**

Lasix is Furosemide, a loop diuretic which acts by blocking tubular reabsorption of sodium and chloride in the proximal and distal tubules, as well as in the thick ascending loop of Henle. This increases renal excretion of water, sodium, chloride, magnesium, potassium and calcium. According to ESC, Loop diuretics are recommended to reduce the signs and/or symptoms of congestion in patients with HFrEF and according to the European Society of Cardiology(ESC) guidelines for the diagnosis and treatment of acute and chronic heart failure, the dose of Furosemide used in heart failure is 40-80mg daily and this patient was prescribed Furosemide 40mg daily which makes this therapy appropriate (ESC, 2021).

**Tab Spironolactone**

Spironolactone is an aldosterone antagonist which acts primarily through competitive binding of receptors at the aldosterone-dependent sodium-potassium exchange site in the distal convoluted tubule. It causes increased amounts of sodium and water to be excreted, while potassium is retained. According to ESC guidelines for the diagnosis and treatment of acute and chronic heart failure, the dose of Spironolactone in heart failure should be 25mg-50mg daily and this patient was given 25mg daily which makes this therapy appropriate. (ESC, 2021).

**Tab Lisinopril**

Lisinopril is an angiotensin converting enzyme inhibitor and it acts by competitively inhibiting the conversion of angiotensin I to angiotensin II (a potent vasoconstrictor). It is recommended in all patients with HF*r*EF and current or prior symptoms, unless contraindicated (ESC, 2021). This patient has been coughing for about 5 days and hence must not continue with the Lisinopril therapy. This makes the drug not best in this therapy. The drug must be withdrawn and replaced with an angiotensin receptor blocker such as Losartan.

**Tab Forxiga**

Forxiga is Dapagliflozin which belongs to the class of drugs called Sodium Glucose cotransporter 2 inhibitors(SGLT2s). It acts by inhibiting SGLT2 by reabsorbing filtered glucose from the tubular lumen. According to ESC guidelines for the diagnosis and treatment of heart failure, a trial investigation was carried out and it was found out that dapagliflozin reduced all-cause mortality, alleviated heart failure symptoms, improved physical function and quality of life in patients with symptomatic HFrEF. Benefits were seen early after the initiation of dapagliflozin, and the absolute risk reduction was large. Survival benefits were seen to the same extent in patients with HFrEF with and without diabetes. Hence, Dapagliflozin is recommended for patients with HFrEF to reduce the risks of heart failure hospitalization and death. The ESC guideline also recommended a dose of 10mg daily which makes this therapy appropriate(ESC,2021).

**Tab Xarelto**

Xarelto is Rivaroxaban, a factor Xa Inhibitor which works by inhibiting platelet activation by selectively blocking active site of factor Xa without requiring a cofactor such as antithrombin III. This drug is indicated for prophylaxis of venous thromboembolism(VTE) and venous thromboembolism-related death during hospitalization and at discharge in patients who are admitted and at risk for thromboembolic complications. According to the Journal of the American College of Cardiology(ACC), patients with HFrEF have multiple risks of VTE, including stasis of blood in the legs and heart, hypercoagulability and endothelial injury and the recommended dose is 10mg daily which makes this therapy appropriate. (ACC, 2020).

**PHARMACEUTICAL CARE ISSUE**

Adverse drug reaction of Lisinopril(Cough)

**RECOMMENDATION**

Replace Lisinopril with Losartan

**PLAN**

Patients is currently on;

* Tab Lasix 40mg bd
* Tab Spironolactone 25mg daily
* Tab Losartan 50mg daily
* Tab Forxiga 10mg daily
* Tab Xarelto 10mg daily

**GOALS OF THERAPY**

1. Relief of symptoms (Easy fatigability, difficulty in breathing, chest pain, pedal edema)

2. To prevent complications (Impaired Kidney functions, Atrial fibrillation)

3. To improve the quality of life of the patient

4. To reduce the need for hospital re-admissions

**MONITORING OF EFFICACY AND TOXICITY**

|  |  |  |
| --- | --- | --- |
| **MEDICATION** | **EFFICACY** | **TOXICITY** |
| Furosemide | Reduction of pedal edema | * Hypokalemia * Hyponatremia * Hypomagnesemia * Weight loss |
| Spironolactone | Relief of symptoms | * Hyperkalemia * Hyponatremia |
| Losartan | Relief of symptoms | * Hyperkalemia |
| Dapagliflozin | Reduction of heart failure hospitalization | * Back pain * Dizziness |
| Rivaroxaban | Venous thromboembolism risk reduction | * Hemorrhage |

**COUNSELLING**

1.Patient was counselled to reduce salt intake to at least 2g per pay.

2. Patient was counselled to exercise regularly.

3. Patient was counselled to avoid alcoholic beverages.

4. Patient was counselled to limit the amounts of fluid intake.

5. Patient was counselled on the need to adhere to the medications prescribed.

**OUTCOME**

Recommendation was accepted and Lisinopril was replaced with Losartan. Patient got better and was discharged.

**REFERENCES**

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