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A case report of congestive cardiac failure (CCF), superior vena cava syndrome (SVCS) with hypertension (HTN)

[*]Ayesha Habeeb, Hafsah Hani

Department of Pharmacy Practice, Deccan School of Pharmacy, Darussalam, Nampally, Hyderabad, Telangana, India

Abstract
Congestive cardiac failure is a life-threatening medical emergency, most commonly occurring as an immediate or delayed complication of acute myocardial infarction (AMI), or resulting from severe hypertension or valvular defects (stenosis or incompetence). Occasionally it is caused by patients' non-compliance with medication orders. In this case, the patient had a history of previous Ventricular tachycardia (Controlled with Amiodarone), Heart failure (Ejection fraction 15%New York Heart Association Class II), Coronary Artery Disease (CAD), Diabetes Mellitus (DM) type 2 for 5 years, Chronic renal insufficiency, Orthopnea, Superior VenaCeva Syndrome, Hypertension (for 30 years) and controlled congestive heart failure (CHF) for which he took two 40mg Furosemide tablets (a very potent oral diuretic) each morning. In this case study 69 years old Male patient was admitted to the tertiary care hospital with chief complaints of Swollen legs, Ankle edema, Weakness, Paroxysmal noctural dyspnoea, Weight gain, Increasing SOB, Furosemide dose was decreased 2 weeks ago due to hypokalemia, Oedema of the upper body, extremities and face, Dilated veins over the arms, neck and anterior chest wall. Case report of CCF, HTN with Superior VenaCeva Syndrome have been conducted providing the detailed information of the Case in SOAP format (Subjective, Objective, Assessment, planning), Pharmacists intervention and Patient counseling and Life style modifications.

Keywords: congestive cardiac failure (CCF), ventricular tachycardia, amiodarone, coronary artery disease (CAD), chronic renal insufficiency, orthopnea, superior vena ceva syndrome, furosemide

Introduction: Diseases congestive cardiac failure
According to American Heart Association (AHA) Congestive Cardiac Failure (CCF) is defined as a chronic and progressive condition where the heart muscle is unable to pump enough blood through the body to meet the body's need for blood and oxygen [1].

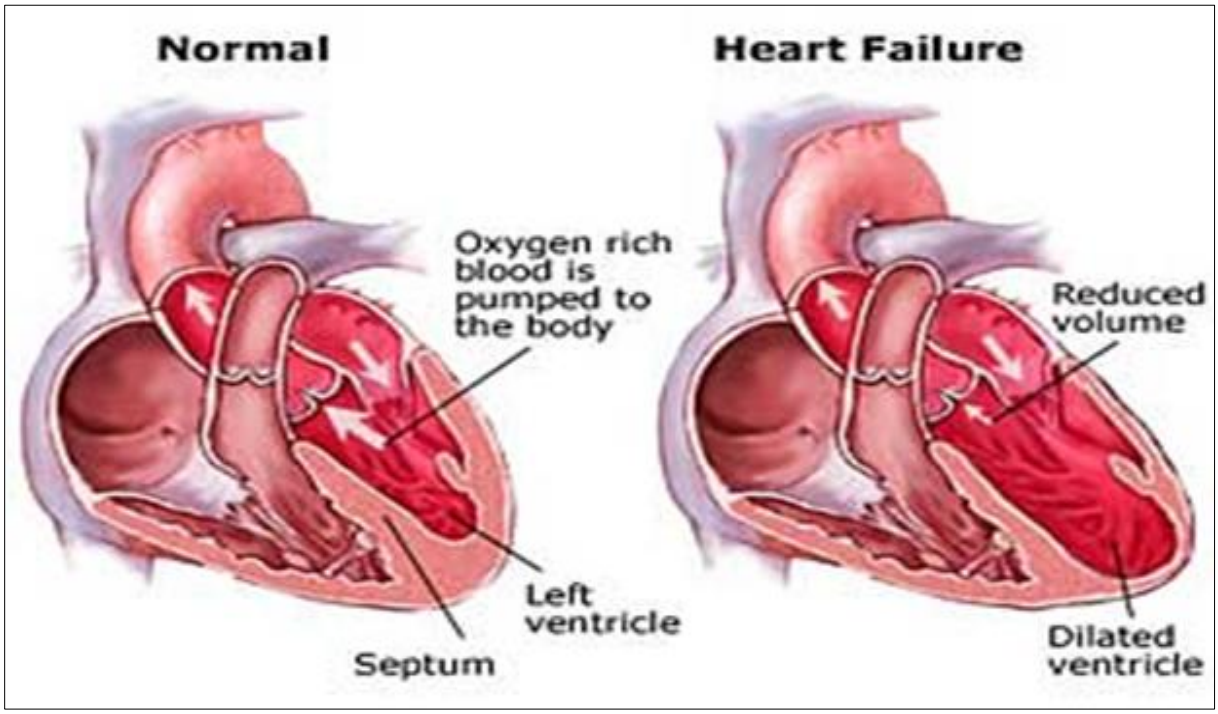

Fig 1

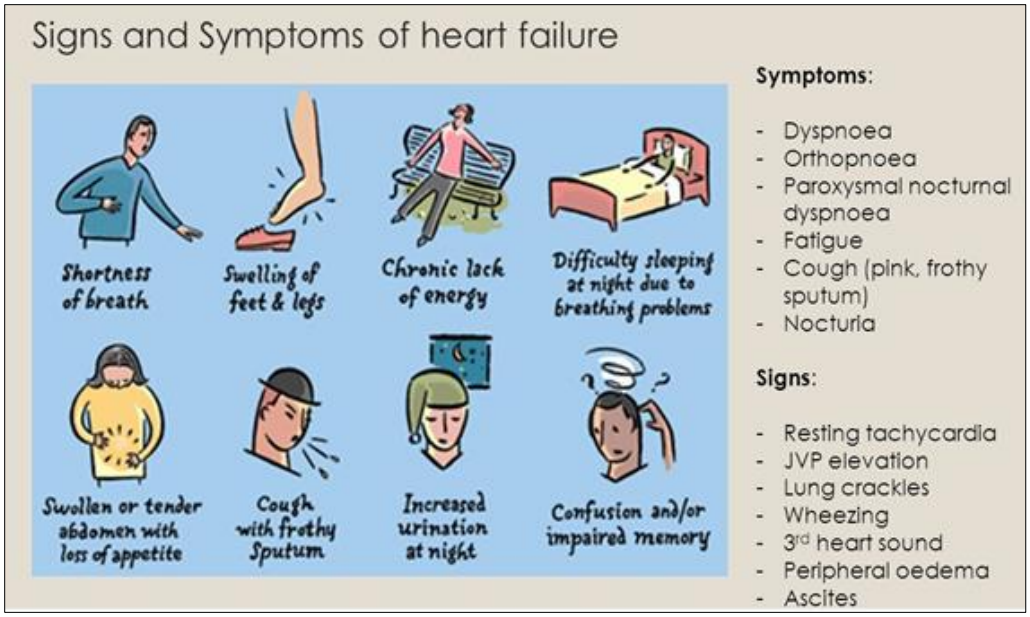

Fig 2: Clinical manifestations of CCF

Superior vena cava syndrome

According to ICD, Superior vena cava syndrome (SVCS) is a group of symptoms caused by obstruction of the superior vena cava (a short, wide vessel carrying circulating blood into the heart) [2].

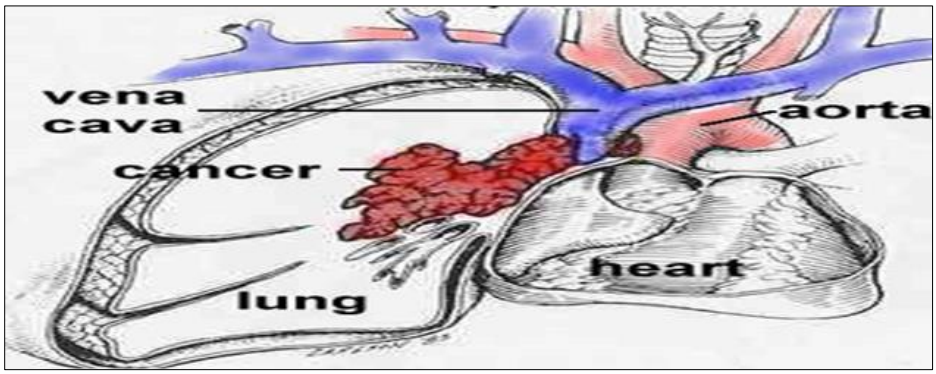

Fig 3

SVCS classification and clinical manifestations

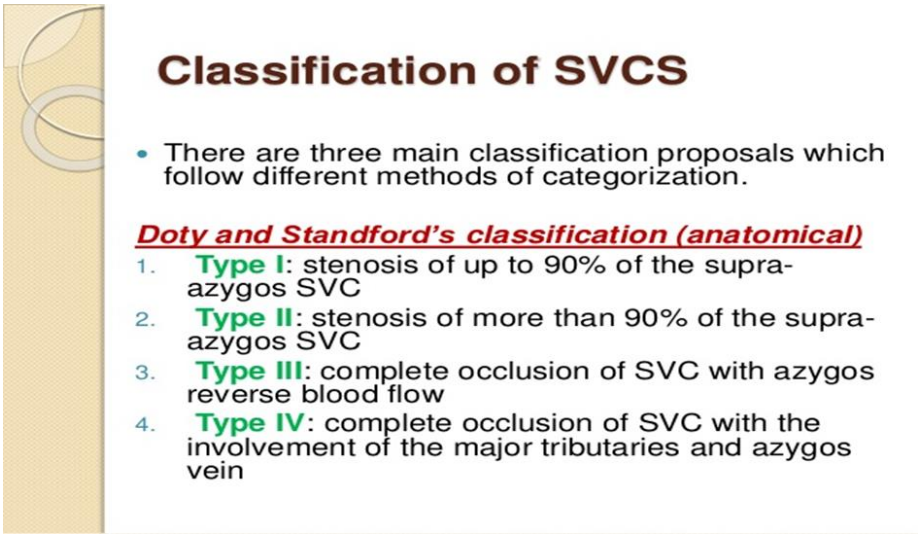

Fig 4

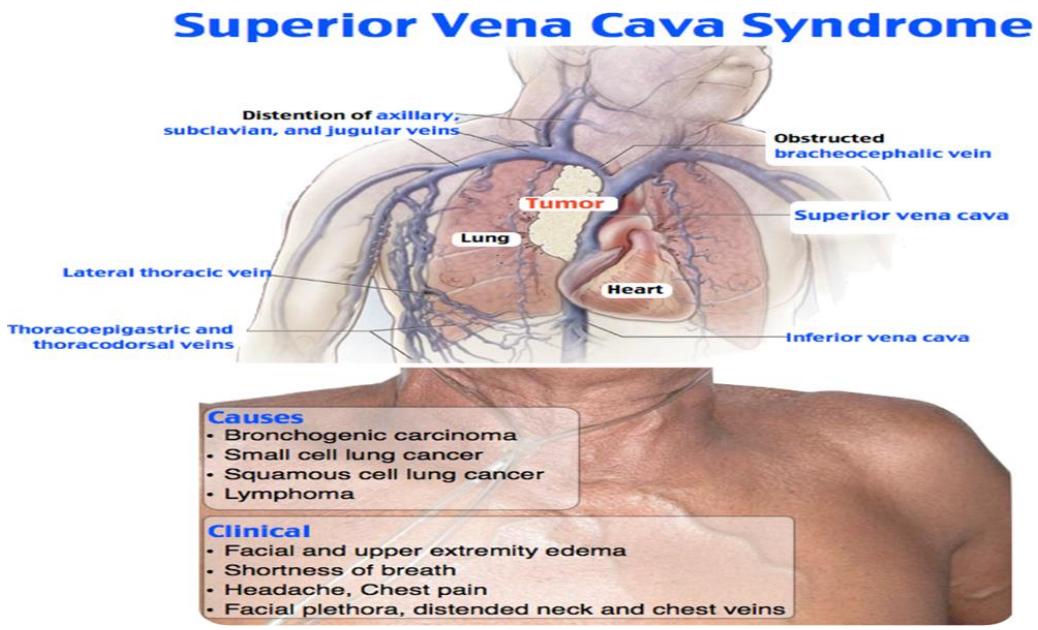

Fig 5

Hypertension

According to Eighth Report of the Joint National Committee (JNC 8) Hypertension is defined as a systolic blood pressure greater than 140mmHg and a diastolic pressure greater than 90mmHg, based on two or more measurements [3]

JNC 8 classification

Table 1

Blood pressure classification	Systolic blood pressure in mm HG	Diastolic blood pressure (DBP) in mm Hg
Normal	<120	and <80
Prehypertension	120-139	or 80-89
Stage 1 Hypertension	140-159	or 90-99
Stage 2 Hypertension	> or =160	> or =100

SBP: Systolic blood pressur, DBP: Diastolic blood pressure

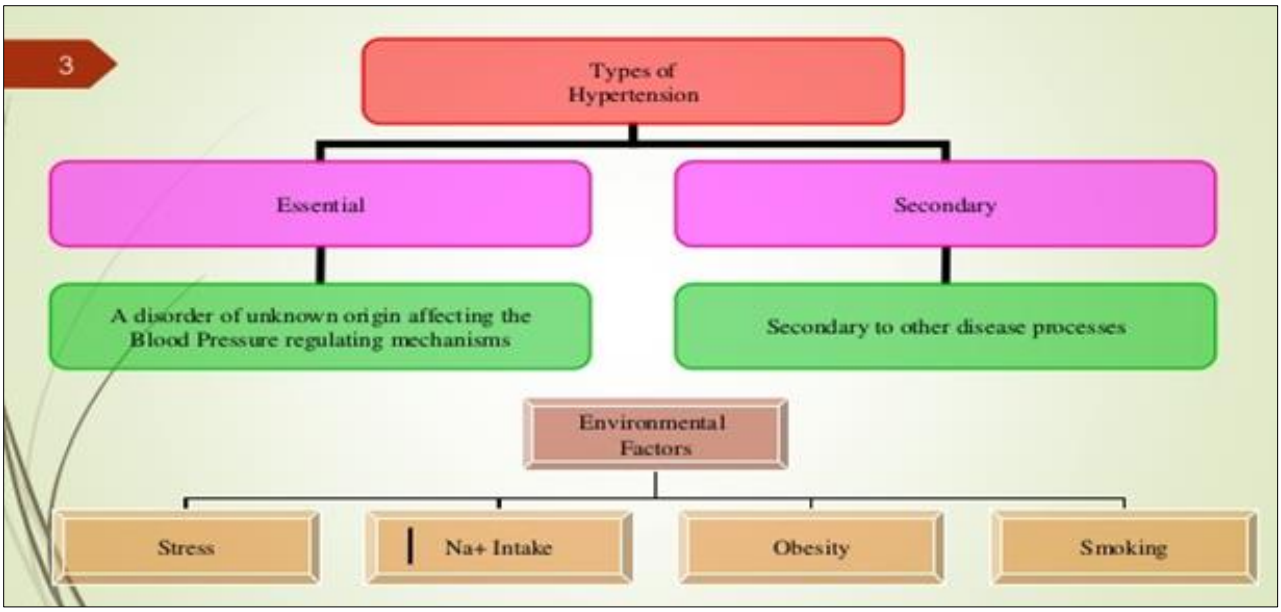

Fig 6: Types of HTN

Clinical manifestations of HTN

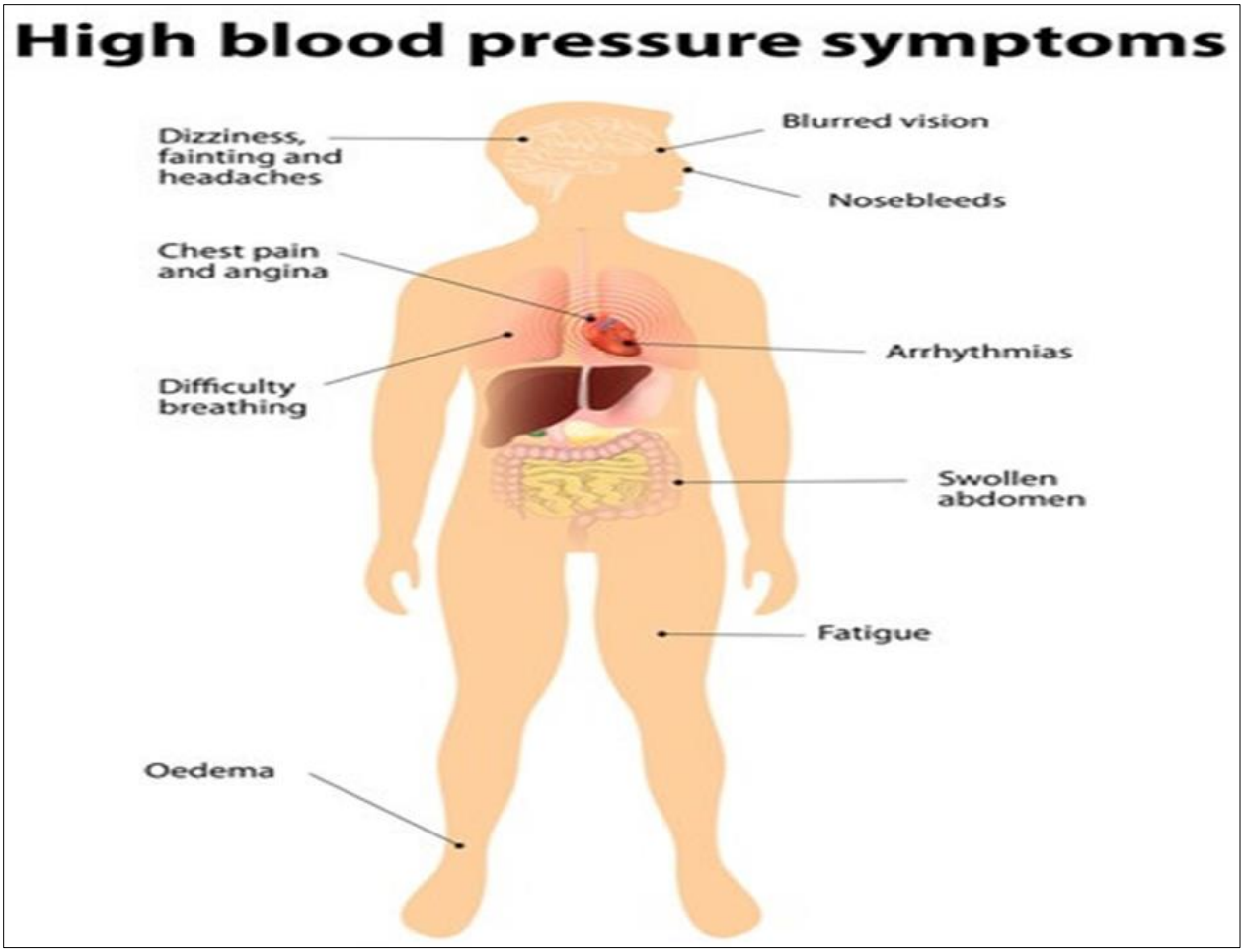

Fig 7

Standard treatment protocol for HTN with CCF

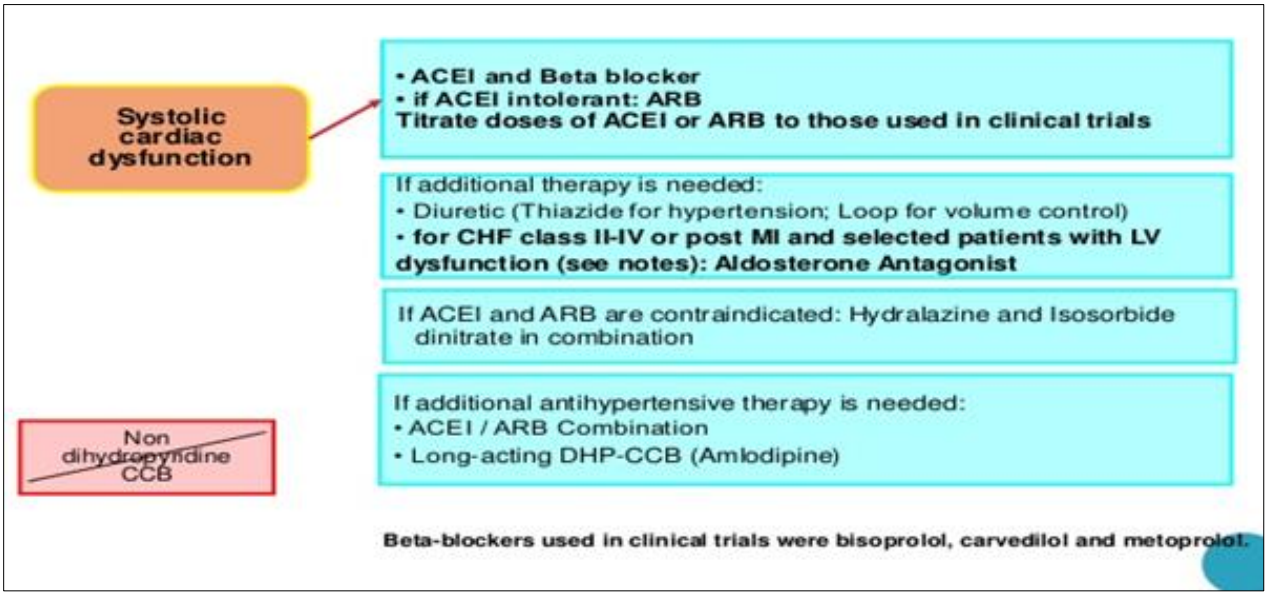

Fig 8: Hypertension with CCF

Case Presentation

Patient Demographic Profile

PATIENTNAME: XYZ

AGE: 69Years DOA: 15-04-2017

SEX: Male DOD: 27-04-2017

A 69 years old male patient is admitted in Cardiology department with chief complaints of:

- Increased shortness of breath (SOB) past week

History of Present Illness

- Swollen legs
- Ankle edema
- Weakness
- Paroxysmal noctural dyspnoea
- Weight gain
- Increasing SOB
- Furosemide dose was decreased 2 weeks ago due to hypokalemia
- Oedema of the upper body, extremities and face.
- Dilated veins over the arms, neck and anterior chest wall.

Medical HX

- Ventricular tachycardia(Controlled with Amiodarone)
- Heart failure(Ejection fraction 15%New York Heart Association Class II)
- Coronary Artery Disease(CAD)
- Diabetes Mellitus(DM) type 2 for 5 years
- Hypertension(HTN) for 30 years
- Chronic renal insufficiency
- Orthopnea.
- SVCS

Family HX

- Mother with Heart Failure(HR)

Social HX

- Prior cigarette smoker 3-4 packs/week; quit 30 years ago; 6 cans of beer/week

Allergies

- No known drug allergies
- ACEI- induced cough

Physical Examination

- Gen: Well developed, Well-nourished man with noticeable SOB

Vitals

- BP:153/91mmHg
- HR:82/mint
- RR:25b/mint
- Temp:37◦c
- Weight:78kg
- Ht: 172cm
- HEENT:+Jugular venous distention
- CVS:S1S2+
- CHEST: Bibasilar rales
- ABD: Hepatomegaly
- GU: Deferred
- RECT: Deferred
- EXT:2+ Edema bilateral
- NEURO: Alert

Laboratory Test Results

Table 2

TEST	VALUE	NORMAL GE
SODIUM	140mEq/L	135-145mEq/L
POTASSIUM	4.5mEq/L	3.5-5.0mEq/L
CHLORIDE	105mEq/L	97-110mEq/L
BICARBONATE	24mEq/L	22-26mEq/L
BUN	32mg/d L	8-25mg/d L
FASTING GLUCOSE	116mg/d L	65-109mg/d L
URIC ACID	3.9mg/d L	3-8mg/d L
CALCIUM	9.0mg/d L	8.6-10.3mg/d L
GLYCATED Hb (HbA1C)	7.5%	4.0-6.0%
PHOSPHATE	3.5mg/d L	2.5-4.5mg/d L
INR	2.5	2.0-3.0
MAGNESIUM	1.6mg/d L	1.58-2.68mg/d L
HCT	42.9%	40.7-50.3%
Hgb	14.5g/d L	13.8-17.2g/d L
AST	34IU/L	11-47IU/L
ALT	34IU/L	7-53IU/L
ALBUMIN	2.5g/d L	3.5-5.0g/d L
SERUM CREATININE	1.9mg/d L	0.7-1.3mg/d L
LEUKOCYTES	12×109/L	4-10×109/L
PLATELETS	174×109/L	4-10×109/L
MCV	82µm3	80.0-97.6µm3
ALKALINE PHOSPHATASE	95IU/L	38-126IU/L
TOTAL BILIRUBIN	0.2mg/d L	0.2-1.1mg/d L

Pharmaceutical Care Plan (Soap Format)
Subjective

- A 69 years old male patient was admitted to Cardiology department with chief complaints of increase difficulty in breathing, swollen legs, weakness, and weight gain, Oedema of the upper body, extremities and face. Dilated veins over the arms, neck and anterior chest wall. This all started 2 weeks ago when Furosemide dose was decreased

Objective

- SOB: 3+ ankle edema; 7kgweight gain; BP: 153/91mmHg; CR: 1.9; BUN: 32; Urinanalysis: 2+protein; chest X-ray; enlarged cardiac silhouette; left ventricular ejection fraction (LVEF) 15%, S1S2.
- Computed tomography of the chest with contrast showing a large lobulated mass on the right upper chest (large arrow) measuring 7.8 cm × 6 cm × 5.8 cm invading the mediastinum and extending to the apex and lateral chest wall (small arrow)

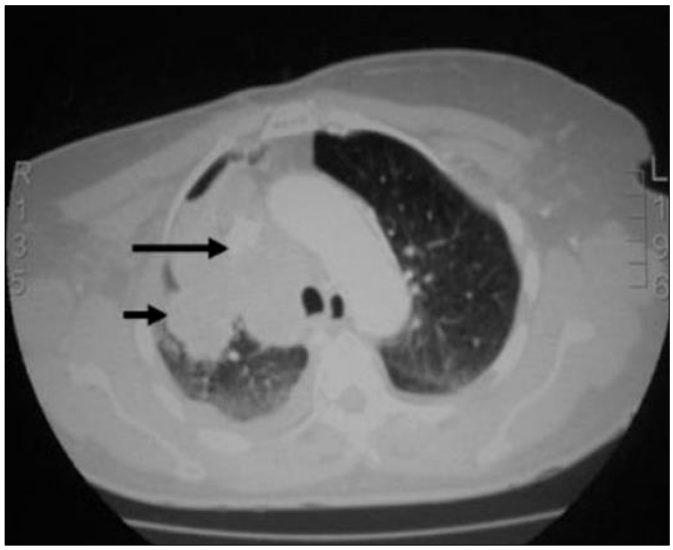

Fig 9

Assessment

- From the above Data the patient was diagnosed with Congestive Cardiac Failure, HTN and SVCS.
  - Problem 1:CHF exacerbation
  - Problem 2:Diabetes Mellitus type 2
  - Problem 3:Poorly controlled BP
  - Problem 4:Drug interaction; Amiodarone and Coumarin and Amiodarone and Digoxin
  - Problem 5:Chronic renal insufficiency
  - Problem 6: Superior Vena Ceva Syndrome

Problem 1: chf exacerbation
Pharmacist Interventions

- Increased Furosemide daily dose; add PM dose; change regimen to 80mg PO QAM and 40mg PO QPM
- Monitor weight q24h
- Monitor K+ level
- Discuss importance of daily weights (same time of day, preferably on arising, in similar clothes); maintain a dairy of weights and report increases in weight.
- Analyze dietary intake of sodium and use of potassium-containing salt substituted. Discuss importance of adhering to dietary restrictions; praise and encourage to continue sodium-restricted diet (2g Na/day).
- Assess adherence to entire heart failure medication regimen.
- If heart failure continues to worsen, consider adding nitrates or ȁ-blocker.

Problem 2: Poorly Controlled DM type 2
Pharmacist Interventions

- Add glyburide 5mg PO QD
- Rule out use of Metformin due to increased SCr level(≥1.5)
- Discontinue Avandia 8mg QD due to possible fluid retention

Problem 3: Poorly controlled BP
Pharmacist Interventions

- Goal BP for adult hypertensive diabetic patients is below 130/80mmHg
- Add ARB(ACE inhibitor induced cough).Add Cozaar CHF; initial, 12.5mg orally PO once daily; titrate at 7-day intervals to 25mg, then 50mg daily(based on response)
- If BP remains elevated with increase in Furosemide and addition of Cozaar, add a nitrate

Problem 4: Drug Interactions
Coumarin/Amiodarone
Digoxin/Amiodarone
Pharmacist Interventions

- Monitor interaction with Amiodarone and Coumadin; INR stable; no need to adjust dose
- Decrease dose of Digoxin by 50%; change regimen to 0.125mg PO Q3 days.
- Continue Digoxin; monitor Digoxin level (goal: 1ng/mL). Counsel regarding need to report nausea, blurred vision
- Monitor INR(goal:2-3)

Problem 5: Chronic Renal Insufficiency Secondary to Congestive Heart Failure
Pharmacist Interventions

- No interventions needed at this time.
- Use caution with renally cleared medications; dose should be adjusted for decreased renal function.
- Consider Metolazone if renal function becomes markedly reduced.

Problem 6: Superior Vena Ceva Syndrome
Pharmacist Interventions

- Patients typically present with shortness of breath along with facial and upper extremity edema.
- A histological diagnosis and Computed tomography of the chest is done before initiating treatment.
- Intravascular stents are proven to be safe and effective and allow the most rapid resolution of symptoms of SVCS.
- Treatment of SVC syndrome is divided into Conservative treatment and Emergency treatment.

Glucocorticoid therapy (Dexamethasone, 4 mg every 6 h) and Diuretics (Furosemide) is commonly prescribed as Emergency treatment.

Goals of treatment

- To improve symptoms and quality of life.

- To decrease likelihood of disease progression [4, 5].
- To reduce the risk of death and need for hospitalization.

PLAN

- Amiodarone 200mg PO OD
- Carvedilol 25mg PO QAM, 12.5mg PO QPM
- Furosemide 80mg PO QAM
- Avandia (Rosiglitazone Malaete),8mg PO OD
- Coumarin 6mg PO OD
- Digoxin 0.125mg PO OD initiated
- Spironolactone 12.5mg PO OD
- Dexamethasone, 4 mg every 6 h

Table 3

Drug	Adverse drug reaction	Route	Dosage	Frequency
Amiodarone	Torsades-de-points, Hyperthyroidism	PO	200mg	OD
Carvedilol	Hypotension	PO	25mg,	QAM
	Bradycardia	PO	12.5mg.	QPM
Furosemide	Ototoxicity	PO	80mg	QAM
Avandia	Hepatotoxic effects, Anemia.	PO	8mg	OD
Coumarin	Nausea, loss of appetite, Abdominal pain	PO	6mg	OD
Digoxin	Nausea, Blurred vision.	PO	0.125mg	OD
Spironolactone	Muscle pain or weakness, confusion.	PO	12.5mg	OD
Dexamethasone	Insomnia, Mood changes	PO	4mg	Q 4hr

Patient counselling for HTN

- Hypertension being an initiating factor for numerous other systemic complications requires careful assessment and control [6].
- Non-pharmacological treatment:
- Weight reduction
- Restriction of sodium
- Regular exercise
- Relaxation
- A DASH(Dietary Approaches to Stop Hypertension) is effective –Diet high in fruits and Vegetables and Low-fat dairy products [7]

Patient counselling for CCF

Life Style Changes

- Stop smoking
- Lose weight
- Avoid or limit alcohol
- Avoid or limit caffeine
- Eat a low-fat, low-sodium diet
- Exercise
- Reduce stress
- Keep tract of symptoms and weight.
- Limit fluid intake

Patient Counselling For SVCS

- The first and most important task in managing the patient with SVC syndrome is to correctly identify the cause [8].
- The urgency with which the diagnosis must be made and therapy administered is based on the severity of symptoms.
- For SVC syndrome associated with malignancy, the goal is to alleviate symptoms and treat the underlying disease [9, 10].

About The Medications

Table 4

Drug Category	Pharmacists Role
Diuretics	Select Appropriate Dose Timing To Avoid Frequent Urination In The Night.
Beta Blockers	Monitor For Hypotension, Dizziness, Headache And Bradycardia
Ace Inhibitors	Monitor For Hypotension, Dizziness, Cough, Taste Disturbances And Rash.
Calcium Channel Blockers	Monitor For Swollen Joints.

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