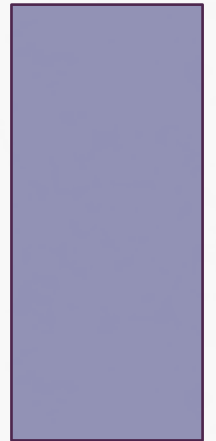


# CARDIOLOGY CASE PRESENTATION

DONE BY: SARA ALARFAJ



# PATIENT INFORMATION

- A.S, 70 years old male.
- Electively admitted to PSCC on the 24<sup>th</sup> of August,2013.

# CHIEF COMPLIANT

- The patient complained of shortness of breath for 3 days, became severe on the day of admission associated with orthopnea.
- Chest tightness for one day.

# HISTORY OF PRESENTING ILLNESS

- He presented with SOB with orthopnea and chest tightness
- The patient is diabetic with complications of Retinopathy and Nephropathy.
- Obstructive sleep apnea on home BIPAP.
- Renal impairment “not on dialysis”
- Obesity.

# PAST MEDICAL HISTORY

- Ischemic heart disease:
  - S/P CABG in 2010 (LIMA to LAD and SVG to PDA+ OM)with MR.
  - S/P PCI in 2010 (to LCX+OM)
  - S/P PCI to RCA in 2007
- Diabetes Mellitus type 2 with Retinopathy and Nephropathy.
- Chronic kidney disease grade III-IV
- Obstructive sleep apnea with type II Respiratory failure.
- Dyslipidemia
- HTN

The patient last admission on Sep 2012 as a case of CHF to treat fluid overload.

# PAST MEDICATION HISTORY

<b>Salmbutamol Inh 100 mcg/dose</b>	<b>Isosorbide Dinitrate 20 mg OD</b>
<b>Fluticasone (fluticasone/salmeterol) Inhaler</b>	<b>Aspirin 81 mg OD</b>
<b>Tiotropium Inh 18 mvg</b>	<b>Clopidogril 75 mg OD</b>
<b>Hydralazine 25 mg OD</b>	<b>Furosemide 40 mg OD</b>
<b>Metoprolol 50 mg BD</b>	<b>Human Insulin 10 units SQ</b>
<b>Amlodipine 10 mg OD</b>	

17-6-2013

4-6-2013

# VITAL SIGNS

- **Wt** = 100 Kg
- **HR** = 87 (NSR)
- **BP** = 144/64
- **RR** = 24
- **SpO2** = 95%
- **Temp** = 36.7

# PHYSICAL EXAMINATION

- **CNS:** conscious and oriented.
- **Chest:** Bilateral Basal crackles.
- **CVS:** S1+ S2 + 0 , no lower limb edema.
- **Abd:** Distended with +ve bowel sounds.



# CONT

## **Chest X-ray: (25<sup>th</sup> Aug)**

- Showed pulmonary edema.

## **ECG:**

- Normal sinus rhythm

## **ECHO: (25<sup>th</sup> Aug)**

- LV is mildly dilated.
- LV systolic function is moderately reduced.
- EF= 40%
- Akinetic basal to mid inferior posterior wall
- Repaired MV.

# LABS

- **Electrolytes:**

	24	25	26	27	28	29	30	31	1	2
<b>Na</b>	133	135	136	139	143	138	138	136	137	137
<b>K</b>	4.2	4.6	3.9	-	3.8	4.2	3.5	4.7	4	3.9
<b>Mg</b>	1.07	1.02	1.08	-	.99	1.02	.88	.88	1.03	.91
<b>Ca</b>	2.27	2.35	2.45	2.46	2.52	2.64	2.41	2.34	2.47	2.37
<b>Urea</b>	14.5	13.9	12.3	16.2	16.7	17.6	16.1	15.8	19.3	21.5
<b>Cr</b>	209	197	205	208	206	225	202	205	220	225

2-5

2.51

9-104

135-14

.74-1

2.3-7

# CONT LABS..

- CBC**

	24	25	26	27	28	29	30	31	1	2
WBC	8.5	10	8.3	8.7	8.7	8.3	9.5	10	9.8	8.7
RBC	6.4	5.8	5.9	5.5	5.6	6	5.6	5.5	6	5.3
Hg	13	13	13.1	11.8	12	12.8	12.2	12	13	11.6
Plt	222	228	212	219	239	263	269	254	279	245

4-11

4.2-6.2

12.5-18

150-450

- Coagulation**

	24	25	26	27	28	29	30	31	1	2
PT	10	9.6	10.4	10.7	9.3	8.6	9.3		9.7	9.4
PTT	46	35	31	44	27	26	24		24	26
INR	1.1	1.1	1.2	1.2	1	1	1.1		1.1	1.1

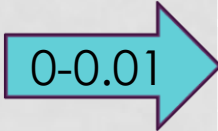

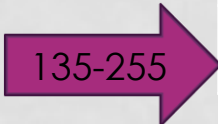
7.6-9.9

27-40



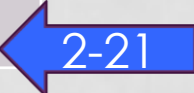
.9-1.1

# CONT LABS..

## • Cardiac Enzymes

	24	25	26	27	28	29	30	31	1	2
 Trop	.134	.15	.20	.174	.120	.067	-	.051	-	.058
CK	-	112	76	-	55	66	65	61	63	44 
 LDH	215	193	199	-	174	-	193	233	302	180

## • Liver

	24	25	26	27	28	29	30	31	1	2
ALT	5	-	8	-	-	15	13	11	-	9 
 ALP	-	64	58	53	-	62	58	58	-	54
BIL	12	12	15	10	-	10	14	14	14	- 

# ASSESSMENT

- Congestive heart failure to R/O acute coronary syndrome.

# MEDICATIONS

	medication		medication
<b>Sch.</b>	Aspirin 81 mg PO OD	<b>PRN</b>	Regular Insulin
	Clopidogrel 75 mg PO OD		Mg Gluconate 1000 mg PO
	Metoprolol 25 m PO BID		Potassium Chloride 24 MEq
	Furosemide 60 mg IV BID		
	Atrovastatin 40 mg PO OD	<b>Cont.</b>	Furosemide 250 mg.
	Atrovent 500 MIC q 6 hr		Heparin 50,000 Units.
	Seretide 250 MIC BID		Nitroglycerin 60 mg.
	Pantaprazol 40 mg PO OD		

# PROBLEM LIST

- 1) Ischemic heart disease.
- 2) Congestive heart failure.
- 3) Diabetes Mellitus type 2 with complications.
- 4) Renal Impairment (CKD grade III-IV)
- 5) Obstructive Sleep Apnea.
- 6) Dyslipidemia.
- 7) HTN
- 8) Obesity.

# DAY 1-2 (24-25/8)

	S	O	A	P
<b>IHD</b>	<ul style="list-style-type: none"> <li>SOB, 3 days</li> <li>Chest tightness, one day.</li> </ul>	<p><b>ECG:</b> NSR  <b>Trop:</b> .134-.151  <b>Na=</b> 133-135  <b>K=</b> 4.2-4.6  <b>Mg=</b> 1.07-1,02  <b>BP=</b> 144/64-129/59  <b>HR=</b> 87- 74</p>	NSTEMI	<ul style="list-style-type: none"> <li>Aspirin 81 md OD</li> <li>Clopidogril 75 mg OD</li> <li>Metoprolol 25 mg BD</li> <li>Furosemide 250 CI</li> <li>Heparin 5000 units</li> <li>Atrovastatin 40 mg OD</li> <li>NG "Tridil" 30 mcg/min IV</li> <li>Possible cath</li> </ul>
<b>CHF</b>	<ul style="list-style-type: none"> <li>SOB</li> <li>Chest tightness.</li> </ul>	<p>Echo.  <b>CXR:</b> pul edema  <b>EF=</b> 40%  <b>Na=</b> 133-135  <b>K=</b> 4.2-4.6  <b>Mg=</b> 1.07-1,02  <b>BP=</b> 144/64-129/59  <b>HR=</b> 87- 74</p>	HF.	<ul style="list-style-type: none"> <li>Metoprolol 25 mg BD</li> <li>Furosemide 250 CI</li> <li>NG 30/min IV</li> <li>Pul dr said Resp failure type 1 due to CHF</li> </ul>

ACEI ? 

Atrovent 500 MIC neb q 6hr  
 Seretide 250 MIC inh 1 puf BID



# CONT DAY 1-2

	S	O	A	P
<b>T2DM w/ comp.</b>		<b>HbA1c%=</b> 8.9 <b>BSL=</b> 16.7-9.5	Type 2 DM w/ Retinopathy and Nephropathy	Insulin sliding scale.
<b>CKD (III-IV)</b>		<b>Urea=</b> 14.5-13.9 <b>Cr=</b> 209-197 <b>CrCL=</b> 38.8 <b>Balance=</b> - 817.12 <b>ABD:</b> distended	Diabetes associated Nephropathy	<ul style="list-style-type: none"> <li>• HbA1c &lt;</li> <li>• Treat patient symptom</li> <li>• Control B</li> <li>• Treat overload.</li> <li>• No need for dialysis at present. Min contrast use.</li> <li>• 1.2 gm N-acety Cysteine.</li> </ul>

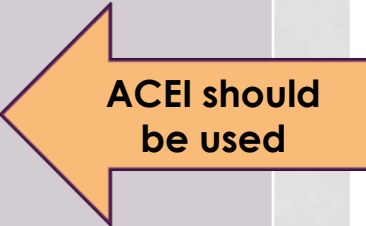
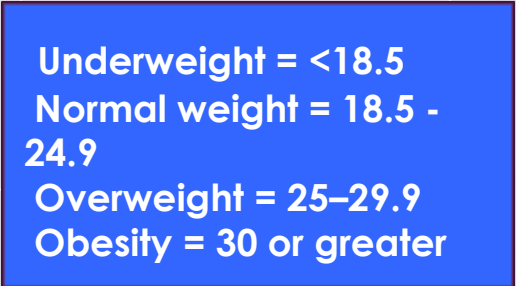
**Treat anemia, hypocalcemia, hyperparathyroidism**

2 before cath, 2 after

# CONT DAY 1-2

	S	O	A	P
<b>OSA</b>		<p>pH= 7.29                      pCo2=44                      pO2= 81.1                      HCO3= 24</p>	OSA on home BiPAP	<p>Continue on BiPAP.</p> <div data-bbox="1344 648 1785 842" style="border: 1px solid black; background-color: #e0f2f7; padding: 5px;"> <p>pH= 7.35 - 7.45                              paCo2= 35-45                              paO2= 80-100                              HCO3= 21-28 mEq/L</p> </div>
<b>Dyslip.</b>		<p><b>Last in April:</b>                      Chl= 4.5                      TG = 1.58                      LDL= 2.93                      HDL= .94</p>	Known to be dyslipidemic.	<p>Atorvastatin 40 mg OD.</p> <div data-bbox="1385 1033 1617 1219" style="border: 1px solid black; background-color: #9c27b0; color: white; padding: 5px;"> <p>Chl &lt; 5.2                              TG &lt; 1.7                              LDL &lt; 2.6                              HDL &gt; 1.6</p> </div>

# CONT DAY 1-2

	S	O	A	P
<b>HTN</b>		<b>BP=</b> 144/ 64	The patient has a hx of HTN.	Metoprolol 25 mg BD  
<b>Obesity</b>		<b>Wt=</b> 100 kg(24) =99.7Kg (25) <b>Ht=</b> 167 <b>BMI=</b> 37.2 <b>BSA=</b> 2.05	The patient is a case of CHF and CKD.	Treat overload. DM diet. Low salt diet.  

**ACEI should be used**

**Underweight = <18.5**  
**Normal weight = 18.5 - 24.9**  
**Overweight = 25–29.9**  
**Obesity = 30 or greater**

# DAY 3-4 (26-27/8)

	S	O	A	P
<b>IHD</b>	SOB improved	<b>ECG:</b> NSR <b>Trop:</b> .200- .174 <b>Na=</b> 136- 139 <b>K=</b> 3.9 <b>Mg=</b> 1.08 <b>BP=</b> 142/71 <b>HR=</b> 76	NSTEMI	On 27 <sup>th</sup> : 1) Valsartan 160 mg OD was added. 2) DC heparin infusion and cont on prophylactic SQ. 3) Started on Lasix 60 mg IV push BID
<b>CHF</b>	SOB improved.	Same as above. EF= 40%	Systolic HF	Same treatment+ Valsartan
<b>DM</b>		<b>HbA1c=</b> 8.9 % <b>BSL =</b> 5.9 – 6.2	T2DM	Insulin sliding scale
<b>CKD</b>		<b>Urea=</b> 12.3- 16.2 <b>Cr=</b> 205-208 <b>CrCL=</b> 39 ml/min <b>Balance=</b> -536.75 <b>ABD:</b> distended	DM associated Nephropathy	Same plan

Trop .134 to .15

Calci heparin 5000 units q 12 hrs

# CONT DAY 3-4

	O	P
<b>OSA</b>	No ABGs for those days.	Continue on BiPAP.
<b>Dyslipid.</b>	No new lipid profile levels.	Atorvastatin 40 mg PO OD.
<b>HTN</b>	BP= 142/71 = 138/61	Metoprolol 25 mg PO BD Valsartan 160 mg PO OD.
<b>Obesity</b>	Wt= 96 Kg "27 <sup>th</sup> " BMI= 35.7	patient needs to lose more fluids.



Lost  
4 kgs

# DAY 5,6 AND 7 (28-30)

	S	O	A	P
<b>IHD</b>	SOB improved	<b>ECG:</b> NSR <b>Trop:</b> .120- .067 <b>Na=</b> 143-138 <b>K=</b> 3.8-3.5 <b>Mg=</b> .99-.88 <b>BP=</b> 133/66 <b>HR=</b> 76	NSTEMI	Same treatment.
<b>CHF</b>	SOB improved.	Same as above. <b>CXR:</b> bilateral congestion <b>EF=</b> 40%	Systolic HF	Same treatment. Lasix bolus 100 mg IV.
<b>DM</b>		<b>HbA1c=</b> 8.9 % <b>BSL =</b> 17.2 – 29- 17.8	T2DM	Insulin sliding scale
<b>CKD</b>		<b>Urea=</b> 12.3- 16.2 <b>Cr=</b> 205-208 <b>CrCL=</b> 39.6 ml/min <b>Balance=</b> -536.75 <b>UOP=</b> 2.1 L/D <b>ABD:</b> distended	DM associated Nephropathy	Same plan

# CONT DAY 5,6 AND 7

	O	P
<b>OSA</b>	No ABGs for those days.	Continue on BiPAP.
<b>Dyslipid.</b>	No new lipid profile levels.	Atorvastatin 40 mg PO OD.
<b>HTN</b>	BP= 133/66 = 149/64 = 134/53	Metoprolol 25 mg PO BD Valsartan 160 mg PO OD.
<b>Obesity</b>	Wt= 95 Kg "30" BMI= 35.7	patient needs to lose more fluids.



Lost  
5 kgs

# DAY 8,9 AND 10(31 AUG-2 SEP)

	S	O	A	P
<b>IHD</b>	No SOB No CP	<b>ECG:</b> NSR <b>Trop:</b> .051- .058 <b>Na=</b> 138-137 <b>K=</b> 4.7- 3.9 <b>Mg=</b> .88-.91 <b>BP=</b> 149/64- 129/48 <b>HR=</b> 77	HD stable NSTEMI	<ul style="list-style-type: none"> <li>• Metoprolol increased to 50 mg BID "1<sup>st</sup> Sep"</li> <li>• No thalium and no cath, medical treatment only.</li> <li>• Mobilization, Physiotherapy.</li> </ul>
<b>CHF</b>	No SOB No CP	Same as above. <b>EF=</b> 40%	Systolic HF	Same treatment. 31 <sup>st</sup> aug: Start ISDN 20 mg PO/ q12hrs
<b>DM</b>		<b>HbA1c=</b> 8.9 % <b>BSL =</b> 13.8	T2DM	Insulin sliding scale
<b>CKD</b>		<b>Urea=</b> 12.3- 16.2 <b>Cr=</b> 205-225 <b>CrCL=</b> 39.6 ml/min <b>Balance=</b> -767 <b>ABD:</b> distended	DM associated Nephropathy	Same plan



# CONT DAY 8,9 AND 10

	O	P
<b>OSA</b>	No ABGs for those days.	Continue on BiPAP.
<b>Dyslipid.</b>	No new lipid profile levels.	Atorvastatin 40 mg PO OD.
<b>HTN</b>	BP= 121/54 = 115/55 = 129/48	Metoprolol 25 mg PO BD Valsartan 160 mg PO OD.
<b>Obesity</b>	Wt= 95 Kg "2 <sup>nd</sup> of Sep" BMI= 35.7	Same plan.

# RECOMMENDATIONS

## **HF: (ACCF/AHA Guidelines for the Diagnosis and Management of Heart Failure in Adults )**

- Patients admitted with HF and with evidence of significant fluid overload should be treated with intravenous loop diuretics.
- When diuresis is inadequate to relieve congestion new recommendation:
  - a. higher doses of loop diuretics.
  - b. addition of a second diuretic (such as metolazone, spironolactone or intravenous chlorothiazide).. “not in this patient, renally impaired”
  - c. continuous infusion of a loop diuretic. (*Level of Evidence: C*)

# CONT

## Cont ACCF/AHA:

- In patients hospitalized with HF with reduced ejection fraction not treated with oral therapies known to improve outcomes, particularly ACE inhibitors or ARBs and beta-blocker therapy, initiation of these therapies is recommended in stable patients prior to hospital discharge. (*Level of Evidence: B*)
- In patients with evidence of severely symptomatic fluid overload in the absence of systemic hypotension, vasodilators such as intravenous nitroglycerin, nitroprusside or nesiritide can be beneficial when added to diuretics and/or in those who do not respond to diuretics alone. (*Level of Evidence: C*)
- The addition of isosorbide dinitrate and hydralazine to a standard medical regimen for HF, including ACE inhibitors and beta blockers, is reasonable and can be effective in blacks with NYHA functional class III or IV HF. Others may benefit similarly, but this has not yet been tested. (*Level of Evidence: A*).. **“this was also in ESC”**

# CONT

## **HF (ESC):**

- ARBs are no longer the first choice recommendation in patients with HF and an EF  $\leq 40\%$  who remain symptomatic despite optimal treatment with an ACE inhibitor and beta-blocker.

## **HF + CKD (ESC)**

- Renin–angiotensin–aldosterone blockers (ACE inhibitors, renin inhibitors, ARBs, and MRAs) frequently cause a fall in GFR, although any reduction is usually small and should not lead to treatment discontinuation unless marked
- Spironolactone and eplerenone can cause hyperkalaemia and worsening renal function, which were uncommon in the RCTs, but may occur more frequently in ordinary clinical practice, especially in the elderly. Both should only be used in patients with adequate renal function and a normal serum potassium concentration.

## **HF + HTN (ESC)**

- If blood pressure is not controlled with an ACE inhibitor (or ARB), a beta-blocker, MRA, and diuretic, hydralazine and amlodipine (or felodipine), are additional blood pressure-lowering agents shown to be safe in systolic HF.

THANK YOU

QUESTIONS?