04/24/24 Morning Report with @CPSolvers

*"One life, so many dreams" **Case Presenter**: Anmolpreet Grewal (@Anugrewal19) **Case Discussants**: Sharmin (@Sharminizi) and Jack Penner*

CC: **SOB** for one day

HPI:
53 yo F with SOB for one day, she was in normal state of health until she experienced sudden onset dyspnea, exacerbated on exertion, Emergency services were called, she presented hypoxemia, requiring O2 4L on NC. Cough, fever, nausea, vomiting, chest pain, all absent

PMH:
-Hx of long standing Heart murmur

Meds:
n/a

Fam Hx:
Father - HTN
Rest was n/a

Soc Hx:
-From Central America

Health-Related Behaviors:
-non-smoker

Allergies:
none

Vitals: T: wnl **HR:** 90 bpm **BP:** 120/90 **RR:** 22 **SpO2** 96% on 4L NC
Exam:
Gen: Well nourished
HEENT: No icterus
CV: No JVD, normal S1/S2, 4/6 systolic murmur in upper sternal border
Pulm: CTAB; no wheeze; no crackles
Abd: Soft, no tenderness to palpation
Neuro: Alert and oriented x3
Extremities/skin: No edema, no clubbing

Notable Labs & Imaging:
Hematology:
WBC: normal Hgb: 11, MCV: normal ; RDW: 13; Plt: normal

Chemistry:
Na:138 K:3.8 Cl:103 HCO3:24 AG: 6 Ca:8.2 PO4: 3.2 BUN: Cr: 0.6 glucose:
Ca: Mag: 2.6
AST: ALT: Alk-P: Albumin:
Troponin 66 on admission, peak of 300; proBNP 1400
Covid test: neg
Imaging:
EKG: Normal sinus rhythm, non specific ST wave changes, Left ventricular hypertrophy
CXR: Mild pulmonary vascular congestion, no focal consolidation, no pleural effusion or pneumothorax.
CTPE: Negative for PE. Significant for valvular disorder = aortic stenosis
Echocardiogram: EF of 65% severe aortic wall thickening with aortic gradient of 70, aortic wall area 0.7 cm2.
Diuresis with 20 mg Lasix, sudden drop of preload, cardiothoracic sx > aortic valve replacement
Dx: Severe Aortic Stenosis

Problem Representation: 53 yo F with PMH of long standing heart murmur presents with acute onset SOB, and hypoxemia. On PE she is found to have a 4/6 systolic murmur in US border and clear lungs, pro BNP of 1400. No significant findings on EKG, CXR. CTPE showed significant aortic stenosis and Echo with severe aortic wall thickening and EF of 65%

Teaching Points (Ximena):
(1) **Framework of sudden onset of clinical syndrome:**
The diseases at play → something got blocked, rupture or had discharge of electrical activity. The framework can be applied to many organ systems. Later, we can relate it to the patient's current presentation.
→ Framework applied to acute hypoxemic respiratory failure: The possible causes → cardiac (ACS, arrhythmias) or pulmonary (PE, pneumothorax, asthma).
→ Important to evaluate:vital signs, auscultation (bilateral clear airway, and ECG to assess severity.
(2) Evaluate: Sudden in onset or sudden to the patient's attention?
(3) Access to care can point to unknown chronic pathologies.
(4) **Physical exam pearls:** the history of a new murmur is an important piece of data. Systolic murmur: stenotic → aortic and pulmonic /regurg → mitral and tricuspid. Sudden onset should include papillary muscle rupture in the ddx. It is expected to have lung manifestations.
(5) The patient's origin is helpful for risk factors: environmental, infectious and cultural.
(6) Hypoxia + clear lungs reduces the possibility of a cardiac etiology. Consider PE, acute pulm HTN.
(7) Bicarb can point to non cardiac causes of decompensation but doesn't explain the hypoxemia.
(8) **Lab pearls:** order CT-PE vs CTA (when considering catastrophic intrathoracic pathology), ECG, Echocardiogram and close and constant monitoring (trending the BP). The patient being stable gives us more time to evaluate the results of the studies and treat the actual condition.
(9) CT better than CXR for pneumothorax, aortic dissection, pulmonary edema.