ACP FLORIDA CHAPTER CLINICAL
VIGNETTE ORAL PRESENTATION

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Mount Sinai Medical Center, Miami Beach
CORONARY MILKING: A RARE CAUSE OF CHEST PAIN AND ELEVATED CARDIAC ENZYMES
CHIEF COMPLAINT: CHEST PAIN

- A 56 year-old woman from Mexico comes to the emergency department complaining of anterior chest pain for approximately two hours.

- The pain was described as oppressive, 10/10 in intensity, radiating to her left arm and back, and associated with shortness of breath and palpitations.

- The pain gets worse lying down and improves by leaning forward.
• She denies DOE, PND or pleuritic chest pain.

• She had similar pain one month previously while in Mexico.

• A complete cardiac evaluation was performed, including ECG, echocardiogram and an exercise stress test, that showed no findings suggestive of ischemia.
Clinical Vignette

History

Physical Laboratory Imaging Hospital Course Left Heart Cardiac Catheterization Diagnosis Discussion

• PAST MEDICAL HISTORY

1. Hypothyroidism

2. Hiatal Hernia

• PAST SURGICAL HISTORY

1. C-section x 3

2. Breast Implants
Clinical Vignette

- **MEDICATIONS**
  1. Levothyroxine 25 mg qd

- **ALLERGIES**
  1. Sulfas
FAMILY HISTORY

1. Mother: CAD and CABG x 3

• CHILDHOOD DISEASES

1. None
INFECTIONOUS DISEASES

1. None

• SOCIAL AND MARITAL HISTORY

1. Lives in Mexico with husband and her 3 daughters.

2. Housewife, currently on vacation with her family.

3. Previous smoker, 1 PPD for approx. 30 yrs. Quit 8 yrs ago.

4. Drinks an occasional glass of wine, no drugs.
REVIEW OF SYSTEMS

Endocrine: + heat or cold intolerance no polyuria or polydipsia.

Cardiovascular: + chest pain and palpitations, no DOE, PND

Respiratory: No cough, pleuritic chest pain or + SOB.

Rest of the review of system is unremarkable.
Physical Exam:

Vitals: Temp: 98.3  BP: 102/58  HR: 74 (SR) RR: 18

General Appearance: good appearance, well hydrated.

HEENT: PERRL, NL EOM.

Skin: No lesions or rashes.

Neck: No JVD, no carotid bruits no masses.
Thorax: Normo-dynamic, no deformities.

Breast: No masses, no skin changes and no drainage.

Lungs: CTA Bl, no abnl BS.

Cardiac: regular rhythm, nl s1 and s2, no murmurs, rubs or gallops.
Abdomen: Soft, NT, ND + BS, no masses.

Genitourinary: No CVA tenderness.

Extremities: nl pulses, no edema.

Lymph Nodes: No lymphadenopathy.
Clinical Vignette

Musculoskeletal: No deformities, joint tenderness, swelling or effusions.

Neurological: CN II-XII intact, with no motor deficits or sensory deficits. Gait wnl and DTR unable to evaluate at the time.
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**DIAGNOSTIC STUDIES PERFORMED IN THE ER**

- **TSH**: 0.005
- **Cholest**: 99, trig 46, HDL 32
- **LDL**: 58
- **CKMB 1st**: 0.5
- **CPK**: 63
- **Trop**: 0.092
Clinical Vignette

DIAGNOSTIC STUDIES PERFORMED IN THE ER

History
Physical
Laboratory
Imaging
Hospital Course
Angiography
Diagnosis
Discussion
### CHEST WALL PAIN
1. Musculoskeletal pain
2. Isolated musculoskeletal chest pain syndromes
3. Rheumatic diseases
4. Nonrheumatic systemic diseases
5. Skin and sensory nerves

### GASTROINTESTINAL CAUSES OF CHEST PAIN
1. Gastroesophageal reflux disease
2. Esophageal hyperalgesia
3. Abnormal motility patterns and achalasia
4. Esophageal rupture, mediastinitis, and foreign bodies
5. Medication-induced esophagitis
6. Other gastrointestinal causes of chest pain

### CARDIAC CAUSES OF CHEST PAIN
1. Coronary heart disease
2. Aortic dissection
3. Valvular heart disease
4. Pericarditis
5. Myocarditis
6. Stress-induced cardiomyopathy
7. Cardiac syndrome X
8. Pheochromocytoma

### PULMONARY CAUSES OF CHEST PAIN
1. Pulmonary vasculature
2. Acute pulmonary thromboembolism
3. Pulmonary hypertension and cor pulmonale
4. Lung parenchyma
5. Pneumonia
6. Cancer
7. Sarcoidosis
8. Pleura and pleural space
9. Pneumothorax
10. Pleuritis/serositis
11. Pleural effusion
12. Mediastinal disease

### PSYCHOGENIC/PSYCHOSOMATIC CAUSES OF CHEST PAIN
9. Pneumothorax
10. Pleuritis/serositis
11. Pleural effusion
12. Mediastinal disease
HOSPITAL COURSE

- In the emergency department the patient had an ECG performed that showed normal sinus rhythm and possible left atrial enlargement but no ST segment or T wave abnormalities suggesting ischemia.

- CTA performed showed no signs of PE, Ao dissection or PNA.

- Patient was then admitted to the telemetry floor and was treated as a NSTEMI.

- Echocardiogram, repeat ECG’s and subsequent two sets of troponins trended down to normal.
HOSPITAL COURSE

• However on day 2 of hospitalization the patient again complained of severe precordial chest pain, this time worsened with the administration of nitroglycerin.

• Repeat Troponin and CK MB were elevated at 0.611 and 4.7 respectively, without any changes on ECG’s.

• Left heart catheterization was performed that showed:

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LEFT HEART CARDIAC CATHETERIZATION

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LEFT HEART CARDIAC CATHETERIZATION

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HOSPITAL COURSE

- Left Heart Catheterization results: myocardial bridging of the proximal left anterior descending coronary artery with no evidence of obstructive disease.

- No intervention was performed and the patient was discharged home and managed medically with aspirin and calcium channel blockers.
CORONARY BRIDGING

Clinical Vignette

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Coronary arteries occasionally have a segmental intra-myocardial course.

During systole, this segment of the vessel is compressed, a condition referred to as milking or systolic "myocardial bridging".

This phenomenon was first recognized more than 200 years ago by Reyman, HC. Disertatis de vasis cordis propiiis. Bibl Anat. 1737;2:366.

First reported in depth in 1951.

First recognized angiographically in 1960.
MYOCARDIAL BRIDGING

- Severe bridging of the major coronary arteries can produce myocardial ischemia, coronary thrombosis, myocardial infarction, atherosclerosis or sudden death.

- Angiographic studies have reported that the prevalence of myocardial bridging is 1.7 percent (range 0.5 to 16 percent), which is almost always confined to the LAD.

- A higher prevalence has been observed in patients with Hypertrophic Cardiomyopathy and in recipients of cardiac transplants.
MYOCARDIAL BRIDGING

Is generally benign with a 5-year-survival rate ranging from 85-98%.

Associated with:

1. Cardiac Ischemia
2. Atherosclerosis
3. Hypertrophic Cardiomyopathy
MYOCARDIAL BRIDGING

• Diagnosis

1. Angiography

2. Others:
   - Doppler-flow catheter
   - IVUS
   - Electron beam CT
   - Multislice CT
   - Magnetic Resonance Tomography
   - Transthoracic doppler echocardiography

Discussion
MYOCARDIAL BRIDGING

• Management

1. Beta blockers

2. Calcium channel blockers

3. No nitrates

4. No stents

5. Surgical therapy

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CONCLUSION

• This case illustrates the potential consequences of intramyocardial bridging, including myocardial ischemia, as well as the clinical importance of suspecting this condition when a patient presents with intermittent episodes of severe chest pain that worsens with the administration of nitroglycerin.

• Although this clinical condition is rare and the treatment is mainly medical management, it is important to confirm the diagnosis with coronary angiography.

• If the patient’s symptoms are refractory to medical management, or if they have a documented episode of a subsequent myocardial infarction, they may benefit from surgical intervention.
REFERENCES


THANK YOU

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