

# Renal Calculi and Reverse Takotsubo Cardiomyopathy- An Unexpected Association?

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## Introduction

- Takotsubo cardiomyopathy (TTC) has been described as stress induced reversible cardiomyopathy with apical ballooning on cardiac imaging following a stressful trigger.
- However, basal hypokinesis with apical hyperkinesis on echocardiography- also known as reverse takotsubo cardiomyopathy (rTTC) has been reported relatively rarely (<3% of cases of TTC).
- We present the first case in literature that reports development of reverse takotsubo syndrome following diagnosis of renal calculi and renal colic.

## Imaging



Transthoracic Echocardiogram- Parasternal Long Axis View demonstrating basal hypokinesis.



Transthoracic Echocardiogram- Apical Two Chamber View demonstrating basal hypokinesis.



Left ventriculogram demonstrating hypokinesis of basal inferior and basal anterolateral walls.

## Case Presentation

- HPI**
  - 63 year old female with medical history of hypothyroidism presented to the hospital with complaints of left sided flank and chest pain. This was associated with nausea, chills and a few episodes of hematuria.
- Exam/Labs**
  - Physical exam: mild tenderness to palpation in left lower quadrant of abdomen
  - Vitals: Heart rate 53, Blood pressure 150/72
  - Troponin I 0.72 → 1.31 ng/ml, pro-BNP 204 pg/ml
- Imaging**
  - EKG: sinus bradycardia and short PR interval
  - CT Angiogram Chest/Abdomen/Pelvis: 3mm stone in left kidney with multiple small left ureteral stones causing mild hydronephrosis
- TTE**
  - Transthoracic echocardiogram: left ventricular ejection fraction (LVEF) 50% and hypokinesis of basal anteroseptal and mid-inferoseptal myocardium
- Management**
  - Given aspirin, atorvastatin and started on continuous heparin infusion (concern for Non-ST Elevation Myocardial Infarction)
  - Tamsulosin and intravenous fluids (renal calculi)
- LHC**
  - Left Heart Catheterization: normal coronary arteries, left ventricular end-diastolic pressure 5 mmHg
  - Left ventriculogram: mildly reduced systolic function, LVEF 45%, hypokinesis of inferior and basal anterolateral walls
- Diagnosis**
  - Reverse Takotsubo Cardiomyopathy (on going stress from renal calculi/hydronephrosis, rising troponin I, hypokinesis of basal inferior and basal anterolateral walls, clean coronary arteries, depressed LVEF)
- Treatment**
  - Guideline directed medical therapy with metoprolol succinate and lisinopril
  - Flank pain resolved after passage of renal calculi
  - Plan for outpatient follow up with TTE in 3 months

## Conclusion

- Reverse takotsubo cardiomyopathy has been described in literature to be triggered by emotional or physical stress likely due to catecholamine cardiotoxicity.
- Typically, rTTC is observed in young women with mean age of 36-years-old.
- Our case is unique because our patient is older and postmenopausal and it represents the impact of stress/pain secondary to renal stones leading up to rTTC.
- Timely echocardiography and left heart catheterization/ventriculogram are essential to aid in the diagnosis of this rare cardiomyopathy.