- **Medical Case Study**

Patient Background:

Mrs. Smith is a 55-year-old female who presented to the emergency department complaining of chest pain, shortness of breath, and fatigue. She has a history of hypertension, hyperlipidemia, and type 2 diabetes. She also has a family history of coronary artery disease.

Medical History:

Mrs. Smith was diagnosed with hypertension at the age of 45 and has been taking lisinopril 20 mg daily for the past 10 years. She was diagnosed with hyperlipidemia at the age of 50 and has been taking atorvastatin 40 mg daily for the past 5 years. She was diagnosed with type 2 diabetes at the age of 50 and has been taking metformin 1000 mg twice daily for the past 5 years. She is a non-smoker and drinks alcohol occasionally.

Symptoms:

Mrs. Smith has been experiencing chest pain for the past 2 days. The pain is located in the center of her chest and is described as a pressure-like sensation. She also reports shortness of breath with minimal exertion and fatigue. She denies any nausea, vomiting, or diaphoresis.

Physical Exam:

On examination, Mrs. Smith is afebrile with a blood pressure of 160/90 mmHg, heart rate of 100 beats per minute, and respiratory rate of 22 breaths per minute. She appears uncomfortable and anxious. Cardiovascular exam reveals a regular rhythm with no murmurs, rubs, or gallops. Lungs are clear to auscultation bilaterally. Abdomen is soft and non-tender with no hepatosplenomegaly. Extremities are without edema or cyanosis.

Diagnostic Tests:

An electrocardiogram (ECG) shows ST-segment elevation in leads II, III, and aVF. Cardiac biomarkers are elevated with troponin I level of 4.5 ng/mL (normal range <0.04 ng/mL). Chest X-ray is unremarkable.

Diagnosis:

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Mrs. Smith is diagnosed with acute ST-elevation myocardial infarction (STEMI).

Treatment:

Mrs. Smith is immediately started on aspirin, clopidogrel, and heparin. She is taken to the cardiac catheterization laboratory for emergent angioplasty and stenting of the culprit artery. The procedure is successful, and she has good reperfusion of the affected myocardial territory. She is then transferred to the cardiac care unit for further management and observation.

Follow-up:

Mrs. Smith has an uneventful hospital course and is discharged on day 4 with a regimen of aspirin, clopidogrel, atorvastatin, lisinopril, and metformin. She is advised to participate in a cardiac rehabilitation program and to follow a heart-healthy diet and lifestyle. She is scheduled for follow-up with her primary care physician and cardiologist.

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