The Need to Look Beyond Traditional Risk Factors in Medical Diagnoses

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next lives here

Overview

- Abstract
- Introduction
- Causes of Misdiagnosis
- Case Report
  - The Story
  - The Procedure
  - Discharge
- Discussion
- Conclusion
- References

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Abstract

7.4 million patients were misdiagnosed

2.6 million patients recieved harm that could be prev-ented

370,000 patients are left perm-anently disabled

Each year, about **7.4 million patients are misdiagnosed in the Emergency Room**, which leads to a delay or failure in treating the medical condition and it makes recovery difficult for the patient.

Medical malpractice occurs because of short physician-patient interactions, overworked physicians, inexperience, and overconfidence.

This case study involves a **29-year-old young male with no traditional risk factors** for coronary artery disease.

After labs, the patient was immediately rushed to the **Catheterization lab** and a successful **Percutaneous Coronary Intervention** was performed.

The patient was **discharged with no complications** but was advised to follow up with an outpatient cardiology clinic.

Overall, the case highlights the need for **physicians to look beyond the traditional risk factors and consider patient symptoms and prior history for accurate diagnosis**.

Introduction

Did you know that in 2022 about **7.4 million** patients were misdiagnosed in the ER? About **2.6 million** patients received harm that could have been prevented, and **370,000** patients were left permanently disabled or dead due to misdiagnosis (*Kounang*). **The top 5 clinical conditions that most commonly misdiagnosed are Stroke, Myocardial Infarction MI / Heart Attack, Aortic Aneurysm, Spinal Cord Injury, and Venous Thromboembolism** (*Kounang*).

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Causes of Misdiagnosis

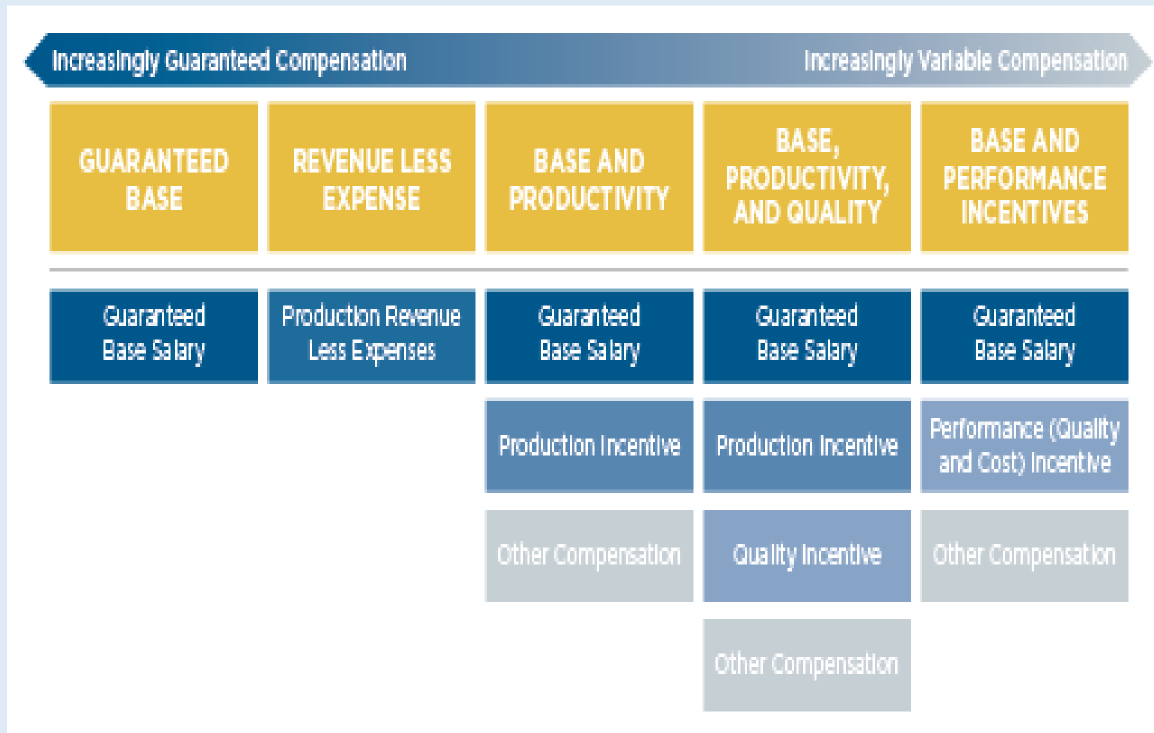
Misdiagnosis is defined as a **diagnosis that is delayed or incorrect as detected by some subsequent definitive test or findings.**

Diagnostic errors lead to a delay or failure to treat the clinical condition, making recovery difficult for the patient, and countless malpractice lawsuits against the physician.

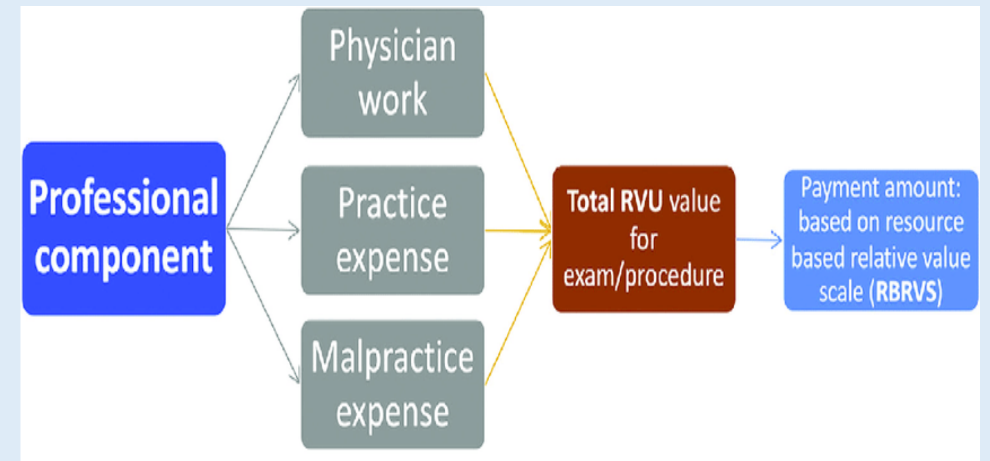
Medical malpractice occurs because of short physician-patient interactions, overworked physicians, inexperience, and overconfidence.

Causes of Misdiagnosis

Different Compensation Models



Productivity Based Compensation Model



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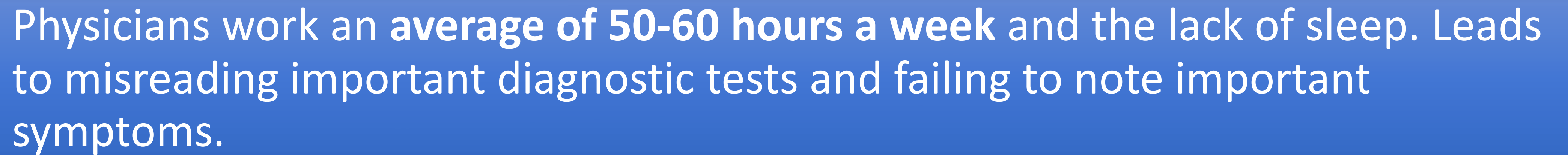
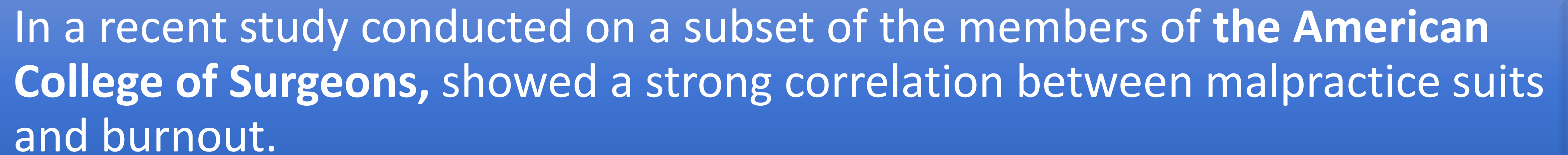
Causes of Misdiagnosis - Overworking



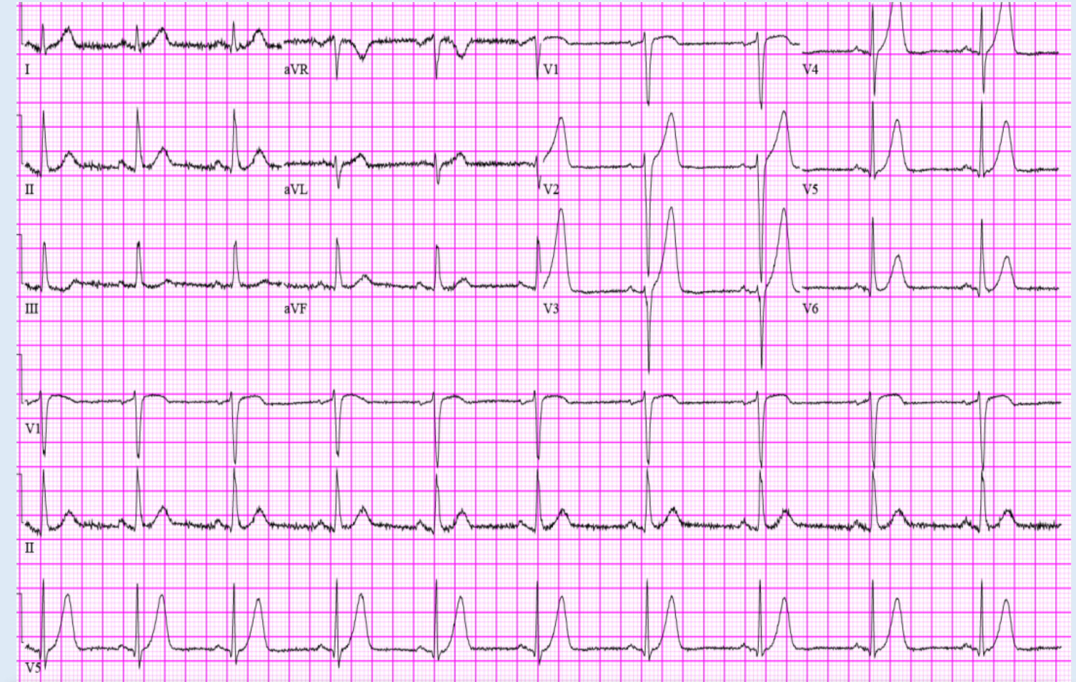


Causes of Misdiagnosis - Lack of clinical experience

Causes of Misdiagnosis – Confirmation Bias

Case Report – The Story

A 29-year-old young male with no traditional risk factors for coronary artery disease had a very stressful event a few hours before presenting to the emergency department with chest discomfort. **An initial EKG was performed when he first arrived at the hospital**, and it showed peaked T waves. Typically, patients present to the **ER claiming no pain**, **and labs typically indicate normal or slightly elevated cardiac enzymes.**



EKG of 29-year-young old male when he first arrived at the hospital

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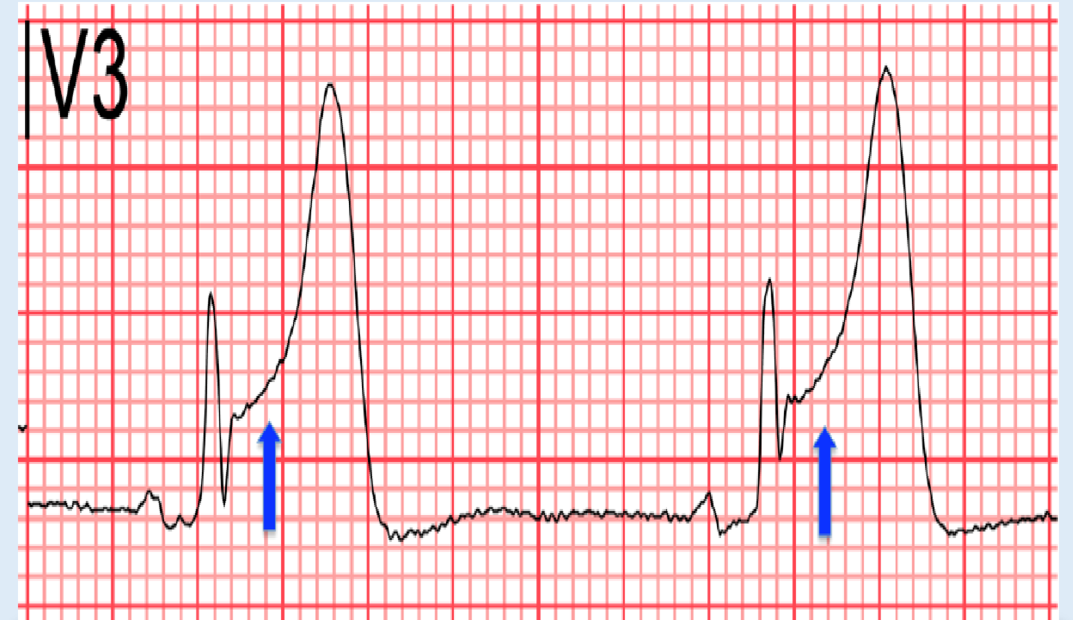
Case Report – The Story – Cont…

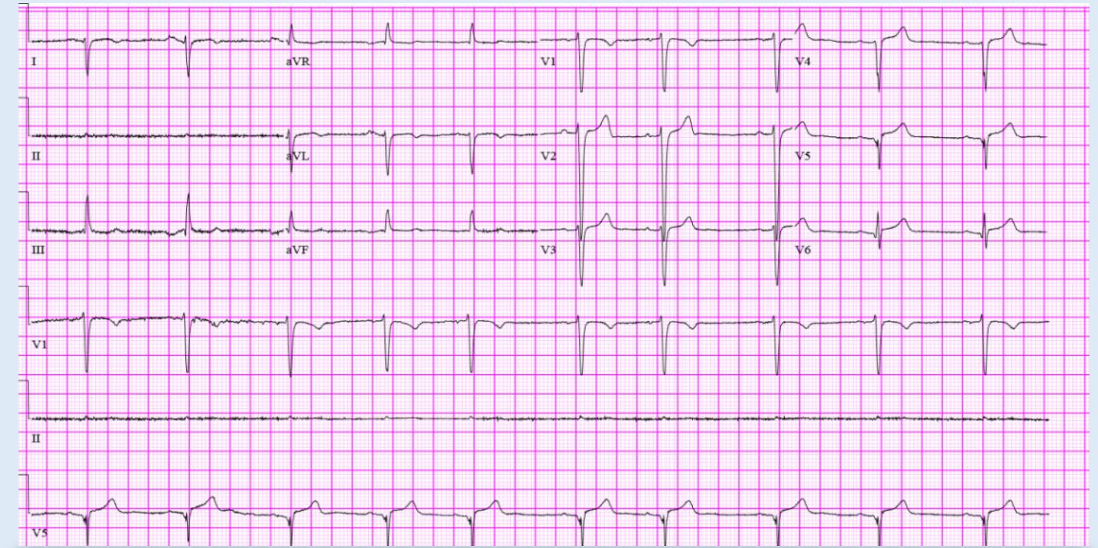
His EKG did not meet the criteria for **STEMI.** Typically, the EKG for a patient experiencing STEMI shows an **elevated ST segment.** Since patient's EKG did not meet criteria for STEMI. His **initial Troponin level was borderline (0.1 ng/mL)** and when labs were taken in the morning, his Troponin level was elevated to about 4 ng/mL. **If Troponin levels are greater than 0.04 ng/mL, then the patient will experience a non-STEMI heart attack**.



EKG of an individual experiencing STEMI. Blue arrow points to the elevated ST segment.

Case Report – The Story – Cont...

Due to his **elevated Troponin levels**, **the patient was administered IV Nitroglycerin**. After labs were taken, the patient reported having some residual left arm pain, despite receiving some IV nitroglycerin. **EKG was performed again and revealed only a poor R-wave progression**. Provided his ongoing symptoms, the **medical team decided to bring the patient to the Catheterization lab on an urgent basis.**



EKG of 29-year-old young male morning after administration

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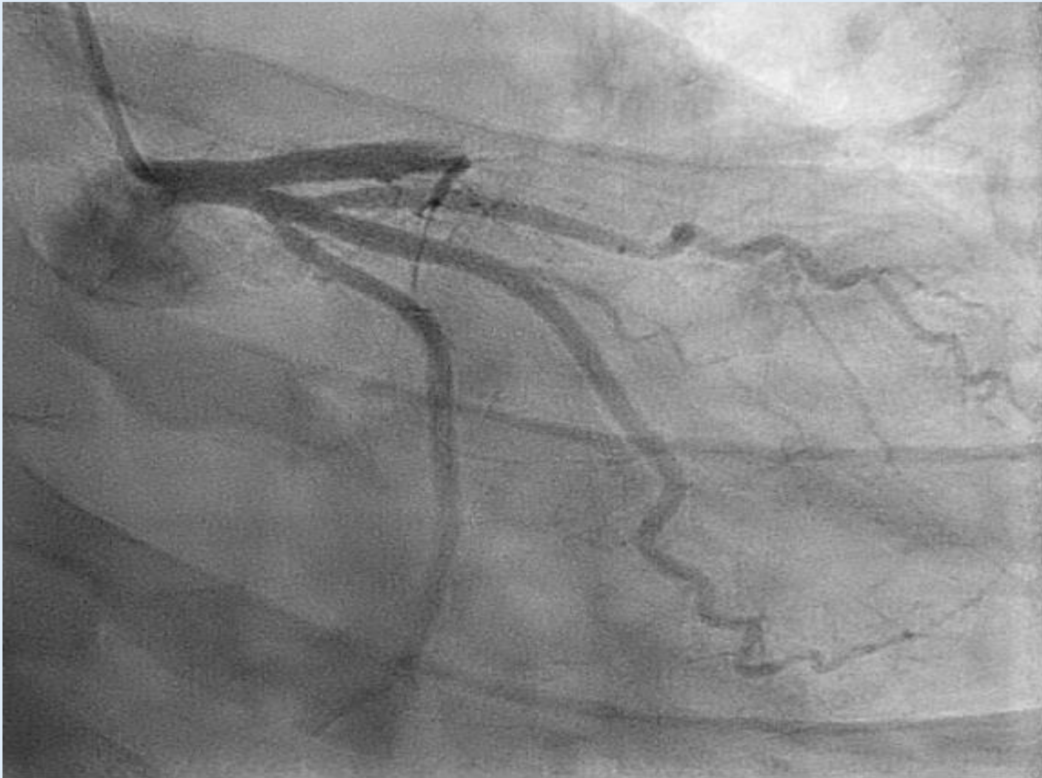
Case Report - Procedure

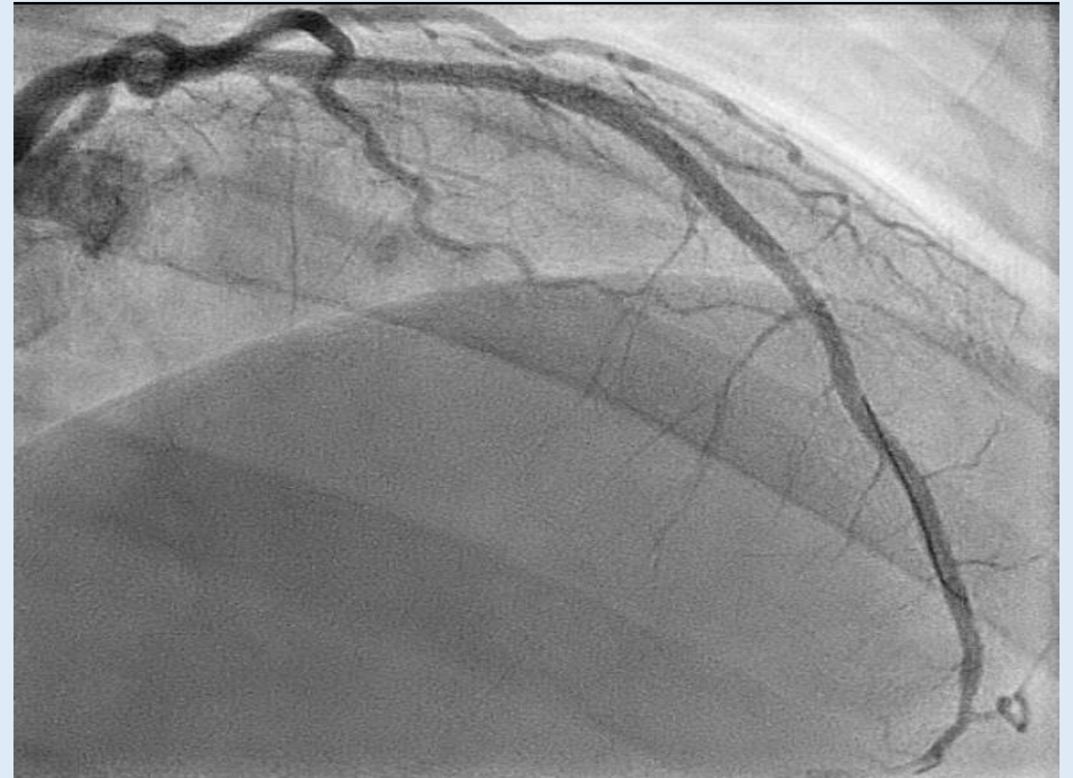
A **Coronary Angiography** revealed a **total occlusion of the mid Left Anterior Descending LAD artery**, as well as a significant amount of thrombus or blood clots. The site of occlusion occurred immediately after the origin of the first septal perforator. **Successful Percutaneous Coronary Intervention (PCI) was performed**, and the blood flow was restored in the vessel.

Case Report – Procedure – Cont…

Coronary Angiography result of the 29-year-old male. Shows a total occlusion of the mid LAD.



Coronary Angiography of 29-year-old male after successful PCI. Shows restored blood flow



Case Report - Discharge

The Patient was returned and monitored in the CCU for 48 hours.

He was administered dual antiplatelet therapy with aspirin and Plavix

A high intensity statin medication was also initiated to help lower his cholesterol levels.

A low-dose beta blocker and an ACE inhibitor were also initiated.

Thus, reducing irregular heartbeat or arrythmia, and preventing future heart failure.

The patient was discharged home from the CCU with no complications but was advised to follow up with an outpatient cardiology clinic.

Discussion

Wellens Sign or Wellens Syndrome (WS) is commonly known as the **warning sign for acute anterior wall Myocardial Infarction / Heart Attack**, which typically occurs due to the decrease in blood supply to the anterior wall of the heart.

Prompt **revascularization and adjunctive pharmacotherapy** is critical to treat Wellens Syndrome.

Some of the well-known diagnostic criteria for Wellens Syndrome **are ECG results, cardiac enzyme results, and a prior history of angina**.

Conclusion

The patient appeared to have **met the diagnostic criteria for Wellens Syndrome.**

However**, if the medical team had dismissed these apparent symptoms due to the patient's young age and overall good health,** then the patient would have been misdiagnosed, and this could potentially lead to delayed admission and lifesaving treatment.

Thankfully, **the team did not rely solely on the traditional risk factors** and brought the patient to the Catheterization lab in time to save him from potential MI.

By looking beyond, **the medical traditional risk factors, physicians were able to strategically analyze the appropriate interventional treatments**.

Overall, this case highlights the need for **physicians to look beyond the traditional risk factors and consider patient symptoms and prior history for accurate diagnosis.**

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Q & A

Thank You!!!