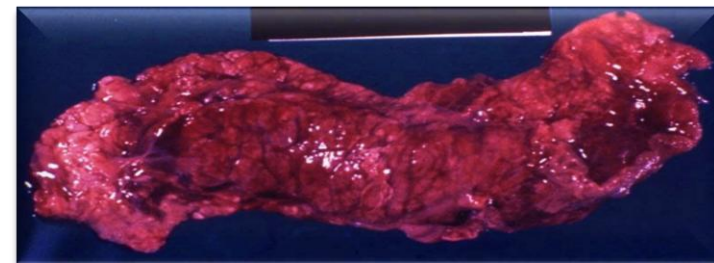


# Identification of Serum miRNAs as prospective Bio-markers for acute and chronic pancreatitis

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# Acute Pancreatitis-

## *Etiology and Pathophysiology*

Pancreatic  
obstructed


Ducts

become

Hypersecretion of the exocrine  
enzymes of pancreas

These enzymes enter the bile duct, where  
they are activated and with bile back up  
into the pancreatic duct

**Pancreatitis**

- 
- **Trypsinogen- (a proteolytic enzyme)**
    - Normally released into the small intestine, where it is activated to trypsin
    - In AP, activated to trypsin in the pancreas causing autodigestion of pancreas

# My brother Jawahar's death report

A 39-year-old man was admitted with a nine-month history of intermittent attacks of epigastric pain.

These attacks usually last up to several days associated with nausea and vomiting.

He was well in between attacks and had no loss of weight





## ◆ Trauma

- Use of alcohol \*
- Biliary tract disease
- Viral or Bacterial disease



# *Clinical Manifestations*

- Severe **Abdominal pain** is predominant symptom
  - Pain located in mid-epigastrium
  - Commonly radiates to the back
  - Sudden onset
  - Severe, deep, piercing, steady
  - Aggravated by fatty meal or lying recumbent position
  - Not relieved by vomiting

# *Diagnostic Studies*

- History and physical examination
- Laboratory tests
  - Serum amylase-
  - Serum lipase – also elevated
  - Blood glucose
  - Serum calcium
  - Triglycerides

# Progression of Disease

- Autodigestion

↓ Acute Inflammation of Pancreas

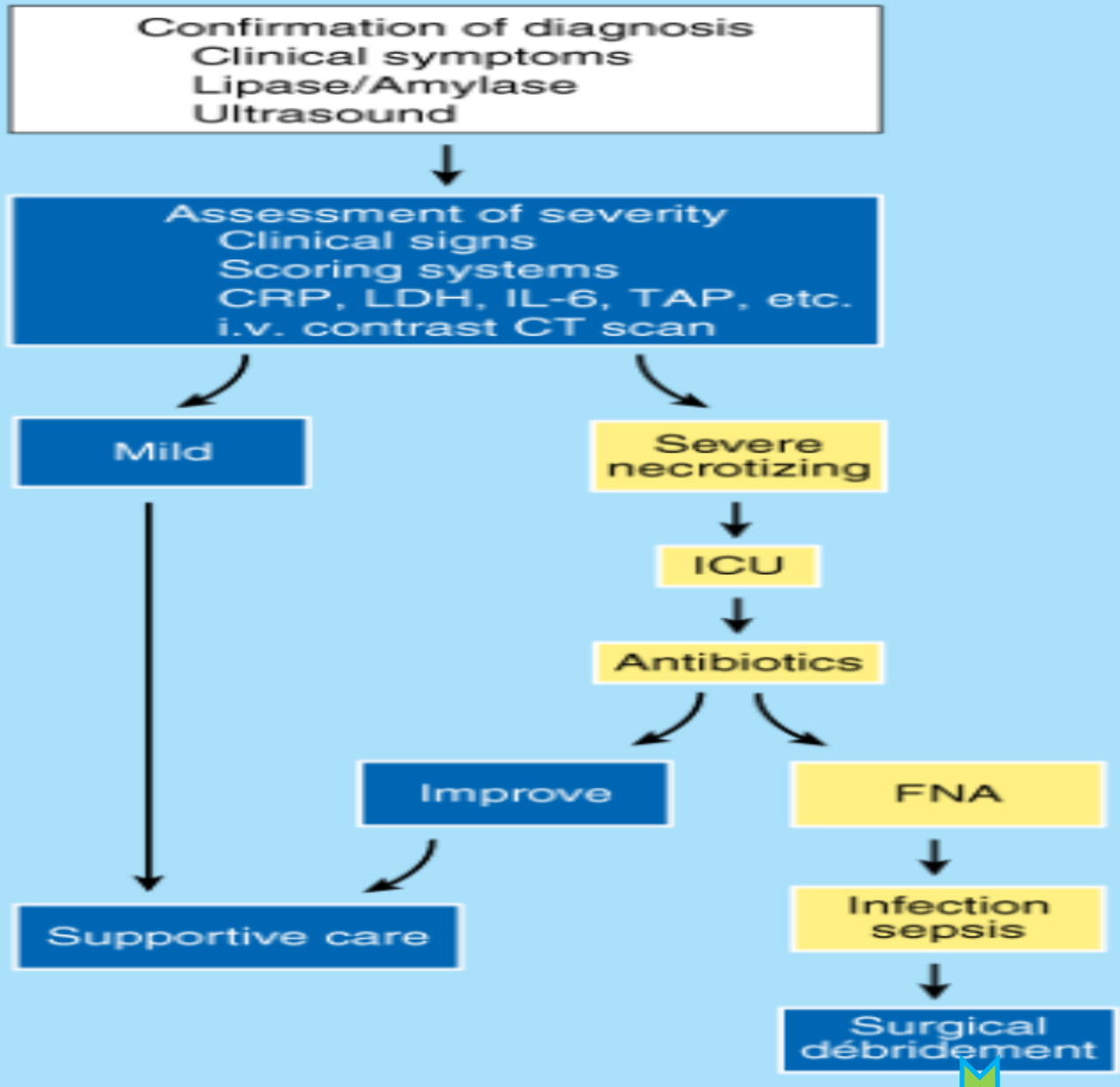
↓ Necrosis of Pancreas

↓ Digestion of vascular walls

↓ Thrombus and Hemorrhage

↓ **Death**





**Death**

## **MATERIALS AND METHODS**

- **Sera microRNA expression was profiled from 3 AP patients with varying disease severity and three healthy controls.**
- **Differentially expressed miRNAs were validated in a cohort of patients and controls.**
- **The diagnostic and prognostic potentials of differentially expressed miRNAs were evaluated using receiver operating characteristic (ROC) curve analysis and compared to that of classic prognostic markers for AP.**

## Sample procurement

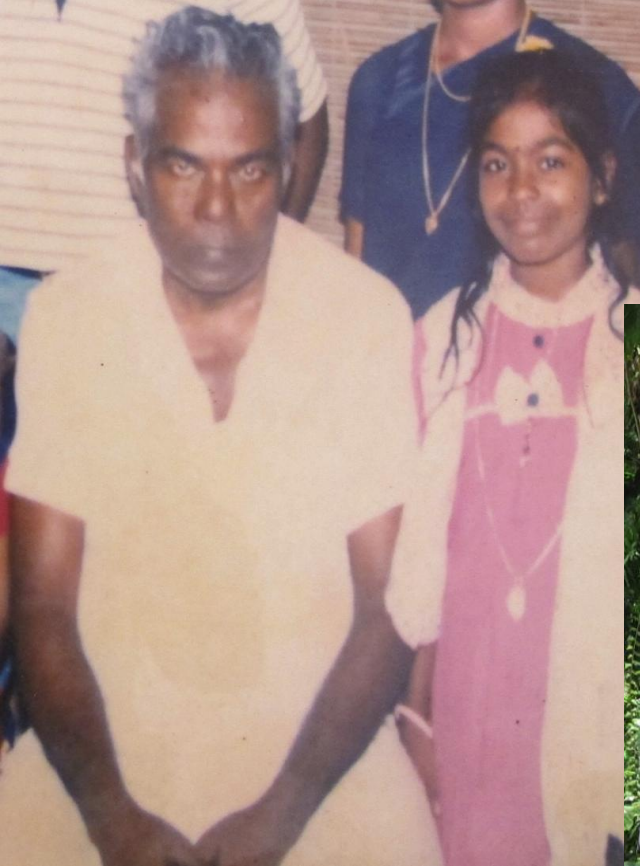
- After signing consent and before the onset of endoscopy, no more than 20 ml of blood was collected and equally distributed into EDTA-coated tubes.
- Specimens were initially stored at 4–8 ° C, and then rapidly processed by centrifugation followed by collection of supernatant.
- After processing, all supernatants were stored at –80 ° C until analysis.

# RESULTS

- **miRNA microarray analyses identified 212 differentially expressed miRNAs between sera from AP patients and that from controls.**
- **Nine miRNAs were differentially expressed between severe and mild AP patients. Further validation confirmed the down-regulation of miR-83b, miR-22a, and miR-7 in AP patients,**
- **Analysis revealed that these miRNAs can differentiate AP from health cases.**
- **Furthermore, the serum miR-521b-5p level was significantly higher in patients with disease complications or a low plasma calcium level.**
- **The serum miR-521b-5p level can distinguish between severe and mild AP.**

## CONCLUSION

- The expressions of miR-92b, miR-10a, and miR-7 in AP might be used for the early diagnosis of AP and miR-521b-5p may be used for predicting AP severity.
- The absence of reliable blood markers for pancreatic ductal adenocarcinoma (PDAC) reduces the potential effectiveness of screening strategies in at-risk populations such as those with chronic pancreatitis (CP).
- Therefore, the discovery of biomarkers derived from blood or bile that facilitate the identification of CP.
- In addition, biomarkers may guide studies designed to elucidate dysplasia-to-carcinoma mechanism(s) specific to PDAC and identify gene or protein targets for novel therapies.



**Gall bladder & liver cancer**



**Acute pancreatitis**



**Chronic pancreatitis**





**Thank you for your  
attention**