

# Management of chronic pancreatitis

Liver update meeting 2024

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# Outline

- Definition
- Aetiology
- Diagnosis
- Management options
  - Pharmacotherapy
  - Endoscopic
  - Surgical

# Definition

- CP
  - Progressive disorder
  - Recurrent episodes of inflammation
  - Replacement of pancreatic parenchyma with fibrous tissue
- Consequences
  - Pain
  - Exocrine and endocrine insufficiency
  - Malignancy

# CLASSIFICATION SYSTEMS OF AETIOLOGIES

## MANNHEIM

M indicates multiple risk factors including:

Alcohol consumption: excessive (>80 g/d), increased (20–80 g/d), moderate (<20 g/d)

Nicotine consumption

Nutritional factors: high caloric proportion of fat and protein, hyperlipidemia

Hereditary factors: hereditary, familial, idiopathic (early onset, late onset), tropical

Efferent duct factors: pancreas divisum, annular pancreas and other congenital abnormalities of the pancreas, pancreatic duct obstruction (eg, tumors), posttraumatic pancreatic duct scars, sphincter of Oddi dysfunction

Immunological factors: autoimmune pancreatitis

Miscellaneous and rare metabolic disorders: hypercalcemia, hyperparathyroidism, chronic renal failure, drugs, toxins

## TIGAR-O

Toxic-metabolic: alcohol, tobacco smoking, hypercalcemia, hyperlipidemia, chronic renal failure, medications, toxins

Idiopathic: early onset, late onset, tropical

Genetic mutations: *PRSS1*, *CFTR*, *SPINK1*, others

Autoimmune: isolated, syndromic

Recurrent and severe AP-associated CP: postnecrotic (severe AP), vascular disease/ischemic, postirradiation

Obstructive: pancreas divisum, sphincter of Oddi disorders, duct obstruction (eg, tumor), posttraumatic pancreatic duct scars

*M-ANNHEIM and TIGAR-O*

*Diagnostic criteria for aetiology, clinical and diagnostic stage*

*Provides a checklist for recording risk factors*

*Dig Dis Sci 2018*

*Am J G 2020*

# Disease burden

- Epidemiology

- Rare
- Estimated prevalence of 35-50 per 100000 adults in US
- Incidence 5 PER 100 000 patient years
  
- SA: Madela et al
- Looked at pathology and outcomes of pancreatic surgeries
- 126 surgeries for cancer and CP: 77 PD
- Prevalence of CP was 29.9% and 55.9% in PDAC

- Poor quality of life

- Physical and mental health



# Progression

Latent

Pain  
Intact endocrine and  
exocrine function

Compensatory

Pain under control.

Transitional

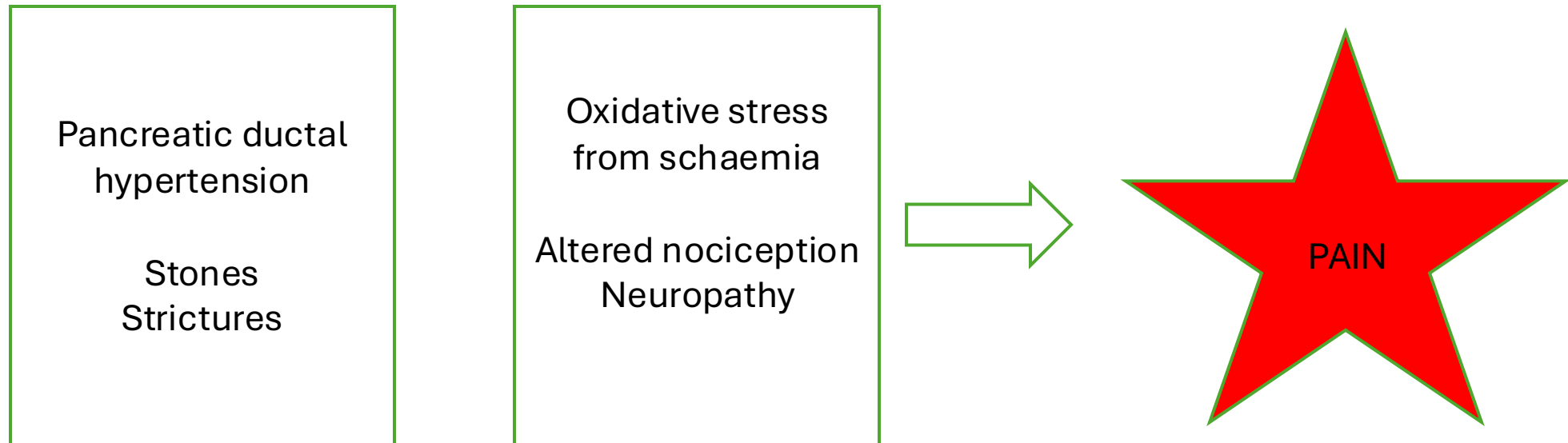
Acute on chronic  
Pancreatitis

Decompensated

PEEI are the main  
features

# Sequelae of pancreatic tissue destruction

# Pain



- High BP does not equate to pain



# Exocrine insufficiency

- Results in maldigestion and malabsorption
  - Steatorrhoea
  - Fat soluble vitamins
  - Abdominal distension
  - Sarcopenia
  - Reduced QOL

# Endocrine

- Pancreatogenic DM (Type 3c)
  - Glycaemic control often poor with wild fluctuations
  - 40% point prevalence
  - Islet cells replaced with fibrosis
  - Insulin resistance, ?impaired incretin hormone response
- Metabolic bone disease
  - Chronic pancreatitis osteopathy
  - Increased fracture risk

# Malignancy

More common in CP from hereditary causes  
Less in AIP

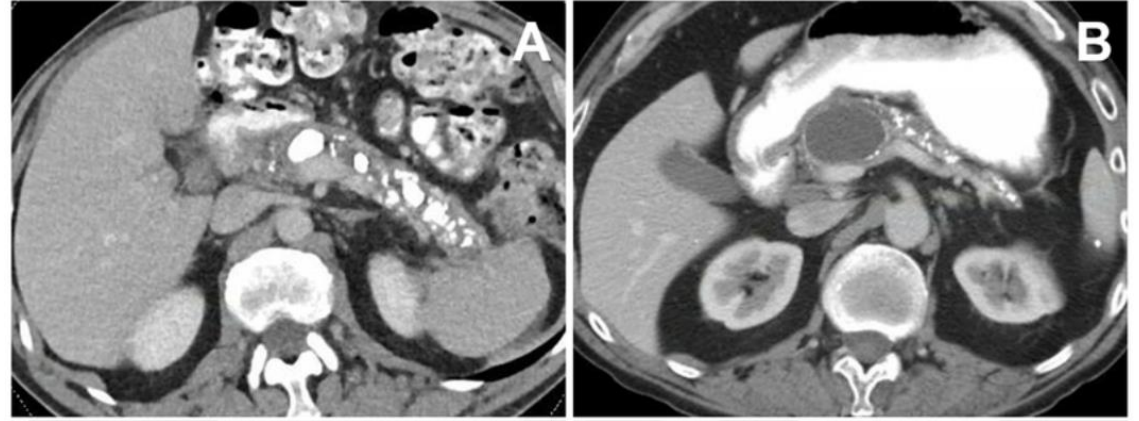
Chronic Pancreatitis Is a Risk Factor for Pancreatic Cancer, and Incidence Increases With Duration of Disease: A Systematic Review and Meta-analysis

Sonal Gandhi, MBBS<sup>1</sup>, Jaime de la Fuente, MD<sup>2</sup>, Mohammad Hassan Murad, MD<sup>3</sup> and Shounak Majumder, MD<sup>2</sup>

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# Diagnosis

- Symptoms
- Imaging: Early vs late CP
  - X-Ray, US, CT, MRI (MRCP or secretin-stimulated MRCP), EUS (+/-TE) and ERCP
- Laboratory: PEI
  - Quantitative fecal fat estimation >7g/day: gold standard for steatorrhea
  - Fecal elastase-1: good alternative
  - Secretin stimulated pancreatic function
- *J gastroenterol 2022*
- *AM J G 2020*



Conventional criteria	Rosemont criteria
<b>Parenchymal criteria</b>	
<b>Major criteria A</b>	
Hyperechoic foci	Hyperechoic foci (>2 mm in length/width with shadowing)
Hyperechoic strands	
Hypoechoic lobules, foci or areas	Major duct calculi (echogenic structure[s] within the MPD with acoustic shadowing)
Cyst	
<b>Major criteria B</b>	
	Lobularity ( ≥3 contiguous lobules = 'honeycombing')
<b>Duct criteria</b>	
<b>Minor criteria</b>	
Irregular duct contour	Cyst (anechoic, round/elliptical with or without septations)*
Visible side branches	Dilated duct ( ≥3.5 mm in body or >1.5 mm in tail)*
Hyperechoic duct margin	Irregular duct contour (uneven or irregular outline and ectatic course)
Dilated main duct	Dilated side branch (>3 tubular anechoic structures each measuring ≥1 mm in width, budding from the MPD)*
Stone	Hyperechoic duct wall (echogenic, distinct structure >50% of entire MPD in the body and tail)
	Hyperechoic strands (≥3 mm in at least 2 different directions with respect to the imaged plane)
	Hyperechoic foci (>2 mm in length/width that are nonshadowing)*
	Lobularity (>5 mm, noncontiguous lobules)

*\*If any of these minor criteria are present, the patient cannot be classified as 'normal'. MPD Main pancreatic duct. Data from references 14 and 15*

# Diagnostic criteria

*Can J Gastro 2011, GIE 2009, J Gastro 2022*

- EUS
  - Hyperechoic foci (non-shadowing ) or strands
  - Lobularity
  - Hyperechoic MPD margins
  - Dilated side branches

# Management

- Focused on:
  - Lifestyle changes
    - Alcohol and smoking reduces exocrine insufficiency, abdo pain and local complications

*P Goltl et al. Alcohol 2023*

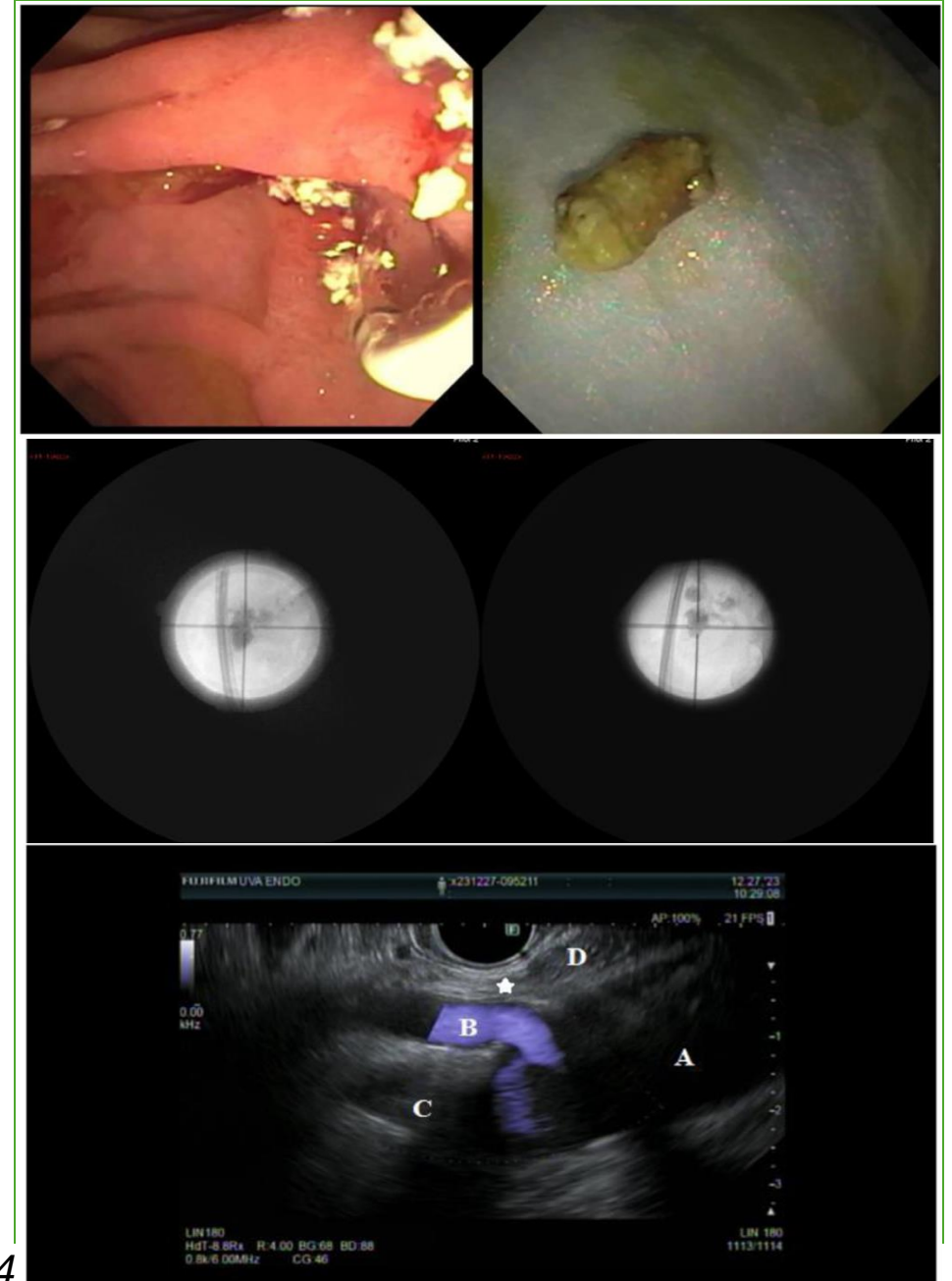
- Pain control
- PERT/ Nutrition
- Diabetes control

# PAIN

- NSAIDs
- Weak then strong opioids
- Other drugs e.g pregabalin, antioxidants
- Fat restricted diet may be effective
- Extra-corporeal shock wave lithotripsy
- **Endoscopy**
- Surgery
- IR: pseudoaneurysm or haemosuccus

# Endoscopic management

- Stone management
  - ERCP with or without pancreatoscopy and lithotripsy
  - The stones can be rigid and refractory
  - ESWL
  - Stenting: can be initial therapy
- ERCP: Strictures
  - Stent
    - If dominant stricture
  - Sphincterotomy: if papillary stenosis
  - Plastic vs fcSEMS
- EUS: case by case
  - Coeliac plexus: Uni or bilateral, direct or indirect
  - Collections





# Pancreatic Exocrine Insufficiency

- Pancreatic enzyme replacement therapy
- Nutrition without fat restriction
- A,D,E,K etc. supplementation
  
- CP associated osteopathy: BMD and high fracture risk
- Sarcopenia- high risk of hospitalization and mortality
  - Nutritional therapy and PERT

# PERT/ Nutrition

*Clinical nutrition 2024*

- Enteric-coated microspheres
  - Released at pH >5.5
  - Recommended dose 20-50000 PhU with main meals: adjust
  - Spread capsules out over a meal
  - Colonic strictures with high dose, esp children
- 
- PERT improves fat absorption and GI symptoms
  - PPI can be added if incomplete symptomatic response
  - High fiber not recommended
  - If malnourished, high energy, high protein meals 5-6 per day



# Role of surgery

- Usually reserved for refractory cases related to anatomic changes
  - Pancreatic, duodenal or biliary obstruction
  - Refractory pain
- Types of interventions
  - Drainage procedures
  - Partial pancreatectomy with/without duodenal resection and pyloric preservation
    - Frey, Berge and Berne most commonly done
  - Total pancreatectomy and islet autotransplantation
    - Survival of the graft sometimes poor: mesenchymal contrasplantation, etarnecept, HCQ tried
- Different but often comparable outcomes wrt: Pain improvement, LOS, blood T/F, weight gain
- Organ sparing procedures widely used

*Ther adv gastroenterol 2024*

# Malignancy screening

## *Key concept*

5. There is a lack of evidence to suggest that performing screening examinations on patients with CP to detect pancreatic malignancy is beneficial.



## **Incidence and risk of pancreatic cancer in patients with chronic pancreatitis: defining the optimal subgroup for surveillance**

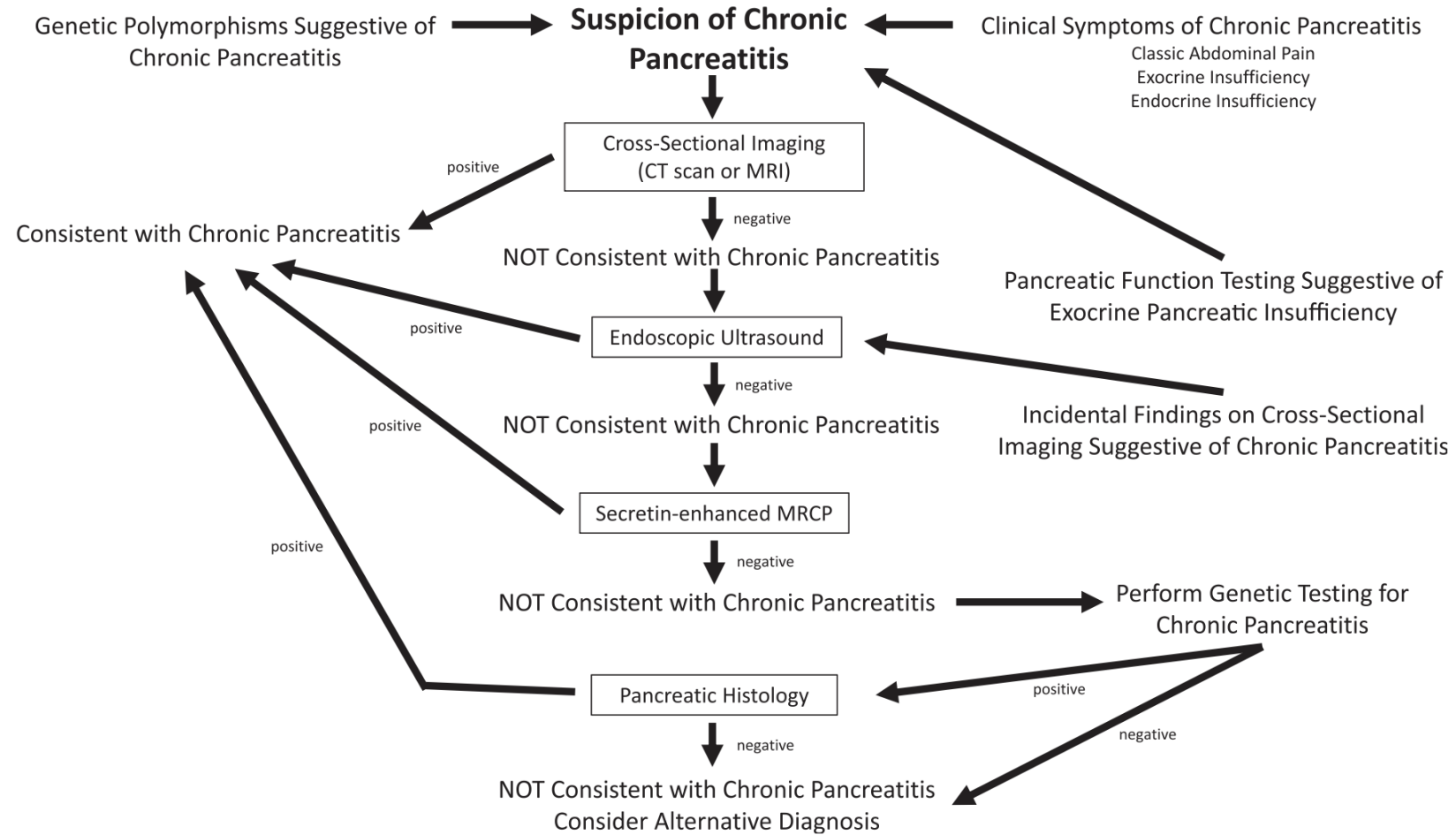
Hyo Suk Kim<sup>1</sup>, Tae-Geun Gweon<sup>1</sup>, Sang Hi Park<sup>2</sup>, Tae Ho Kim<sup>1</sup>, Chang Whan Kim<sup>1</sup> & Jae Hyuck Chang<sup>1,3</sup>✉

# New therapies

- Neuromodulation
  - Cervical transcutaneous nerve stimulation
- Cognitive behavioural therapy
  - Pain self-management
- Energy therapy (Pranic healing)

# Diagnostic approach

Gardner et al AJ Gast 2020



# Conclusion

- Individualized therapies
- Improve quality of life
- Malignancy screening for a select group