Acute and Chronic Pancreatitis: 

*An Update*

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**Goals**

- Summarize a number of recent advances acute and chronic pancreatitis

- Emphasis on findings that are most relevant to clinicians who manage patients with acute and chronic pancreatitis.

- Review current management strategies incorporating recent advances
Introduction: Acute Pancreatitis

• Basic Science reports provide new insights into the
  – acinar cell pH microenvironment
  – signal pathways for acinar cell fate
  – innate immune response.

• Clinical Science have reported
  – evaluation of elevated enzyme levels
  – newer methods to assess disease severity
  – innovative endoscopic techniques for management of local complications
  – the importance of early recognition of pancreatic or extrapancreatic infection
  – prevention of disease recurrence.

• Recent data also suggest that specialized centers may be of benefit in the management of severe acute pancreatitis.

Acute Pancreatitis: Basic Science

• Acidic microenvironment
  – Low pH sensitizes / predisposes acinar cell injury
  – Bhoomagoud M, Gastro 2009
  – Noble M, Gut 2008

• Protein kinase receptors
  – RIP 3 protein necessary for TNF alpha mediated necrosis
  – He S, Cell 2009

• Link between tissue injury and innate immune response
  – TLRs propagate systemic inflammation
Acute Pancreatitis

• Important to risk stratify within the first 24 hours of admission
  – Harrison D, Crit Care Med 2007
  – Wu B, Gastro 2009
  – Wu B, Pancreatology 2009

• Hospital acquired infection impacts mortality
  – Wu B, Gastro 2008
  – Vege S, Am J Gastro 2009

• Endoscopic therapy for WOPN
  – Seifert H, Gut 2009

• Bridging stents for disrupted ducts
  – Telford J, GIE 2002
  – Lawrence C, GIE 2008

• Probiotics not justified for severe AP
  – Besselink M, Lancet 2008

• Nutrition in AP
  – SNAP (NCT00580749)
  – Petrov M, Br J Surg 2009

• Long term Endocrine / Exocrine risk
  – Pezzilli R, HPDI 2009
  – Symersky T, JOP 2006

• Secondary Prevention
  – Alcohol cessation: Nordback I, Gastro 2009

• High volume Centers – mortality benefit
  – Singla A, Gastro 2009
Introduction: Chronic Pancreatitis

• No definite medical treatment
• Epidemiology is becoming more clearly defined
• Basic Science
  – Improved understanding of PSC mediated fibrosis
  – Impaired adaptive intracellular response
• Risk Factors
  – Smoking association with CP
  – Alcohol cessation, binge drinking
• Long term complications
  – Diabetes independent risk factors
  – PEI - Enzyme dose adjustments
• Pain Management

Basic Science

• Proteomic characterization of PSCs
  – Paulo J, J Proteomics 2011

• Calcium-dependent signaling pathways
  – Won J, Mol Biol Cell 2011

• Anti-oxidants beneficial *in vitro*
  – Jiang F, Pancreas 2011
  – Li X, Pancreatology 2011
Basic Science

- Angiotensin II activates PSCs
  - Sakurai T, Pancreatology 2011

- Alcohol withdrawal promotes PSC apoptosis and regression of fibrosis
  - Vonlaufen A, Gut 2011

- UPR may serve as a pivotal adaptive mechanism to maintain pancreatic health in response to noxious stimuli
  - Lugea A, Gastro 2011
  - Hess D, Gastro 2011

Chronic Pancreatitis

- Incidence 4 cases/100,000 person-years
  - Increasing due to diagnostic imaging utilization

- Prevalence 42/100,000 person-years

- 50% alcohol

Yadav D, Am J Gastro 2011
Chronic Pancreatitis

- Cigarette smoking
  - Strong association
  - Duration more important than daily dose
  - Progression of disease
  - Six-fold increase in CP mortality
    - Yadav D, Am J Gastro 2011
    - Sadr-Azodi O, Gut 2012
    - Nojgaard C, Pancreas 2011

Chronic Pancreatitis

- Alcohol
  - 3% of adult alcoholics
  - Co-factors necessary to induce pancreatic damage
  - Sensitizes acinar cells
  - Activates the UPR but needs additional genetic or environmental “effector” to induce acinar cell injury
  - May alter cell protective/adaptive capacity
    - Nojgaard C, Pancreas 2011
    - Philip V, Clin Gastro Hep 2011
    - Lugea A, Gastroenterology 2011
Chronic Pancreatitis

- Diabetes
  - Type IIIC1
  - Insulopenia
  - Glucose intolerance and insulin resistance may also co-exist
  - 47% incidence; increases with age
  - Predictors: calcifications, distal pancreatectomy, smoking, age
    - Wang W, Pancreas 2011

Chronic Pancreatitis

- Exocrine Insufficiency
  - New preparations
    - Coated: Creon, Pancreaze, Zenpep, Ultresa
    - Uncoated: Viokace
  - 30,000 IU = 90,000 USP
  - Give more enzymes 90,000 with 25g fat in meal
    - Dominguez-Munoz J, Clin Gastro Hep 2011
    - Med Lett Drugs Ther 2011
Chronic Pancreatitis

• Pain Management
  – Surgery superior to endoscopy
    • Cahen D, NEJM 2011

  – Pregabalin decrease narcotic requirement and pain
    • Side effects drunk, light-headedness
    • Olesen S, Gastro 2011
    • Olesen S, APT 2011

Chronic Pancreatitis

Pain Management continued

- Total pancreatectomy
  • Careful selection – narcotic use, DM, PEI
  • Hereditary pancreatitis
  • Bellin M, Clin Gastro Hep 2011

  – Central sensitization
    • Frokjaer J, Gut 2011
    • Frokjaer J, Clin Gastro Hep 2012