EVIDENCE-BASED
CARE SHEET

Pancreatitis, Acute: Nutritional Support

What We Know

- Acute pancreatitis (AP) is typically a potentially fatal inflammatory disorder of the pancreas that develops rapidly and involves multiple organ systems.[2, 4, 8] (See *Quick Lesson About…Pancreatitis, Acute*)
  - AP can be mild or severe, with a clinical course that varies widely among patients
    - Recovery from mild AP is usually uneventful after only supportive treatment (e.g., fluid replacement and pain control)
    - Severe AP involves widespread inflammation and multiple complications that increase the risk for mortality significantly
      - In addition to the basic supportive care necessary in mild AP, aggressive treatment strategies for severe AP include intensive monitoring of all physiologic systems, prevention of complications, respiratory assistance, nutritional support, and surgical intervention, if necessary
- AP generally develops as a result of a disorder related to the obstruction or misdirected secretion of pancreatic enzymes (which digestive function is normally limited to the small intestine). AP can be caused by any one or more of the following:[2, 3]
  - Pancreatic duct obstruction
  - Hypersecretion of pancreatic enzymes
  - Premature (i.e., before reaching the intestine) activation of pancreatic enzymes as they enter the bile duct
  - Reflux (backup) of pancreatic enzymes and bile into the pancreatic duct
  - Autodigestion (i.e., digestion of tissues by their own secretions) of pancreatic tissue, leading to inflammation
    - Severe AP is characterized by autodigestion that
      - damages more pancreatic tissue than that of mild AP
      - spreads to tissue surrounding the pancreas
- Autodigestion in severe AP causes hypercatabolism (i.e., excessive metabolic breakdown of nutrients—the opposite of anabolism, which constructs and converts nutrients for physiological repair or growth) that results in rapid weight loss, wasting, and increased risk for mortality[1, 3, 13]
  - Treatment of both mild and severe AP includes restricting all oral intake because eating and drinking may further stimulate secretion of pancreatic digestive enzymes[3]
    - Patients with severe AP require nutritional support to combat hypercatabolism and prevent the loss of lean body mass[1, 13]
    - Patients with mild AP typically do not need nutritional support because they recover and can begin eating normally within 5–7 days; hypercatabolism and malnutrition are rare in mild AP[13]
      - When symptoms subside, patients with mild AP should initially follow a diet comprised primarily of carbohydrate and protein food sources; dietary fat should be increased gradually in accordance with individual tolerance[3]
      - Eating heavy meals and drinking alcoholic beverages should be avoided
- Historically, parenteral nutrition (i.e., providing nutrition via the vascular system) was the feeding method of choice in the treatment of severe AP; however, enteral nutrition (i.e., within the intestines) is the current feeding method of choice. Compared to parenteral feeding, enteral feeding
  - is less expensive[12]
  - is safer[12, 13] and is associated with a lower incidence of complications such as infection,[4] sepsis,[4] thrombosis,[13] organ failure,[10, 13] and metabolic abnormalities[11] (e.g., hyperglycemia)
  - is associated with shorter inpatient length of stays and better clinical outcomes[1, 10]
  - more effectively maintains intestinal blood flow, which prevents atrophy of the intestinal mucosa and maximizes the intestinal barrier function (i.e., of reducing bacterial translocation)[9, 10]
    - There is no consensus regarding the optimal time to initiate enteral feeding[11]
    - Patients who are unable to tolerate enteral nutrition may receive parenteral feeding if necessary; some

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patients are given a combination of enteral and parenteral nutrition[9]
    - Total parenteral nutrition (TPN), alone or in addition to enteral nutrition, may be appropriate for patients who are severely malnourished or have complications (e.g., paralytic ileus)
- Currently, enteral feeding is most commonly given by nasojejunal tube to patients with severe AP, although there is increasing evidence supporting the viability of feeding via nasogastric tube[5, 6, 10]
    - Nasogastric feeding is recommended in the management of patients with severe AP because it has several practical advantages. Compared to nasojejunal feeding, nasogastric tube feeding[5, 6]
        - reduces pancreatic stimulation
        - requires less effort for the initial tube placement and maintenance (nasojejunal tubes require endoscopic placement and replacement)
        - is simpler to use during routine feedings
        - becomes dislocated less frequently
        - is less expensive
    - The composition of standard enteral nutrition formulas may cause pancreatic stimulation because they include fat primarily in the form of long-chain triglycerides (LCTs; e.g., butter) instead of medium-chain triglycerides (MCTs; found naturally in milk fat, palm oil, and coconut oil), which are absorbed more easily and utilized as energy more quickly[11]
        - Elemental or semi-elemental nutrition formulas containing free amino acids, di-tripeptides, and fat primarily in the form of MCTs are less likely to cause secretion of pancreatic enzymes[11]
        - The use of immune-enhancing enteral formulas (e.g., those enriched with probiotics [i.e., live microorganisms] and/or omega-3 fatty acids) has not been established to be more beneficial than the use of nonenriched elemental/semi-elemental formulas[5]
            - Recommended nutrient requirements for patients with severe AP are as follows:[5, 7]
                - Calories: 25–35 kcal/kg/day (1 kg = 2.2 lbs; 1 lb = 0.45 kg)
                - Protein: 1.2–1.5 g/kg/day
                - Carbohydrates: 3–6 g/kg/day
                - Fat: 2 g/kg/day (requirement may be reduced if triglyceride levels are abnormal)

What We Can Do

- Become knowledgeable about nutritional support in AP so you can accurately assess your patients' personal characteristics and health education needs; share this information with your colleagues
- Remain informed about the latest research results on the value of enteral nutrition and the safety of nasojejunal and nasogastric routes
    - Intensively monitor the disease status and nutritional treatment for your patients with AP for evidence of continued pancreatic stimulation
        - Educate your patients with AP that enteral nutrition support is essential to minimize complications and optimize recovery; explain the mechanics of the feeding tube and related equipment
        - Assess your patients' ability to cope with a life-threatening disease; provide emotional support and request a referral to a mental health clinician, if appropriate
- Collaborate with your hospital's continuing education department to provide education about current research and recommendations for nutritional support in AP to clinicians of all specialties

Note

Recent review of the literature has found no updated research evidence on this topic since previous publication on March 12, 2010.

Coding Matrix

References are rated in order of strength:

M Published meta-analysis
SR Published systematic or integrative literature review
RCT Published research (randomized controlled trial)
R Published research (**not** randomized controlled trial)
C Case histories, case studies
G Published guidelines
RV Published review of the literature
RU Published research utilization report
QI Published quality improvement report
L Legislation
PGR Published government report
PFR Published funded report
PP Policies, procedures, protocols
X Practice exemplars, stories, opinions
GI General or background information/texts/reports
U Unpublished research, reviews, poster presentations or other such materials
CP Conference proceedings, abstracts, presentations

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