Nutricion in Surgical Patients

17a. Nutrition in surgical patients

NUTRITIONAL SUPPORT

Poor nutrition results in

- ↑ postoperative morbidity & mortality
- Poor wound healing
- ↓ resistance to infection

Causes of malnutrition

- ↑ catabolism (eg: sepsis, major surgery with complications)
- ↑ losses (eg: chronic liver disease loss of albumin, protein-losing enteropathy, output from stoma)
- ↓ intake (eg: dysphagia, vomiting, sedation, coma)
- ↓ absorption (eg: intestinal fistulae, short bowel syndrome-SBS)
- Other causes (eg: major trauma, chemotherapy, radiotherapy)

Indications for nutritional support

- Pre-op malnourished patients
- Post-op malnourished patients
- Patients with sepsis or major post-op complications
- Patients with fistulae
- Patients with chronic liver disease
- Patients undergoing chemotherapy or radiotherapy
- Patients with SBS or malabsorption syndrome

Evaluation of nutritional status

- History: Duration of illness. Weight loss. Change in appetite. Dietary habits.
- Physical examination: General appearance. State of hydration. Loose skin folds. Loss of skin contours. Muscle wasting. Peripheral edema.
- Weight: BMI <20kg/m2
- Anthropometric measurements: Triceps skin fold thickness. Mid arm circumference.
- Laboratory tests: Hb. Serum albumin. Serum iron.

Administration of nutritional support

- Oral nutrition
- Enteral nutrition: Patients with a functioning small bowel unable to take nutrients by mouth (eg: seriously ill, unable to swallow, mouth lesions eg; herpes)

1. Fine-bore NG tubes: Liquidized food or supplements are given via tube passed through nose into stomach.
2. Surgically created gastrostomy or jejunostomy: Long-term enteric feeding.

In both methods the feed is dripped slowly into GIT. Bolus feeding should be avoided as it gives marked diarrhea. And if given via NG tube in large volumes, may result in regurgitation & aspiration pneumonia.

- Parenteral nutrition: Used where GI function is inadequate. Administered via venous system.

1. Peripheral line: Short-term feeding (up to 5days). Solutions used must be of a special type, which causes little thrombophlebitis. May be used preoperatively for malnourished patients which oral nutrition is unsatisfactory eg; malignant strictures of esophagus.
2. Central line: Used for total parenteral nutrition (TPN). For short-term use, a percutaneous internal jugular line may be used. For long-term & permanent nutrition, a tunneled subcutaneous line (Hickman) should be used. Hypertonic solutions are infused via catheter into a large-bore vein with good flow to prevent thrombophlebitis.

TOTAL PARENTERAL NUTRITION (TPN)

This is usually provided in 3L bags. This provides all nutrients required for a 24h period. Controlled rates of administration are essential and this is achieved either by a special counting device attached to the drip line or via an infusion pump. Any additional fluid & electrolyte to restore losses, or administration of drugs, should be via separate peripheral line.

Components of TPN

- Calories: Combinations of carbo. & fat. Most patients require appox. 2000kcal/day or more if they have sepsis or burns.
- Protein: Supplied as amino acids. Require about 15g/day or 30g/day in hypercatabolic states.
- Water
- Vitamins
- Electrolytes (eg: Na, K, Ca, P, Mg)
- Trace elements (eg: Zn, Cu, Mn)

Monitoring TPN

- Blood sugar, U&Es should be checked daily.
- Blood sugar monitored 6-hourly until fluid & nitrogen balance is obtained.
- LFTs, Ca, P & FBC checked 2x weekly.
- If patients having fever, blood culture is obtained.

Complications of TPN

- Catheter related: Pneumothorax or arterial puncture. Air embolism. Thrombosis of central vein.
- Metabolic: Fluid overload. Hyperglycaemia. Hypoglycaemia. Electrolyte abnormalities. Hepatic cholestasis.

Home TPN

- It is practicable for long-term TPN in ambulatory patients.
- Patients with SBS are most appropriate.
- Hickman tunneled central line is used.
- The feeding solution is administered during night and the catheter disconnected during day to allow activity.
- May need 24h administration, depending on patient’s requirements.