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GENERAL SURGERY

Immunonutrition

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Over the past decade, provision of nutrients has improved patient outcome. It has become clear that immunity depends greatly on nutritional status. The link between nutrition and immunity has attracted an enormous interest in clinical practice. In malnutrition, nutritional intervention can improve immune function. In addition, recent research has revealed that specific nutritional strategies can modulate the immune response and enhance immunity. Such methods are now collectively termed immune-enhancing nutritional support. New strategies for immunonutritional support include early enteral feeding, special nutrients such as glutamine, arginine, n-3 fatty acids and exogenous anabolic hormones. All of these nutritional support methods can modulate the process of inflammation and the immune response, leading to improved outcome for immunocompromised patients. This article reviews the importance of immunonutrition and the roles of several specific nutrients in immune function.

There is serious relationship between immune function and nutritional status. In 1983, we individually and originally developed and introduced "Preoperative Nutritional Index for Surgery: PNIS = 0.147 x (% weight change) + 0.046 x (% ideal body weight) + 0.010 x (% triceps skinfold thickness) + 0.051 x (normotest)" as one of the risk factors based on preoperative nutritional status before hepato-biliary and pancreatic surgery. We evaluated the preoperative immune functions such as peripheral total lymphocyte count, serum endotoxin level, fibronectin, and PPD test, and determined the relationship between these indicators and PNIS in patients associated with preoperative hepatic dysfunction. In result, patients associated with hepatic dysfunction had both of malnutrition and immunosuppression. In addition, there were significant relationships between these immune function tests and PNIS. Thus, these results show that immune function depends on nutritional status.

Nutritional route affected host immune defense by modifying local and systemic cytokine production. In a rat peritonitis model, the 48 hours survival rate of the enteral group was 60 per cent, markedly better than that of parenteral group as 22 per cent. It was also investigated whether preoperative nutritional routes influence the systemic cytokine response and serum endotoxin level in patients who had undergone hepato-biliary and pancreatic surgery. Plasma IL-6 and endotoxin levels were marginally higher preoperatively and were significantly higher on POD 1 in the preoperative TPN group than in the enteral route which may promote maintenance of immunologic function in the immunocompromised host.

Nutrition is a critical determinant of immunocompetence. The link between nutrition and immunity has attracted an enormous interest in clinical practice. Nutritional intervention can improve immune function in malnutrition. Recent studies have shown that a single nutrient can have an impact on immune responses. Such specific formulas include n-3 fatty acids, glutamine, arginine, taurine, nucleotides, some hormones, vitamins and trace elements. In this article the role of n-3 fatty acids, glutamine, arginine, taurine, growth hormone and insulin-like growth factor in immune function are reviewed. The new modalities of immunonutrition can be beneficial for prevention and

treatment of infection. Especially specialized diets containing these immunomodulatory nutrients may be one of the most important and effective therapies for patients with infections, trauma and cancer. Future studies are warranted to define patients populations for which these immune-enhancing nutrients would be most appropriate.

Factors Associated with the Preference to Undergo Mastectomy or Breast Conservation Surgery for the Treatment of Breast Cancer in Patients of a Tertiary Care Hospital Breast Clinic

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Objectives: 1) To identify significant demographic and certain psycho-social factors associated with the preference to undergo mastectomy or breast conservation surgery for the treatment of breast cancer in a sample of patients seen at a tertiary care hospital breast clinic. 2) To identify significant demographic and psycho-social factors associated with the preference to again undergo mastectomy or breast conservation surgery and the feeling of need for improvement of the external appearance by using prosthesis insert beneath their brassier (PIB) or breast reconstruction.

Methods: A questionnaire consisting of items measuring demographic variables, preference to undergo mastectomy or breast conservation surgery, the feeling of need for PIB or breast reconstruction, perceived or actual problems with family, spouse, marriage, and self-confidence or self/body-image, was distributed to a sample of patients of 2 groups: those with benign or malignant breast disease not yet surgically treated (203 patients) and those with breast cancer within 3 months or later than one year after mastectomy (60 patients). In all 263 questionnaires returned, data were analyzed separately for the two groups, using univariate (chi square) analysis and multiple logistic regression analysis to identify factors associated with treatment preference for the untreated group, and canonical correlation analysis to identify factors associated with the combination of treatment preference and the feeling of need for PIB in the mastectomy group.

Results: Sixty-nine per cent of the untreated group preferred breast conservation to mastectomy for the treatment of breast cancer. Univariate and subsequent multiple logistic regression analysis for the untreated group revealed that only age (<40 years), problems with self-body image (yes), marital status (single) and occupation (student or government officials) were significantly associated with the preference to undergo breast conservation surgery [odds ratios (95% confidence interval) were 2.94 (1.5-5.75), 4.18 (1.88-9.31), 2.27 (1.14-4.52) and 2.68 (1.21-5.93) respectively]. In contrast, 71 per cent of the mastectomy group preferred mastectomy to breast conservation, though 45 per cent felt the need for PIB. Factors associated with preference to undergo breast conservation and need for PIB were age (<40 years), educational status (higher than high school), and (perceived) problems with self image (yes) (canonical loadings 0.51, 0.52, 0.58, respectively, overall canonical correlation = 0.66, P-value 0.014, first root).

Conclusion: Factors associated with the preference for mastectomy or breast conservation for treatment of breast cancer include age, problems with self/body image, martial status and occupation, in patients not yet treated for their breast problems. In postmastectomy patients, on the other hand, factors associated with the treatment preference and feeling of need for PIB and breast reconstruction include age, educational status, and problems with self/body image.

Nutritional Aspect in Critical Care Patients

C Chuntrasakul

The purpose of nutrition support during critical care is to prevent loss of lean body mass by maintaining adequate nutrition status. It may improve the outcome of care, reduce complications and shorten length of hospital stay. The majority of the critically ill patients will develop impaired tissue function and structure due to starvation, inflammatory response, organ failure and immobility. Nutrition depletion in critical illness may begin before admission to the intensive care unit during the preoperative stay in general wards and relating with the illnesses. Starvation is an important factor and relating with inflammatory response. We have found that greater than 50 per cent of meal that being delivered to the patient was discarded. The death from starvation in the previous healthy human will occur after 60 days. The inflammatory mediators such as TNF, IL-1, IL-2, PAF will lead to proteolysis and lipolysis. However, patients who become starvation within 2 weeks will demonstrate impaired muscle power as well as respiratory and cardiac function, delayed wound healing and reduction of digestive and absorptive function of the intestine. There are several simplified methods for estimating energy expenditure such as Harris-Benedict equation multiplied by stress factors (calculated) or measured expenditure by indirect calorimetry. The results showed that the measured expenditure was 14.1 per cent below calculated energy expenditure for

patients with sepsis and 16.1 per cent below the measured expenditure in multiple trauma patients. There have been several reports in the literature of overfeeding to the extent of causing difficulty in weaning from the ventilator, elevated body temperature and lipogenesis. From overfeeding, there will be the attributable adverse effects such as excess CO_2 production and fatty infiltration of the liver, suppression the immune function and so on. The risk of overfeeding the patient during critical illness must be considered larger than the risk of under feeding. The appropriate nutrition support requires careful and continuous nutrition and metabolic assessment including measurement of energy expenditure, where possible, and monitoring clinical and laboratory parameters.

Nutrient Substrate Provision:

Glucose: Patients who receive glucose alone in large quantities will have several physiologic abnormalities; the recommendation for glucose is to provide no more than 70 per cent of non-protein calories or no more than 5 gm/kg body weight/day.

Lipid emulsion: The composition of intravenous lipid emulsion that has traditionally been used are the compositions of a mixture of long chain fatty acids in the form of triglycerides derived from soil bean oil. Standard emulsions provide the source for essential fatty acids (LCT) during the long-term parenteral support as well as caloric sources. LCT requires carnitine for transportation across the mitochondrial membrane. The results from animal studies suggested that higher concentration of polyunsaturated fatty acids may induce enhanced inflammatory reactions as well as increased production of free radicals and depression of the immune defense. The alternative lipid emulsion should be containing of some proportion of medium chain triglycerides (MCT), omega-3 fatty acid (marine or fish oil) or monounsaturated fatty acids (olive oil). The MCT is oxidized more rapidly and is not dependent on carnitine for mitochondrial transport. It will improve the immune system function and better stability of cellular membranes. Omega-3 fatty acids is clearly shown to attenuate the inflammatory response, increased antioxident (Vit. E) supply during administration of polyunsaturated fatty acids and down-regulation cytokines response to trauma and sepsis may be achieved.

Nitrogen substrate: The goal of nitrogen supply is to limit muscle catabolism and maintaining adequate nutrition supply to the liver for synthesis of certain proteins. Branched-chain amino acids (BCAA) mainly metabolized by skeletal muscle, regulate the muscular protein synthesis and degradation. The results of clinical trials of amino acids solutions enriched with BCAA are some what contradictory. There is not sufficient evidence to recommend the use if BCAA in critically ill patients as well in multiple organ failure. Positive nitrogen has been attained more rapidly with BCAA supplemented parenteral regimens during the first 4 days after major insult. BCAA enrichment has been reported to be of special importance for patients with hepatic encephalopathy. The improvement of encephalopathy was noted but clinical outcome remained unchanged. Current inclusion of 18-22 per cent of protein intake seems to be adequate to meet the requirements of the critical care patient.

Glutamine: Glutamine has been shown to be an important substrate for rapidly dividing cell population. It is the most abundant free amino acid and it serves to transport ammonia and amino groups between peripheral tissues and splanchnic area. Depletion of glutamine in muscle during critical illness and injury is well known. Patients undergoing bone marrow transplant when receiving glutamine supplemented parenteral feeding will show reduction of infectious parameters and hospital stay.

Arginine: Provision of arginine will give positive effect on immune systems, lymphocytes and other tissue with rapid turnover. It is a precursor of nitric oxide (NO) which has become a new therapeutic modality in airway obstruction and possibly in the resolution of pneumonia.

Other adjuvant therapies, such as insulin and growth hormone, insulin seems to affect the rate of protein degradation and when given with BCAA will increase muscle protein synthesis.

Growth hormone supplementation in critically ill or postoperative patients will improve nitrogen economy and lower the rate of urea synthesis.

Early Enteral Intervention:

Enteral feedings require that the patients gastrointestinal tract be functional, at least to some degree. Better proliferation of intestinal mucosa is seen in enteral feeding patients as well as the stimulation of GI hormone secretion, this may prevent bacterial translocation. The enteral nutrition should be started as early as possible in the ICU, preferably by a feeding catheter placed in the upper jejunum.

Nutritional Requirement of the Patient Receiving Ventilatory Support

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T Higashiguchi

Malnutrition has a well defined effect on pulmonary physiology and pulmonary dysfunction may lead to nutritional depletion. Recently, nutritional support is used as a part of the routine therapeutic armamentarium for patients with acute and chronic respiratory insufficiency.

Since nutrients have pharmacologic properties and physiologic actions, these have to be considered, and tailored to the type of pathophysiology and stage of respiratory failure. Status of respiratory drive, respiratory muscle strength, air trapping, parenchymal inflammation, extravascular lung water (EVLW) and circulatory competence are all relevant. Nutritional support increases metabolic demand and respiratory drive with progressive improvement in respiratory muscle and parenchymal function. In contrast, hypoalbuminemia induces lung edema increasing EVLW because of decrease of colloid hydrostatic pressure gradient (CHPG). Thus nutritional support may prevent or treat the lung edema increasing CHPG by improvement of hypoalbuminemia. Carbohydrate may increase CO_2 production and RQ, especially in injured or septic patients, which may result in increased ventilatory demand. Intravenous fat emulsions are an accepted alternative substrate. Recent study suggests that their quantity and quality may affect pulmonary vasomotor tone and pulmonary inflammation due to changes in eicosanoid metabolism. These properties may have implications to both severe chronic diseases and acute respiratory failure. Amino acid infusions, especially the BCAA-enriched formulas, result in a dose-dependent increase in ventilatory drive. In acute phase, calories are supplied in the 1-1.2 REE range; once the patient has been stabilized, this is increased to 1.4-1.7 REE. Glucose is supplied in the lower range of the obligatory need (2-4g/kg/day) and lipid, which has an equivalent nitrogen-sparing effect, is infused 12-24 h daily to provide 30-60 per cent of daily calories. Amino acids are infused at 1-2 g protein/kg/day. A good response to a proper nutritional regimen in respiratory insufficiency is accompanied by diuresis and a rise in serum albumin in addition to normolization to respiratory drive and muscle endurance. On the other hand, long-term ventilation without enteral diet induces high ratio of pneumonia or sepsis probably due to induction of bacterial translocation. Enteral nutrition should be recommended to perform the nutritional support for patients associated with respiratory disorders. Even a small amount of nutrients administered through the gastrointestinal tract may provide the activation of intestinal immune system and the improvement of gut barrier dysfunction.

Transposition of The Lingual Thyroid: A New Alternative Technique

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Background: In symptomatic lingual thyroid, surgical transposition of the gland with its vascular supply intact seems to have superior results to those obtained by surgical ablation and autotransplantation. However, the procedure should be simple, reproducible, reliable, and cause less morbidity as well as providing simple access to evaluation of the gland post-operatively.

Methods: We present the case of a 33-year-old female with lingual thyroid who was treated by transposing the whole gland to the lateral pharyngeal wall through a lateral pharyngotomy incision. The transposed lingual thyroid was nourished by a random tongue muscle pedicle flap.

Result: At the 5-month postoperative stage, iodine scanning reviewed the radioactivity uptake of the transposed gland. Even though the patient was not on postoperative thyroid hormone supplement, her thyroid function gradually returned to normal after initially showing hypothyroid postoperatively.

Conclusion: This new technique for transposition of lingual thyroid is simple and reliable and should be considered as an alternative method in the management of symptomatic patients.

Popliteal to Dorsalis Pedis Bypass for Limb Salvage in Diabetic Patients. Initial Experience at Phramongkutklao Hospital

T Temudom, J Kasemmongkol, S Kiatkajornchaikul, N Wora-Urai

Tibioperoneal occlusive disease may pose technical challenges for operative revascularization, particularly in diabetic patients with critical limb ischemia. Our aim was to review our initial experience with a popliteal to dorsalis pedis bypass for limb salvage in these patients.

From September 1998 to May 1999, 7 diabetic patients underwent popliteal to dorsalis pedis bypass using saphenous vein grafts. Prior to revascularization, all patients were at risk of limb loss; digital gangrene in 5 patients and nonhealing ulcer in 2 patients

Pt. No	Age/ Sex	Co-morbid	Lesions	Graft	FU (mo)	Morbidities
1	82/m	CAD	Gangrene	Nonreversed GSV	8	
2	75/m	CAD	Gangrene	In situ GSV	8	Wound hematoma
3	65/m	HTN	Gangrene	In situ GSV	5	
4	60/m	CAD, CVA	Gangrene	Reversed GSV	4	
5	57/F	HTN	Gangrene	In situ GSV	2	
6	58/F	-	Ulcer	Nonreversed GSV	2	Graft thrombosis
7	57/F	-	Ulcer	Reversed GSV	2	UTI

Immediate limb salvage was achieved in all patients. There was no perioperative death. One early graft thrombosis caused by external compression (encircling bandage) was successfully managed by graft thrombectomy.

Popliteal to dorsalis pedis bypass shows promise for salvage of ischemic limb during early experience and short term follow up. More extensive experience and long term follow-up are needed to establish its role relative to a conventional method.

Outcome of Surgical Treatment of Adult Choledochal Cyst

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Choledochal cyst is an uncommon disease in adult. Seventeen patients, treated during October 1990 til January 1999 at Siriraj Hospital are retrospective studied. Clinical manifestations, operative procedures and short-and long-term outcome of treatment are analysed. There were 15 females and 2 males, with ages ranging from 16-45 years. Only 2 patients (11.8%) had the clinical triad of jaundice, abdominal pain and palpable mass. Clinical pancreatitis was presented in 3 patients (17.6%). Ten patients were classified as type I (58.8%), 6 type IV (35.3%) and one type V (5.9%) according to Todani's classification. Cholangiocarcinoma was encountered in one patient (5.9%). Extrahepatic cyst excision with a Roux-en-Y hepatico-jejunostomy was performed in 16 patients with type I or IV (94.1%). There was neither operative death or hospital death. Six patients were lost to follow-up (35.2%), the remaining 10 are still well. Median follow-up was 3.2 years. The patient with cholangiocarcinoma died 2 years after surgery. Excision of the cyst followed by biliary enteric anastomosis is still the mainstay of surgical treatment, but should be done before the development of carcinoma.

Local Anesthesia Herniorrhaphy

T Thong-ngam

Background: There were many methods of anesthesia which were used in herniorrhaphy. In this study, the reporter would like to propose a much safer method and lower cost in treating patients; that was local anesthesia herniorrhaphy.

Methods: The prospective study of 55 inguinal hernia patients who presented in Surgical Division at Chachoengsao Hospital from September 1996-March 1999 was carried out. We used lidocaine combined with bupivacaine in the anesthetic technique.

Results: Fifty-five patients were all men. The mean age was 52.89 years (range 9-84). Thirty one were out-patients and twenty four were in-patients. Among all 24 in-patients, eighteen came in as emergency. Only two emergency patients received spinal anesthesia. No complication occurred in 54 patients except only one had hematoma. There was no evidence of infection or serious complications.

Conclusions: Local anesthesia herniorrhaphy had many advantages to patients, including low morbidity, effective repair and significant cost reduction.

Key word: local anesthesia, herniorrhaphy

Pulse Dye Laser Lithotripsy for Large Biliary Tract Stones

S Panpimanmas, S Chantawibul, T Ratanachu-ek

From 1997-1998 the first series of 21 patients with large biliary tract stones (1.5-4.0 cm with average 2.5 cm in diameter) underwent endoscopic stone extraction by using combination of ERCP and EST with automatic stone-tissue detection pulse dye laser. Male = 8, Female = 13, average age = 57.5 years (32-83) and nature of stones were mostly primary stones (71.4%). Laser fibers were controlled by balloon catheter with fluorocope (blind technique) in 16 cases and by mother-baby scope system in 5 cases. The result in successful fragmentation of stones was 87.5 per cent in blind technique and 100 per cent in mother-baby scope technique. Temporary stents were used in the patients who had severe cholangitis and those who required more than one session of lithotripsy (19%). Complications consisted of controllable cholangitis in 2 cases (9.5%) and there was no mortality. We conclude that stone-tissue detection lithotripsy is very safe and effective in the patient with large biliary tract stones and high surgical risk especially via direct mother-baby scope system.

Palliative Esophageal Stent and Surgery in Esophageal Malignancy

A Monomaipiboon, Y Sangpayup, A Wanichayathanakorn, W Stapanavatr

Introduction: Esophageal malignancy is one of the most aggressive malignancy. Unfortunately, majority of the patients present with uncurable disease. Then palliative treatment for relief of dysphagia symptom is the mainstay of treatment. Surgical management either esophagectomy or esophageal by pass alone remains a challenge to surgeons.

In spite of advances in surgical management, morbidity and mortality are still high especially in the patients who are frequency elderly, debilitated, undernourished and have a number of concomitant serious clinical conditions. The other palliative treatment especially esophageal stent can be safely used in inoperable, unresectable, recurrence or against the surgery.

Objective: To compare mortality, morbidity, hospital stay, operative time, improvement of dysphagia and late complications between esophageal stent and surgical resection.

Research design: Retrospective study

Patient selection: Forty-four patients with esophageal carcinoma between April 1993 to April 1999 in Department of Surgery, Vajira Hospital were included in the study. Surgical resection was performed in 23 patients and esophageal stent was performed in 21 patients.

Method: Data from the medical records of all 44 patients were used to analyse and study of their outcome.

Result: All patients in both groups were categoried in stage III-IV according to pathological staging and intraoperative findings in surgical group and according to radiological and clinical staging in esophageal stent group. The mortality rate in surgical group was 29.1 per cent (7/24) and in esophageal stent was 4.7 per cent (1/21). The morbidity related procedure in surgical group were anastomotic leakage 37.5 per cent (6/17) and in esophageal stent were esophageal perforation 0 per cent, stent displacement 9.5 per cent (2/21), stent obstruction from food impaction 19 per cent (4/21), tumor overgrowth 9.5 per cent (2/21). The operative time, length of admission (post procedure period and ICU period) in surgical group are 328.04 mins. (195-720 mins), 30.39 days (10-70 days), 9.78 days (0-63 days), and in esophageal stent are 61.19 mins (30-140 mins), 5.85 days (1-20 days), 0 day.

Conclusion: Esophagectomy or esophageal by pass alone in esophageal malignancy should be used in highly selected patients and very experienced surgeons because of high mortality and morbidity rates, long time consuming not only the operative time but also post operative period. An alternative treatment especially esophageal stent should replace surgery in advanced cases of esophageal malignancy.

Supine Versus Prone Position for Diagnostic and Therapeutic ERCP

A Manomaipiboon, S Ampornareekul, A Wanichayathanakorn, W Nggitphaiboon, P Kamjonkijjakan, V Hirunvivatkun

Introduction: Both diagnostic and therapeutic ERCP are necessary for the patients with known or suspected hepatobility and pancreatic diseases. These procedures are complex and performed routinely in prone position. Most patients receive conventional sedation. In minority cases, general anesthesia is necessary for children, some difficult patients, complex procedures and peroperative. Concern about the safety of the prone patient during sedation or anesthesia is not new. During sedation or anesthesia associated with aging or concomitant diseases, significant physiologic and functional hazards may occur in the prone patients.

Objective: To compare the successful rate and complication rate of both diagnostic and therapeutic ERCP between conventional prone and supine position.

Research design: Prospective study

Patient selection: One hundred and eighty patients with known or suspected hepatobiliary or pancreatic disease received both diagnostic and therapeutic ERCP between March 1995 and April 1999 in Department of Surgery, Vajira and Prapinklao Hospitals.

Method: All 180 patients were divided into two groups, the first was performed with prone position and the second with supine position. After successful diagnostic ERCP, the therapeutic ERCP (EST only, EST with stone extraction, EST with stent insertion) were performed in indicated patients. The successful rate and complication rate in both groups were compared.

Results: In prone position group, the successful rate in performing diagnostic ERCP was 91.1 per cent (82/90), therapeutic ERCP 93.9 per cent (31/33) and the complication was pancreatitis 4.4 per cent (4/90). CBD perforation 3.0 per cent (1/33). In supine position, the successful rate in performing diagnostic ERCP was 92.2 per cent (83/90), therapeutic ERCP 95 per cent (38/40), and the complication is pancreatitis 7.7 per cent (7/90), and bleeding 2.5 per cent (1/40). The successful rate and complication rate of both diagnostic and therapeutic ERCP in supine position are not different from the conventional prone position ($p>0.05$).

Conclusion: Both diagnostic and therapeutic ERCP can be performed effectively in supine position. Then it is very useful in the patient who require general anesthesia, close monitoring and peroperative medication.

Successful Removal of Common Bile Duct Stone in Patient after Billroth II Gastrectomy

S Manusnayakorn, C Sangsubhan, T Tanprayoon, K Chatamara

Endoscopic retrograde cholangiopancreatography (ERCP) is a useful diagnostic and therapeutic procedure.

For diagnosis, ERCP helps visualizing both common bile duct (CBD) and pancreatic duct (PD) pathology. Besides, ERCP still has an important role in current practice because it is also a therapeutic procedure, especially for patients who previously had operations on biliary tract. Such patients will have much higher morbidity on reoperation. The reported success rate of ERCP is between 46-92 per cent, which depends on many factors. One of the most obvious factors is previous Billroth II gastrectomy. The operation causes distortion of the anatomy of gastrointestinal tract so that reaching the papilla is difficult. Additionally, the papilla viewed by this approach is in reverse direction compared to normal patient, which makes it more technically difficult to cannulate the CBD. To obtain successful cannulation requires specially designed devices or special techniques. Such techniques include pushing the catheter against the duodenal wall to obtain correct access to the CBD and bending the tip of the endoscope. Even more difficult is to perform sphincterotomy in inverted position of the papilla because the typical sphincterotome cuts at the 11 o'clock position. The author reports successful cannulation and removal of CBD stones in a patient with Billroth II gastrectomy with balloon dilatation technique which eliminates cutting the papilla. This is probably the first report from Thailand.

Shelf Life of Steam Sterilized Surgical Instruments Packaged in Linen-wraps Versus Plastic-paper Bags

S Srisiri, P Phummisirikul, P Pongchailerk, V Duangsomkit, V Phummisirikul

Background: In our institution surgical instruments are sterilized by steam sterilization (Autoclave) wrapped in two layered linen packaging. Unused items must be resterilized every 2 weeks. However there have been recommendation in various textbook that this method of sterilization has a reliable shelf life of 7 weeks. Meanwhile, it has been quoted that plastic-paper combination packaging of surgical instrument has an expired date of one year for instruments that are seldom used. It is tempting to know whether sterilizing in linen versus plastic-paper packing is more cost effective

Objective: To compare the duration whereby surgical instruments remained sterile after autoclaving between two-layered linen packaging and disposable plastic-paper packaging.

Material and Method: Orthopedic screws were used in this experiment to represent surgical instrument. Seven hundred and thirty eight screws were divided into 3 groups. Group 1 consisted of 360 screws which were individually wrapped in a two-layered linen packaging. Group 2 also consisted of 360 screws individually contained in a disposable, heat-sealed, plastic-paper bag. Group 3 was the control and consisted of 18 screws which would not undergo any process of packaging and sterilization. All specimens in Group 1 and 2 were sterilized simultaneously by steam sterilization. All specimens were kept on open-shelf in the operative room without special treatment. Twently sterilized screws were taken from each of groups 1 and 2 for culture of both aerobic and anaerobic organisms every 2 weeks for the first 20 weeks and then every 4 weeks from the 20th to the 52nd weeks. One non-sterilized screw in group 3 was also cultured at the same time.

Results: From the day of sterilization up to the 52nd week, not even a single screw in Group 1 and 2 showed any growth of organisms in either aerobic and anaerobic cultures. On the other hand, all screws in group 3, which were not sterilized, showed positive growth in aerobic culture.

Conclusion: Small surgical instruments sterilized in two layered linen packaging as well as in disposable plastic paper bag could remain sterile for at least 52 weeks. Whether either of these two means of packaging could last any longer beyond this period of time was to be found out by further experimentation.

The Evaluation of Nutritional Assessment Methods in Esophageal Carcinoma Patients

V Chititavorn, A Chanvitan, P Puttawibul, N Apakupakul, C Pornpatanarak

Background: Malnutritional condition in surgical patients was generally recognized as important cause of serious postoperative complication. Nutritional assessment by serum albumin level (ALB), total lymphocyte count (TLC) and body mass index (BMI, kg/cm^2) are the routine preoperative data that can be used in the clinical practice. Dehydration of the patients was the most important confounder which cause data distortion. Arm muscle area (AMA) which reflect body protein was one of the anthropometric method that exclude the effect of dehydration but was not used routinely in clinical application.

Objective: The evaluation of anthropometric measurement by BMI, laboratory test by ALB and immunological function by TLC were compared with the evaluation of body protein mass by AMA in the esophageal carcinoma patients.

Design: Prospective crossectional method was designed in this study.

Materials and Methods: From May 1996 to May 1999,

130 cases of esophageal carcinoma patients were studied within 48 hours after admission. The midarm circumference and triceps skinfold thickness were measured by the same investigator. The calculation of AMA (limb circumference-p x skinfold thickness)^2 was classified as malnutrition when lower than 40 percentile. BMI lower than 20, ALB lower than 3.1 gm% and TLC lower than 1,500 cell/mm^3 were classified as malnutirtion. The disagreement data correlation was analyzed by Kappa analysis.

Results: There were no significant data correlation between AMA and ALB (8.7%), AMA and TLC (35.7%). The AMA and BMI was significantly correlated (77.9%, P=0.0008).

Conclusion: The malnutritional status measured by BMI was better than ALB and TLC. This may be applied to support the surgical patients.

Prognostic Factors for Histopathology of Intramural Metastasis of Esophageal Squamous Cell Carcinoma in Thailand

P Eaemharit, P Puttawibul, A Chanvitan, C Pornpatanarak, W Nopanitaya, N Apakupakul

The prognostic value of histopathology of intramural metastasis in esophageal squamous cell carcinoma was studied in resected specimens of 38 patients from a high-incidence region of southern Thailand who underwent esophagectomy between 1991 and 1994. Set of serial sections were cut every 0.5 cm starting from the proximal margin and continuing down to the distal margin and stained in haematoxylin and eosin. Intramural metastasis was found in 33 specimens (87%) and mean length of 3.1 ± 2.1 cm of proximal segment and mean length of 3.8 ± 3.3 cm of distal margin. Survival differences between groups and patients with varying intramural metastasis were evaluated (univariated analysis) by the Mantel-Cox test using strata software. Overall survival for 5 patients without intramural metastasis was significantly better than for 33 patients with intramural metastasis (P=0.03)

Prognostic Value of Tumor Vascularity and S-Phase Fraction After Surgical Resection of Esophageal Squamous Cell Carcinoma in Thailand

S Sahajarupat, C Pornpatanarak, A Chanvitan, S Koontongkaew, W Nopanitaya, N Apakupakul, P Puttawibul

Background: Todate there is no parameter that accurately predicts patient outcome and survival in esophageal squamous cell carcinoma which has fewer than 10 per cent of all patients survive more than 5 years. Intratumoral microvessel count, which represents a measure of tumor angiogenesis and cell-cycle abnormality on S-phase fraction have been associated with the overall survival of patients with a variety of malignancies. However, little is known about these factor in esophageal squamous cell carcinoma.

Method: In this study, surgical specimens from 38 primary esophageal squamous cell carcinoma were examined for S-phase fraction by flow cytometry, while tumor vascularity was evaluated by immunohistochemistry method using monoclonal anti-Factor VIII.

Results: Thirty-four (89%) of the 38 esophageal carcinoma have microvessel count more thna 0.4/mm^2 and % of S-phase fraction > 20 which were associated with significant reduction of overall survival in multivariate analysis.

Conclusion: The results of this study suggest that tumor vascularity and S-phase fraction may serve as a reliable prognostic marker for aggressiveness of disease.

The Role of Cytokine Therapy in MOF and Nutritional Consideration in Liver Failure

T Higashiguchi

Multiple organ failure (MOF) including hepatic failure is a critical condition developing in patients with overwhelming bodily injury resulting from major surgical insult, severe trauma, extensive burns, acute pancreatitis, and sepsis. It has recently become evident that the host response to such injury is the main pathogenetic factor contributing to the development of MOF. The proinflammatory cytokines such as tumor necrosis factor (TNF) and interleukin (IL)-1 are known to play a pivotal role in the pathogenetic mechanisms of MOF. In response to bodily injury, macrophages produce and release TNF and IL-1, which subsequently induce the production of other cytokines (IL-6, IL-8, etc.) and other endogenous chemical mediators. The resultant systemic inflammation such as systemic inflammatory response syndrome (SIRS) or compensatory anti-inflammatory response syndrome (CARS) may develop into MOF mainly through neutrophil-endothelial cell interaction when the primary injury is overwhelming or a second inflammatory insult such as sepsis triggers an exacerbated inflammation. These systemic inflammatory response is mainly induced in endotoxemia and/or sepsis. Several experiments demonstrated that antiendotoxin or anticytokine treatment was effective in improvement of the survival rate and the metabolic alter-

ations during endotoxemia or sepsis. Monoclonal antibodies directed at core epitopes and lipid A (E5, HA1-A) could not reproduce the beneficial effects. However, bacterial permeability increasing protein (BPI), endotoxin neutralization protein (ENP) and E5531 may have potential in the treatment of endotoxemia or sepsis. Our recent studies suggested that lipopolysaccharide binding protein (LBP) and soluble CD14 are key factors to inhibit the induction of liver failure due to the over production of inflammatory cytokines after severe stress such as extensive liver resection. LBP production peaks at 12 hours after extensive liver resection, and this is related to the excessive production of inflammatory cytokines have been produced, expression of LBP must be suppressed within 12 hours to inhibit this excessive reaction. It has recently been confirmed that the transcription factor NF-kappa B is involved in the up-regulation of a variety of proinflammatory genes and that cell-mediated immunity is down-regulated in the event of major bodily injury through a shift in the balance between T helper (Th) 1 and Th 2 cytokine response patterns. The molecular immunological mechanisms by which these factors participate in the development of MOF should be characterized. Another treatment using extracorporeal endotoxin removal is reported. Polymyxin B immobilized fiber (PMX) is now widely used in Japan for severe sepsis and septic/endotoxic MOF. PMX treatment improves the symptoms related to the septic state, a hemodynamic disorders, and cytokine levels including TNF, IL-6, and IL-10, with a decrease in endotoxin levels. Early performance of this therapy, especially within 12 hours after induction of endotoxemia, sepsis, and severe stress is helpful to improve the outcome of patients with MOF and liver failure. In addition, the prevention of bacterial translocation using early enteral nutrition or selective digestive decontamination including glutamine administration may be also useful for the treatment of MOF, because bacterial translocation is one of the most important causes and the second inflammatory factor of SIRS, CARS, and MOF. In conclusion, now, it may be difficult to improve the therapeutic outcome of MOF and liver failure by only the cytokine therapy, thus, multidisciplinary treatment, including endotoxin removal and nutritional support, is necessary for the survival of these patients.

Gastrostomy Button: Clinical Appraisal

R Ruangtrakool, TH Ong

We retrospectively studied all gastrostomy buttons inserted in the Royal Children's Hospital, Brisbane between 1988 and 1995. One hundred and thirty-two patients (M=60, F=72) and 388 buttons were analysed. Intellectual handicap and cystic fibrosis comprised the majority of patients. Thirty-three patients had gastrostomy buttons inserted primarily, whereas, 99 patients received gastrostomy buttons inserted into matured gastrostomy stoma. The average longevity of all determined buttons (n = 280) was 360.43 days (SD = 310.24). The first buttons inserted primarily (n = 25) had longer longevity than the first buttons inserted into matured gastrostomy stoma (n = 82) with statistical significance. The average longevity of subsequent buttons was significantly less than the first buttons. Valve incompetence and leakage of gastric content around the shaft were the most common causes of button removal. We concluded that the gastrostomy button is the method of choice for long term enteral feeding in children.

Predicting the Likelihood of Residual Disease in Women Treated for Ductal Carcinoma In-situ

A Ratanawichitrasin, S Grundfest-Broniatowski, LA Rybicki, RE Hermann, E Steiger, JP Crowe

Background: To identify women at risk for residual disease after excision of ductal carcinoma in-situ (DCIS), we assessed the relationship between the characteristics of the initial biopsy and the presence of residual DCIS at a subsequent operation.

Study Design: We identified 134 consecutive "paired" operations from 112 women who had undergone two or more operations for DCIS between February 1995 and December 1996. Cancer status of the margins, patient age and leading presentation, tumor subtype and grade, and the presence of multifocal-extensive disease were assessed as potential predictors.

Results: Residual DCIS was found 60 (45%): in 2 of 12 patients (17%) with negative margins, in 11 of 36 (31%) with close margins (<2 mm), in 30 of 52 (58%) with positive margins, and in 17 of 34 patients (50%) with margins of unknown status. Patients with positive or unknown margins were 7.7 and 8.3 times respectively, and were more likely to have residual disease than patients with negative margins (95% CI 1.1-59.1; 1.1-66.4). Patients with clinical presentations were 8.0 times more likely to have residual disease than patients who presented with abnormal mammograms (95% CI 2.3-27.6). Mutifocal-extensive DCIS was associated with residual disease (adjusted odds ratio [OR] = 7.7, 95% CI 2.9-20.5), as was comedo subtype (OR = 2.7, 95% CI 1.1-6.7).

Conclusion: Positive or unknown biopsy margins, a

clinical presentation, multifocal-extensive cancer, and the comedo subtype are associated with higher risk of residual DCIS.

Intraabdominal Abscess from Parasitic Infestation: A Case Report

D Meekaewkunchorn, S Ratanarapee, M Laohapensang, K Thakerngpol Intraabdominal abscess from parasitic infestation is a rare complication. In this report we reviewed clinical presentation, diagnostic aspect and therapeutic procedure of a three-year-old boy who was referred to Siriraj Hospital with the history of abdominal pain, fever and diarrhea for 3 weeks. He also had history of round worm in his stool. Physical examination revealed an inflammatory mass at left upper quadrant. Exploratory laparotomy showed intraperitoneal abscess without any evidence of bowel perforation. The abscess was drained and tissue biopy from the abscess wall was taken. Postoperative recovery of the patient was uneventful. The pathologic study showed parasitic ovas in the abscess wall and one course of antehelmintics was administered.

It is suggested that parasitic cause should be suspected whenever a child presents with an inflammatory abdominal mass having evidence of parasitic infestation.

Result and Effect of Ischemic and Reperfusion Injury in Hemihepatic Vascular Occlusion Technique for Hepatectomy Demonstrated by Electron Microscopy

C Vilasrasmi, C Vanichanond, P Sophon, S Siriteptavee, P Pongchailerk, V Linthong, S Kanjanapanjapol

Technical conceptions of liver resection can be separated into 2 groups: 1) hepatectomy with preliminary vascular control which was first described by Lortal-Jacob and 2) hepatectomy by primary parenchymatous transection described by Ton That Tung. Our technique of liver resection uses hemihepatic vascular occlusion which begins with a step of ligation and section of the right or left hepatic vein and direct branches from IVC, continues with the temporary control of portal pedicle (Pringle's maneuver), and ends with the transection of the parenchyma.

Tru cut biopsies were performed in the unresected part of the liver of all patients who underwent hepatic resections using this technique. The first biopsy was done immediately after laparotomy, the second biopsy was performed before releasing of the porta hepatis clamp, and the last biopsy was performed 25-45 minutes after reperfusion of the unresected part of the liver. All biopsy specimens were sent for electron microscopic examination to determine the ischemic and reperfusion injury to the liver cells.

The preliminary report in this scientific exhibition will demonstrate the electron microscopic finding of the result and effect of ischemic and reperfusion injury to the liver in hemihepatic vascular occlusion technique of liver resection. Hyperchromatic, picnotic nucleus, absence of nucleolus, and vacuolization of the hepatocyte were found in both ischemic and reperfusion injury. Swelling and presence of intramitochondrial particle were found only in reperfusion injury. Perisinusoidal stellate cells (Ito cell) which regulate blood flow to sinusoid changed only in reperfusion phase. Rough endoplasmic reticulum, endothelial cell, and bile canaliculi were not affected by ischemic and reperfusion injury. Dilatation of endoplasmic reticulum was found only in reperfusion injury to the cirrhotic liver.

No specific data about electron microscopic findings of ischemic and reperfusion injury to the liver cell in hepatectomy has been reported previously. We hope that this study can be of benefit for future research concerning the clinical aspects of the results of this hepatectomy technique.

Roles of Microwave Coagulation Therapy for Liver Cancer

W Imsamran, S Subwongchareon, K Leelawat, T Rattanachu-Ek

Localized unresectable liver cancer is still a challenging problem in Thailand especially in good conditioned patients. This study is designed to evaluate the outcome of Microwave Coagulation Therapy (MCT) for localized unresectable Hepatocellular Carcinoma (HCC) and Metastatic Liver Cancer (MLC) when radical liver resection is not feasible.

Research Design: Prospective study from January 1, 1997 to January 1, 1999, 12 patients (9 HCC and 3 MLC) were included in the study. The inclusion criteria were the patients with localized unresectable HCC (anatomical and/or functional cause), localized unresectable MLC with controlled primary site and no extrahepatic metastasis, no contraindication for major operation, no intractable ascites and normal level of total bilirubin. For the HCC patients, the age and cases with liver cirrhosis were 25-68 yr (mean 51 yr) and 6 in 9 patients (66.67%) respectively. For the HCC tumor status, the number of mass, the largest diameter and tumor occupying in both lobes were 2-10 nodules (mean 4 nodules), 7-13.5 cm (mean 11.5 cm.) and 6 in 9 patients

(66.67%), respectively. Exploratory laparotomy with MCT was performed under intraoperative ultrasonography in all patients. Life table calculation method was used for statistical analysis.

Results: The operative time was 6-10 hr (mean 8.5 hr.) and the estimated blood loss is 300-550 ml (mean 410 ml). There was no operative mortality. Fever, ascites or intraabdominal abscess were found in 4 patients. Follow up period was between 4 months to 2 years (mean 13 months). The survival rate at 3,6,12 and 24 months were 100, 67, 65 and 65 per cent, respectively.

Conclusion: Microwave Coagulation Therapy appears to be an effective method for inducing local tumor necrosis and may be of use in combination with other therapeutic modalities for local unresectable HCC and metastatic liver cancer when radical liver resection is not feasible.

The Simple Vacuum Sealing Technique for Wound Dressing

S Numhom, V Srimuniunimit

Negative pressure wound therapy, also known as Vacuum Assisted Closure (V.A.C.), is a new technique using negative pressure to promote wound healing. It induces an increase peripheral blood flow, improved local oxygenation, stimulation of angiogenesis and proliferation of good quality granulation tissue. We use simple, inexpensive technique as follow. After debridement of necrosis tissue, wound cavities are filled with polyvinyl foam with embeded drainage tube. The wounds are covered with a transparent vapor transmitting polyurethane film. The drainage tube is connected to wall suction with the continuous negative pressure about 40-120 mmHg.

Between February 1999 and May 1999, nine patients with 15 wounds underwent vacuum scaling technique for wound dressing. Nine wounds were located in the lower leg, 3 in the foot, 2 in the abdomen, and one in the chest. The average time of this technique was 18 days. With this technique of wound dressing, wound closure could be performed in all patients with split thickness skin graft.

Abdominopelvic Vascular Injuries

S Sriussadaporn

Background: Injury to abdominal and pelvic vessels following an abdominopelvic trauma carries a high mortality rate. Exsanguinating hemorrhage and ischemia of the lower extremity are important clinical features. Frequently, situations are compounded by associated injuries to the intra and extraabdominal organs making management of the entire entity, a surgical challenge. The purpose of this study is to examine our experience and results of treatment of patients with abdominopelvic vascular injuries at Chulalongkorn Hospital, Bangkok, Thailand.

Patients and Methods: The clinical records of patients who had major vascular injuries following an abdominopelvic trauma at Chulalongkorn Hospital, Bangkok, Thailand from July 1991 to January 1998 were reviewed. Diagnoses of major vascular injuries were confirmed during the operations in all cases. Data collections included: age, sex, mechanisms of injury, clinical presentations, associated injuries, Injury Severity Score, management and results of treatment. Shock in this study was defined as a systolic blood pressure of <90 mmHg. Univariate analyses of factors associated with mortality were performed by using Mann-Whitney U Test and Fisher's Exact Test. The P value of <0.05 was considered significant.

Results: The clinical records of 25 patients with 32 abdominopelvic vascular injuries were reviewed. Sixty per cent of patients sustained blunt trauma and 40 per cent sustained penetrating trauma. Nineteen patients (76%) were in shock on arrival, 2 of them underwent ER thoracotomy when first arrived at the emergency room. Nine patients (36%) had signs of lower extremity ischemia. The Injury Severity Score (ISS) ranged from 16-50, mean 29±10.0. Nineteen patients (76%) had 35 associated injuries. Of the 32 injured vessels; 8 were external iliac artery, 5 were renal vein, 4 were abdominal aorta, 3 were common iliac artery, common iliac vein, external iliac vein and inferior vena cava, and one was superior mesenteric artery, superior mesenteric vein and median sacral artery. Treatments included: 13 lateral repair, 4 prosthetic grafting, 4 nephrectomy, 3 ligation, 3 reversed saphenous vein grafting, 2 end to end anastomosis, one internal iliac artery grafting, one intravascular shunt and packing and one perihepatic packing. Nine patients (36%) died. High mortality was observed in injuries to the abdominal aorta (75%), inferior vena cava (66.7%), common iliac vein (66.7%) and associated major pelvic fractures (50%). Factors significantly associated with mortality were the presence of shock on arrival, associated injuries and high Injury Severity Score.

Conclusions: Abdominopelvic vascular injuries are highly lethal conditions, especially in patients with associated injuries. Effective prehospital care and resuscitation are of utmost importance. Proper management at the emergency and the operating room by an experienced trauma team is crucial. During the operation, rapid control of hemorrhage

and appropriate decision making for vascular repair or ligation or using a temporary intravascular shunt as a part of damage control in unstable patients are important for survival in these critically injured patients.

Duodenal Obstruction Due to Chronic Pancreatitis in the Absence of Classlc Symptoms: Report of a Case Successfully Treated with Whipple's Operation (PPPP)

T Akaraviputh, W Boonnuch, D Lohsiriwat

In complication of chronic pancreatitis, duodenal obstruction is much less common than common bile duct obstruction which occurs in less than 1-2% of patients. We reported a 52-year-old male who presented with severe vomiting, wthout jaundice, for only 2 weeks. Both serum CEA and CA 19-9 were in normal level. Upper GI series revealed the contrast could not completely pass through the second part of duodenum. Gastroscopy revealed stricture of the duodenum. Because of high susplclous of malignancy, exploration with pylorus-presurving pancreaticoduodenectomy (PPPP) was successfully performed. Based on histological findings, chronic pancreatitis was diagnosed without malignancy. He is doing well, one year after the treatment.

NEUROSURGERY

Minimum Invasive Treatment of Depressed Frontal Sinus Fracture

C Sajjaisariyavut

Frontal sinus fracture treatment depends on the number of walls involved by the fracture and the status of nasofrontal duct. Surgical approach is generally with a bitemporal inclusion for evaluation and reduction. To diminish the morbidity from conventional technique, we use a minimum invasive treatment with assisted endoscopy and semiclose reduction via a limited brow incision for a significant depressed frontal sinus fracture. In selected case, this technique is excellent for nasofrontal duct evaluation, decrease the total operation time and cost. Immediate and long term result was well accepted.