

Small bowel neoplasms are diagnosed mostly as advanced disease, therefore prognosis is poor. Survival rate is related to advance of disease, tumour histology and mode of resection.

452 FP150

### C-Reactive Protein Compared with Leukocyte Count in the Diagnosis of Acute Appendicitis in Children

J.C.R. Sanjuan, J.I. Martin, I. Seco, L.G. Castrillo, E. Diego, A. Naranjo

Hospital U. Marques de Valdecilla, 39008-Santander, Spain

**Aim of the Study:** To analyze the diagnostic accuracy of C-reactive protein (CRP) and its possible advantage, if any, over leukocyte counts in acute appendicitis (AA) in children. **Methods:** We carried out a retrospective study of 124 children (72 boys and 52 girls) with a mean age of 9.3 years (2-14), operated on a clinical diagnosis of AA. The diagnosis of AA, confirmed by pathological examination of the removed appendix, was then correlated with CRP, leukocyte count and a combination of both parameters made from a logistic regression model. CRP serum measurements were performed by an immunoturbidimetric test (Tina-quant CRP, Boehringer-Mannheim). The patients were divided into two groups, according to the pathological features of the removed appendix: Group A (n = 104), patients with AA and Group B (n = 20), patients without AA. To assess the accuracy of CRP, leukocyte counts and a combination of both parameters, receiver-operating characteristic (ROC) curves were used. The areas under the curve were compared using the of maximum likelihood estimation method. **Results:** There were 95 cases (76.6%) of nonperforated appendicitis, 9 (7.3%) of perforated appendicitis and 20 (16.4%) of normal appendix. Mean CRP in Group A was 4.3 (sd: 6.6) and in Group B was 1.2 (sd: 1.7) (p = 0.03). The CRP and leukocyte count values were correlated with the pathological diagnosis of AA. Mean CRP values increase as the pathological inflammation type progresses (p = 0.007). CRP ROC curve shows that the CRP value with highest accuracy was 1.7 mg/dl. A comparison of the respective ROC curves demonstrates that CRP, leukocyte count and the combination of both tests all have a good diagnostic value but without any significant difference (p = 0.2). **Conclusions:** In children: 1) Serum CRP is increased in AA; 2) Such increase is related to the severity of the appendiceal inflammation; 3) Although serum CRP has an adequate diagnostic accuracy, neither individually nor in combination with the leukocyte count is it significantly better than the leukocyte count alone.

453 FP151

### Acute Appendicitis in Infants and Preschool Children

B.I. Rosales, M.A. Galván, R.J. Suárez

Department of Pediatric Surgery, Hospital General 'Dr. M. Gea González', México City, México

**Objective:** The purpose of the study was to describe the incidence, clinical manifestations and evolution of acute appendicitis in children under 6 years. **Methods:** We reviewed files from January

1991 to December 1996 of patients aged under 6 years with diagnosis of acute appendicitis. We analyzed general frequency of the pathology by age in two groups: A) Infants (0-1 y. 11/12); B) preschool children (2-6 y.). Data include age, gender, physical and laboratory findings, duration of symptoms, whether seen by a physician prior to surgery, stage of the disease at operation, postoperative complications, days to initiate oral feeding and hospitalization days. **Results:** Between January 1991 to December 1996 we registered 1,889 appendicectomies, 478 (25.3%) in pediatric patients. Of this group only 59 (12.3%) were under 6 years, 10 (17%) infants and 49 (83%) preschool children, 54.2% males and 45.8% females. More frequent clinical manifestation in both groups were abdominal pain 76%, vomiting 72%, fever 40%; signs at evaluation were tenderness 53%, Von Blumberg sign 49%, elevated white blood cells count 88%. Time of evolution before surgery was 2.8 days with 1.6 medical examinations prior to admission. At operation 47% of patients were found to have a perforated appendix. 13.5% had an other diagnosis at operation time. We only had complications in 7% of both groups, with wound infection as the first complication. In infants oral feeding was initiated in the fourth day, in preschool children at the second day. Hospitalization stay were 5.6 days for infants and 4.4 days for preschool children. **Conclusions:** In view of the atypical presentation and increased incidence of advanced appendicitis, a high index of suspicion is necessary in children under 6 years presenting with abdominal pain.

454 FP152

### Harvest and Preservation Injury of Small Bowel Grafts in Rats: Influence of the Surgical Technique and Preservation Solutions

C. Empanan, J. Gonzalez-Urriarte, Garcia-Alonso, J. Mendez  
Dept. of Surgery, Universidad del Pais Vasco, Spain & Div. of Organ Transplantation, University of Texas-Houston, USA

**Aim of the Study:** To determine the influence of the incidences occurring during the harvest and correlate in with the preservation injury in two different solutions commonly applied in clinical practice: UW and Collins. **Material and Methods:** 120 WAG rats weighing 300 g were used as donors. Surgical time employed during the harvesting, arterial and venous incidences recognized during the procedure, intraluminal flushing and final macroscopic aspect of the graft were recorded in each animal. Group A (n = 60) was preserved in Collins solution. Group B was preserved in UW solution. At the end of a randomized preservation period (hour 0-2-4-6-8-10-12-14-16-18) segments of the ileal graft were processed for analysis and six grafts per group were transplanted using the cuff technique to the left renal artery and vein in left nephrectomized rats. After 45 min of reperfusion another ileal segment of the graft was processed. Survival rate was noted 7 days after surgery. For statistical analysis Fischer test, correlation test of Pearson, and ANOVA tests were used. Only p < 0.05 was considered as significative. **Results:** Surgical time, arterial and venous incidences as well as final macroscopic aspect influences the preservation and reperfusion injury of the graft (p < 0.05). Survival rate was influenced by all these factors. Histologic injury was reduced in group B when the period of preservation was over 10 h (p = 0.05). No difference was noted in the first 8 h of preservation. Survival rate in group B was improved in group B only when the period of preservation was longer than 10 h (16.5% vs. 0).

**Conclusions:** Small bowel harvesting in the rat influences preservation, reperfusion injury and survival rate of the animal. This injury can be ameliorated with the use of UW solution if the preservation period is over 10 h.

455 FP153

### Pathophysiology and Treatment of Patients with Radiation Enteritis

Y. Nagahata, Y. Azumi, H. Nomura, Y. Nakayama, Y. Kuroda  
First Department of Surgery, Kobe University School of  
Medicine, 7-5-2 Kusunoki-cho, Chuo-ku, Kobe 650-0017, Japan

**Background and Aims:** Therapeutic irradiation for intra-abdominal malignant disease always causes some degree of injury to the intestine. Radiation therapy is used with increasing frequency and risk of radiation enteritis increases similarly. **Patients:** We investigated 17 patients with radiation enteritis in the viewpoint of clinical features and treatment. Endoscopy and barium enema were performed to evaluate the lesion of the intestine. **Results:** All the patients were female and radiation therapy was performed for uterine cancer. The age of the patients was 51 to 74 years (average age  $\pm$  SD;  $63.2 \pm 7.5$  years). The numbers of the uterine cancer were 3 in stage I, 7 in stage II, 5 in stage III, and 2 in stage IV, respectively. Among these patients, 6 patients underwent surgery for uterine cancer. Symptoms included hematomelena (13), diarrhea (7), lower abdominal pain (5). The enteritis involved ileum (1), rectum (15), and ileum and rectum (1). The occurrence of the enteritis was diagnosed from 1 month to 16 years after radiation therapy. Concerning the time between occurrence of the enteritis and radiation therapy, the patients were divided into 2 groups. In 10 patients of one group, the enteritis occurred within 1 year after radiation, but occurred more than 4 years after radiation in 7 patients of the other group.

Thirteen patients underwent surgery for radiation enteritis. Indications of the surgery were fistula, hemorrhage, and stenosis. The surgical operations performed were as follows: colostomy (9), rectal amputation with colostomy (1), rectal resection (1), and ileal resection and colostomy (1). Postoperative courses were rather good in all the patients with surgery. The patients obtained disappearance or improvement of the symptoms of the disease. **Conclusions:** Although there are some problems in indication of the surgical treatment for radiation enteritis, adequate procedures for the disease improved the quality of life of the patients.

456 FP154

### Normothermic Pulsatile Oxygenated Rinse of Small Bowel Grafts Ameliorates Reperfusion Injury

C. Empanan, Z. Beyga, I. Garcia-Alonso, H. Podder, J. Mendez  
Department of Surgery, Universidad del Pais Vasco, Spain &  
Div. of Organ Transplantation, University of Texas-Houston,  
USA

**Aim of the Study:** To ameliorate preservation-reperfusion injury of small bowel grafts using a normothermic pulsatile oxygenated rinse solution designed for the metabolic and vascular needs of the

graft. **Methods:** 36 WAG male rats (300 g) were used as donors. The aortic patch and the portal vein were isolated and cannulated. All the grafts were preserved in Collins solution during 6 h. At the end of the period the grafts were randomized and assigned to 3 different groups (n = 12): a) Group A was immediately transplanted anastomosing the aortic patch to the left renal artery and the portal vein to the left renal vein of a nephrectomized recipient using a cuff technique. b) Group B was perfused with Ringer-Lactate during 25 min prior to the transplant using the same technique. c) Group C was perfused with a specially designed solution (UPV) during 25 min prior to transplant using the same technique as groups A and B. In those grafts perfused arterial pressure, arterial and portal flow, arterio-venous gasometries, and ionograms were measured during perfusion. Each of the groups was divided in two different subgroups (n = 6 in each one). Survival rate after 7 days was measured, and histologic damage was graded (Chiu's scale) in post-operative days 1-3-5. ANOVA and Chi-square test were used for statistical analysis. **Results:** Grafts perfused with both solutions showed reactivating metabolism of the bowel (expressed as oxygen extraction, CO<sub>2</sub> production, pH variation), however UPV solution showed better micro circulatory parameters (mean arterial pressure, outflow). Survival rate in group 1 was 45%, in group B 35%, and in group C 75%. Histological damage was markedly reduced in days 1 and 3 in UPV solution perfused grafts, and increased in group B if compared with transplanted and non-perfused animals. **Conclusions:** Isolated normothermic reperfusion of small bowel grafts with specifically designed reperfusion solutions ameliorates reperfusion injury and improves survival of the grafts.

### Stomach

457 FP155

### Laparoscopically Assisted Distal Gastrectomy

N. Kano, H. Kusanagi, S. Yamada, K. Kasama, C. Uchida,  
Y. Watarai, N. Ohata, A. Takeshi, T. Sakuma, K. Omoto,  
M. Kuroki, S. Pawar

Department of Surgery, Kameda Medical Center, Chiba, Japan

Technique of laparoscopy-assisted distal gastrectomy for early stomach cancer is presented. Insufflation is obtained through a Hasson trocar placed at the umbilical site. Two 12 mm trocars are placed at the lateral margin of the rectus muscle on both sides of the abdomen. Another 5 mm trocar is placed in the left upper abdomen. This is used to tract the stomach wall with a forceps. Using a Babcock forceps and Harmonic Scalpel (LCS) through the two 12 mm trocars, the omentum is cut and the right gastroepiploic vein and artery are exposed. These are clipped and divided respectively to expose the bulb of the duodenum. The stomach wall is lifted up to expose the posterior wall of the stomach and the right gastric artery and vein are exposed. These are clipped and divided. The omentum is cut down to the inferior pole of the spleen. The left g.e. vessels are clipped and divided to expose the greater curvature of the stomach. By lifting up the posterior wall of the stomach, the left gastric vein is identified and cut between clips. The left gastric artery is exposed and cut after placing four clips. The lesser curvature of the stomach is skeletonized. Here a 5 cm long incision is placed in the subxiphoid site and the stomach is exposed. The duodenum is transected one cm anal to