

45.

**SEVERE BACTERIAL INFECTIONS IN CHILDREN WITH SECONDARY IMMUNODEFICIENCY SYNDROME AFTER THE USE OF CYTOSTATIC THERAPY.** G. Bunjevački, J. Simonović, G. Konjović, E. Stojimirović. Children's University Hospital, 11000 Belgrade, Tiršova 10, Yugoslavia.

18 children with malignant hemopathy developed severe immunodeficiency syndrome causing septic infections in 10. Staphylococci and pyocyanea were the most frequent cause, while conditionally pathogenic flora was revealed in 2 patients. Mouth necrosis complicated treatment of the basic illness in 6 patients and presented entrance for the septic infection in 3 children. Ulceration and gangrene of the perianal region with predominance of gram negative bacterial flora were confirmed in 5 children of whom 1 had also ulceronecrotic lesions in the mouth. Purulent meningitis developed in 1 child. In all these children humoral and cellular immunity were investigated. Quantitative determination of the serum immunoglobulins revealed marked decrease in IgG, IgA and IgM during and after the use of the cytostatic therapy. Examination of the cellular immunity by the response of the peripheral blood lymphocytes to phytohemagglutinine stimulation disclosed a decrease of the stimulation index to  $H_2$  thymidine in all patients. Selective testing of immunologic functions confirmed acquired immunodeficiency. The high incidence of severe bacterial infections coexisted with acquired immunosuppressive effect of the polichemotherapy. The follow-up of immunologic features enabled rational application of the cytostatics and urgent treatment of the pyrogenic complications in patients with malignant diseases.

46.

**DEVELOPMENT OF INTENSIVE CARE (IC) SCORING SYSTEM IN PEDIATRIC ONCOLOGY PATIENTS (POP)** L.P. Miller, D.R. Miller, E.J. Beattie J. Koegel. Memorial Sloan-Kettering Cancer Center, NY, NY USA

No rational system exists for classifying POP by complexity of illness. To develop such a system we asked: Is there a useful scoring system of therapeutic interventions (TI); is there a score predictive of IC needs; is early IC intervention of measurable benefit; can resources be allocated better by classifying POP; does early IC prevent certain problems; are TI decreased in terminal care POP; can standards of care be established based on TI? We used a modified Therapeutic Intervention Scoring System (TISS). Points were allocated for each TI. Additions were made for specific needs of POP. 149 POP (108 medical, 41 surgical) were scored. Findings were: TISS of 15 representing five 3 point TI predicted a need for specialized monitoring and IC. Instituting early IC based on TISS suggested a decrease in number of invasive procedures, shorter duration of IC, and less morbidity. Phase of illness predicted degree of care required (experimental chemotherapy (EC) > induction > bone marrow transplant > reinduction > remission). Leukemia POP required more care than solid tumor POP at all phases of illness. 35 POP with fever/neutropenia had TISS of 3-4 requiring little care. Poor nutrition and renal/electrolyte problems secondary to sepsis, amphotericin, antibiotics, EC and fluid overload were common and were reversible with early intervention. Resistant *Serratia* (13) and *Klebsiella* (2) caused most sepsis-induced morbidity requiring moxalactam, amikacin, and cohorting and isolation of POP and families. Terminal care POP received few TI. In conclusion we quantified and documented the clinical impression that POP on induction or EC require more care. Commonest TI were identified and standards of care developed. Defining a TISS predictive of the need for either IC or minimal care allows better utilization of resources, earlier intervention, and may decrease morbidity in patients.

47.

**JEJUNAL DISACCHARIDASE DEFICIENCIES DURING TREATMENT OF WILMS' TUMORS, ACUTE LEUKEMIAS AND NON HODGKIN'S LYMPHOMAS: INCIDENCE, NUTRITIONAL CONSEQUENCES.** D. Olive, A. Morali, J.L. Vuillemin, E. Benz-Lemoine, P. Bordignon, F. Thirion, M. Vidailhet, Services de Pédiatrie -CHU-NANCY-FRANCE

The purpose of our prospective study was to assess the effects of antimetabolic drugs on jejunal disaccharidase activities (J.D.A) to precise the degree of malabsorption, its duration and the necessity of a special nutritive support.

85 peroral jejunal biopsies were performed in 60 chil-

dren (age : 3 months to 18 yrs) ; disaccharidase activities were measured using Dahlquist's method and classified into 5 groups according to the severity of enzymatic decrease ; groups III-V were considered as abnormal.

1) **WILMS' TUMORS** : 19 children, 30 biopsies (2 before any treatment, 23 on therapy, 5 off therapy). All JDA were decreased (mainly lactase) in 8/23 biopsies on therapy.

2) **ACUTE LEUKEMIAS** : 28 children, 34 biopsies performed during induction of remission. JDA were decreased in 15/32 biopsies on therapy, mainly after Arac, L-Asp. and Amsacrine.

3) **NON HODGKIN'S LYMPHOMAS** : 10 children ; 21 biopsies performed during initial 6 months. JDA were decreased in 14/21 particularly enhanced by high dose MTX, ADR, Ara C and repetitive courses.

Our sequential study of JDA allows to foresee the timing, the severity and the duration of malabsorption and digestive troubles which are identically induced by the same combined drugs. According to these data, a better nutritive care may be proposed as follows : -suppression of aggressive proteins and lactose from the diet ; -constant rate enteral feeding ; -prophylactic total parenteral nutrition in case of severe malnutrition and high-risk chemotherapy. Owing to this attitude, correction of digestive troubles was observed and a good nutritional status was maintained in our whole patients.

48.

**THE APPLICATION OF HOME PARENTERAL NUTRITION IN PEDIATRIC CANCER PATIENTS.** A.R. Ablin, M.D., M.B. Heyman, M.D., M.P.H., M. Hanson, R.N., A. Wong, Pharm.D. University of California San Francisco, San Francisco, California, United States.

Home parenteral nutrition (HPN) through centrally placed venous catheters is feasible and available for selected pediatric cancer patients. After proper placement of a right atrial silastic catheter, the patient in the hospital is advanced to an appropriate parenteral nutrition (PN) infusion to provide needed total or supplemental nutrition. The infusion time is gradually shortened so the patient receives the total regimen over a 10-14 hour period at night. The rate of PN infusion is tapered during the last 30-60 minutes to avoid reactive hypoglycemia. The patient is discharged from hospital when stabilized and after training and testing on the use of aseptic techniques, the volumetric infusion pump, catheter care and self-monitoring. All equipment required for infusing PN solutions and catheter care is provided. Pre-mixed solutions are supplied in the home in 2-4 week quantities. Each patient or family maintains daily records of intake, output, weight, urine glucose and medications. Patients are evaluated weekly initially and, after the first month, at longer intervals. Emergency calls are received by a trained clinical nurse specialist, clinical pharmacist specialist, and/or physician involved. The objectives of an HPN program are: 1.) to prevent malnutrition by provision of total or supplemental nutrition 2.) to improve tolerance to usual treatment programs and to permit the development of more aggressive surgery, chemo- and radiotherapy schedules 3.) to return patients and families to more normal life style, activity and mental attitude by decreasing dependence on medical personnel, decreasing in-hospital days and improving self-appearances 4.) to treat malnutrition. Preliminary results with two pediatric patients on HPN program are presented.

49.

**SIDE-EFFECTS ON JEJUNAL DISACCHARIDASE ACTIVITIES (JDA) OF CHEMOTHERAPY (CT) IN NON-HODGKIN'S LYMPHOMAS (NHL) : NUTRITIONAL MANAGEMENT.** E. Benz-Lemoine, A. Morali, J.L. Vuillemin, J. Léger, M. Vidailhet, D. Olive - Services de Pédiatrie - Laboratoire de Chimie - CHU-NANCY -FRANCE

The aggressiveness of some schedules, recently introduced in NHL treatment, led us to study the comparative incidence of JDA disturbances in 3 regimes, trying to prevent digestive troubles and malnutrition.

21 peroral jejunal biopsies were performed in 10 children. Primary site of NHL : cervical (5), abdominal (3), mediastinal (1), subcutaneous (1). Stages (MURPHY) : II (3), III (4), IV (3). 3 types of regimens were used according to prognostic factors. Disaccharidase activities were measured by Dahlquist's method.

JDA were decreased (mainly lactose) in 14 out of 21 biopsies and correlated with major digestive troubles, except in patients under special nutritive care. Predisposing fac-

tors were as follows : high dose of CTX, additive troubles due to MTX and/or ADR, and/or Ara C, repetitive courses of CT, and malnutrition.

These enzymatic abnormalities support the need for using routinely restrictive diet and, in high-risk CT, parenteral nutrition.

50.

PRIMARY OSTEOGENIC SARCOMA OF THE EXTREMITY: EIGHT-YEAR EXPERIENCE WITH ADJUVANT CHEMOTHERAPY. G.Rosen, B.Caparros, A.Nirenberg, A.Cacavio, A.G.Huvos, J.M.Lane, R.C.Marcove. Memorial Sloan-Kettering Cancer Center, New York, New York, U.S.A.

Since October 1973, 198 patients 21 years of age or younger with histologically high grade osteogenic sarcoma of an extremity were treated with adjuvant chemotherapy. Twenty-five of the first 52 patients treated on the T-4 protocol have remained free of disease at a median of 7½ years. In the next chemotherapy protocol (T-7) most patients had chemotherapy prior to amputation or resection during which time the dose of high dose methotrexate was escalated in many patients to that needed to shrink the primary tumor. At a median of 4½ years, 43 of 54 patients (80%) have remained continuously free of disease. In the current protocol (T-10) the response of the primary tumor to chemotherapy with high dose methotrexate was used to select postoperative adjuvant chemotherapy for the patient. With the latter approach 84 of 92 patients (91%) have remained continuously free of disease at a median of 2½ years. This experience demonstrates the value of chemotherapy in increasing the cure rate in osteogenic sarcoma, and that the response to pre-operative chemotherapy can help select postoperative chemotherapy as was done on the T-10 protocol to result in an even higher potential cure rate for osteogenic sarcoma.

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51.

OUR EXPERIENCE ON THE EFFECT OF CHEMOTHERAPY ON PRIMARY OSTEOSARCOMA. M. Brunat-Mentigny, P. Noel, T. Philip, L.M. Patricot, J.C. Vanzelle. Centre Léon Bérard - Service de Pédiatrie. Lyon - FRANCE.

17 patients with an osteogenic sarcoma have been treated by Rosen's T, chemotherapeutic regimen i.e. Actinomycin D, Bleomycin, Cytosine then high dose Methotrexate + Leucovorin rescue then Adriamycin then high dose Methotrexate, for 2 months.

Histology after this treatment had been checked either by biopsies or examination of the operative specimen (amputation or resection).

In 4 cases chemotherapy seemed to have had no effect at all. 2 patients have lung metastases 12 and 18 months after. 2 are recent cases.

In 3 cases there was an effect of chemotherapy but small and tumor was present and seemed viable. One has lung metastases and 2 are recent cases.

In 5 cases there was residual sarcoma but tumor covered less than 25 % of the slide. 3 are alive and well 29 months<sup>+</sup> 24 months<sup>+</sup> and 21 months<sup>+</sup> 2 are recent cases.

In 5 cases we found no tumor at all (4 amputations, one resection), 4 patients are alive and well 27 months<sup>+</sup> 24 months<sup>+</sup> 27 months<sup>+</sup> 18 months<sup>+</sup>. One is dead probably from toxicity of chemotherapy.

7/17 patients had no or small effect and 10/17 patients had a very good effect of chemotherapy.

52.

CHECKING OF LOCAL CONTROL AFTER CONSERVATIVE TREATMENT OF MALIGNANT BONE TUMORS : RESECTION FOLLOWED BY VASCULARIZED BONE AUTOGRAFT. JP Métaizeau<sup>1</sup>, D. Olive<sup>2</sup>, P. Bey<sup>3</sup>, P. Bordignon<sup>2</sup>, F. Plénat<sup>4</sup>, J. Prévot<sup>1</sup> - 1. Service de Chirurgie Infantile, CHU - 2. Service de Pédiatrie "A", CHU, 3. Centre Alexis Vautrin, VANDOEUVRE LES NANCY, 4. Laboratoire d'Anatomie Pathologique, VANDOEUVRE LES NANCY.

After conservative treatment of malignant bone tumors, the local control remains uncertain. The worrying radiological aspect of the irradiated tumor and/or fracture occurrence at this site may fear a relapse of the tumor.

The resection of the whole involved bone is the best way to check the local control. But the extent of the bone defect and the bad local conditions due to irradiation make the reconstruction hazardous.

In two patients (one femoral Ewing's sarcoma and one humeral osteogenic sarcoma) the authors, using a free vascularized fibular graft for reconstruction have obtained the consolidation of the limb after resection of the irradiated tumoral site, without compromising its function. Encouraging results obtained allow us to propose this conservative attitude as primary treatment of specific malignant bone tumours.

53.

A LIMB SAVING OPERATION (TIKHOFF LINBERG) FOR MALIGNANT BONE TUMORS OF THE SHOULDER. CASE REPORTS & FUNCTIONAL RESULTS IN 2 CHILDREN. J. Plaschkes (1), P. Imbach (2), A. Bleher (3), B. Rao (4), M. Bettex (5)

Amputation or exarticulation has usually been the mainstay of treatment for osteogenic sarcoma. In proximal involvement of the arm or shoulder, a better alternative in selected cases is a localized limb saving resection with or without internal prosthetic replacement - the so called Tikhoff-Linberg procedure.

This gives very good functional results and in combination with chemotherapy equally good survival results.

2 children with this type of operation are presented:

One, a 13 year old boy with osteogenic sarcoma of the proximal humerus and another 14 year old boy with Ewing Sarcoma of the scapula.

Both had preoperative chemotherapy. The child with the sarcoma of the scapula also had local radiation but there was still biopsy proven residual tumor after this therapy. In both it is more than one and a half years since operation. They are disease free and have very good functional use of the hand and forearm.

A short video-tape of the operation and functional results is available.

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54.

A FUNCTIONAL KINETIC STUDY OF OSTEOGENIC SARCOMAS AND ITS IMPORTANCE IN THEIR CLASSIFICATION. A.Mazabraud, R.Gongora G.Gongora, B.Perdereau, J.M.Zucker, J.P.Bataini. Institut Curie, Section Médicale, Paris, France.

A simple biopsy, the size of which is of course restricted, cannot permit us to evaluate the differentiation of the tumor as a whole given the polymorphism of osteogenic sarcomas. Thus it has proven necessary to carry out a test the result of which would provide an overall picture of the functional value of the tumor.

For the past ten years we have been using 85 Sr since its metabolism is similar to that of Calcium and also because its radioactivity permits external measurements.

The results are expressed in terms of the ratio between the tumoral zone and the reference zone. This particular test has shown that osteogenic sarcomas subdivide into 3 groups which can in turn be individualized either by the ratio R8 on the 8th day or by the difference R8-R1 representing the average curve between the first and last days of measurements.

In comparing the results with the histological aspect, it appeared evident that sarcomas with a descending curve (type 3) represent those termed "high risk sarcomas" (i.e. anaplastic and telangiectatic sarcomas as well as a certain number of very slightly osteogenic sarcomas which are histologically classified as being of a common type).

The sarcomas displaying an ascending curve (1 and 2) have a more favorable prognosis.

The diagnosis of the sarcoma being established histologically this test is of great importance in that it permits us to recognize high-risk sarcomas and consequently permits them to be equally distributed among the various arms of a therapeutic trial.