The total time of radiotherapy was 77 days (11 weeks), three weeks longer than usual.

Conclusions: The protocol program showed high toxicity, mainly with associated surgery. Cisplatinum dose was adequate, but the combination with high dose rate brachytherapy must be avoided. This original program was modified excluding surgery approach and leaving brachytherapy after external beam radiotherapy. CDDP dose was reduced to 30 mg/m2 and administered only during RT.

Paediatric oncology

1235 POSTER

The Italian hospital-based registry of pediatric cancer: 11 years' experience

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Purpose: Since 1989, all centers belonging to AIEOP adopted a common centralized system for registration of all cases in age 0-14 affected by cancer. This system, known as 'Registry Mod.1.01', has allowed to create an hospital-based national registry of pediatric cancer, which leads to monitor activities (such as protocols accrual) and to plan future strategies in research of mechanisms of disease (such as incidence by cancer type and observed-to-expected ratios).

Methods: The physician in charge at each center provide to enter demographic, diagnostic and treatment data for each new eligible patient directly over a secure Internet connection at a centralized electronic data base, set up at CINECA and managed by AIEOP Operation Office in Bologna. The exhaustivity of this survey system has been estimated by comparing, the numbers of observed cases (O), with those expected (E) by applying to Italian population age-specific incidence rates for 1990-1992 produced by the Childhood Cancer Registry of the Piedmont, which covers about 10% of the Italian population.

Results: From January 1st 1989 to December 31st 1999, 11928 cases affected by malignancies, younger than 15 years and resident in Italy, were collected from 51 out of 53 AIEOP centers. M/F ratio resulted of 1.3 and the distribution of cases according to class of age was as follows: 5654 cases 0-4yrs, 3308 cases 5-9yrs and 2966 cases 10-14yrs. The median number of cases observed yearly was 1084, for an O/E ratio of 0.80. The O/E ratio according to disease showed an optimal recruitment for acute leukemias and lymphomas, in contrast with the lower O/E ratio of solid tumors, especially for Central Nervous System (CNS) tumors (0.44). At the same time, nevertheless the overall agreement with AIEOP protocols by centers was more than acceptable with a value of about 70%, only one third of CNS tumors entered a multicenter clinical trial.

Conclusion: These results confirms the leadership of AIEOP, which represent the reference point for Italian Institutions involved in childhood cancer care. On the contrary for CNS tumors, patients' accrual was not all satisfactory and this fact most likely reflects the tendency to treat children with brain cancer in non-pediatric institutions. For the future we plan to extend this system to other Institutions, not exclusively of pediatrics area, to improve the exhaustivity of our registry.

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1236 POSTER

The aetiology of second soft tissue sarcomas occurring after childhood cancer in Britain

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The risk of a second malignant neoplasm (SMN), of which second soft tissue sarcomas (SSTS) are one of the most frequent, is perhaps the greatest challenge to longevity faced by the increasing population of survivors of childhood cancer. We report the first case-control study to investigate the aetiology of SSTS, in an almost entirely population-based series of SSTS diagnosed in Britain since 1940.

Fifty-three cases of SSTS and 179 controls were identified; the controls were matched for gender, primary diagnosis, and age and calendar year of diagnosis. Excluding those with no treatment record, there was a significant excess of SSTS in those patients exposed to both radiotherapy (RT) and chemotherapy (CT) which was 5 times that observed amongst those exposed to neither RT nor CT ($p = 0.02$). The majority of individuals in the study were treated with RT either alone or in combination with CT, and there was a relative risk of 1.6 observed in those exposed to RT compared with those not exposed. Individual record-based radiation dosimetry is in progress to allow investigation of the dose-response relationship between radiation and SSTS risk. A 3-fold increased risk of SSTS was observed with exposure to CT. This effect was due mainly to exposure to alkylating agents, predominantly cyclophosphamide, the risk increasing substantially with increasing cumulative dose ($p = 0.04$). The greatest risk was observed in those exposed to doses of over 12g/m2 and was 5 times the risk amongst those not exposed to alkylating agents. There was no association with exposure to anthracyclines, antibiotics, vinca alkaloids or epipodophyllotoxins, although the numbers exposed were sometimes small.

In this study, the first reported case-control study of SSTS, we demonstrate a significant association with exposure to anti-cancer therapy during childhood. This finding should help clinicians identify the risks associated with particular aspects of treatment, plan modifications to treatment protocols and direct long-term surveillance to those at greatest risk.

1237 POSTER

Follow-up of long-term survivors of childhood cancer; results of a specialized screening program in over 800 patients

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Purpose: To evaluate in longitudinal setting late effects of childhood cancer treatment, and to provide adequate patient care, including secondary preventive measures.

Methods: Long-term survivors (LTS) of childhood cancer are regularly seen at a specialised outpatient clinic. The results of history taking and physical examination are recorded on case-report forms allowing for registration in a database, PLEKsys. Additional investigations are performed according to protocols based on the treatment modalities used in the patients, and results are also registered in PLEKsys. Medical and psychosocial 'serious' problems are registered in the database irrespective of an established relation with previous multimodality cancer treatment.

Results: As off April 2001, over 800 adults and children were seen at the LTS outpatient clinic. An average of 2.5 serious problems per LTS has been registered. As an elaborate update on all patient records is currently in progress, this number is still subject to change. Survivors of lymphoreticular malignancies have less serious problems than survivors of solid tumours. The average number found in, respectively, childhood ALL, Hodgkin's disease, nephroblastoma and brain tumour survivors were: 1,7; 1.9; 3.2 and 4.2.

In 3:3% of the visitors of our outpatient clinic a second benign or malignant tumour has been registered. The percentages per diagnostic group vary between 1.2% in ALL survivors and 17% in patients that survived their retinoblastoma. Even though the last group of retinoblastoma survivors is very small, the numbers almost certainly reflect the combination of genetic susceptibility and treatment related factors.

Conclusions: Following multimodality treatment, the majority of childhood cancer survivors suffer from serious medical and/or psychosocial problems. To evaluate the full impact of childhood cancer treatment on lifelong health status, cohorts of childhood cancer survivors must be followed lifelong. Our outpatient clinic and specialised database allow both for lifelong follow-up and adequate registration of all medical and psychosocial problems. Besides providing comprehensive care for the LTS it can therefore serve as a basis for further research in the field of late treatment effects. Adequate registration is a prerequisite for patient care as well as research. Much energy and effort will be needed in the future to ensure adequate and timely registration.