EDITORIAL

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Cancer in adolescents

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The Annual Meeting of the Societies of Paediatric Oncology and Haematology focused on cancer and its late effects in adolescents. Debate focused on epidemiology, prevention, therapeutic aspects and side effects. When appropriately treated, approximately 75% of childhood cancers are curable. However, only 20% of the world's children currently benefit from advanced medical care. Children in underdeveloped countries account for 80% of the world's population of children. Some of these children have cancer and are currently denied the right to hope for a cure. The Spanish Registry of Children's Tumours (RNTI - SEOP) is a hospital-based national registry that provides information on epidemiology, survival and mortality, which aids healthcare planning. Cancer in teenagers is relatively rare, but the incidence is higher than in children. In the 15–19 year age group, 174 new cases per million per year are reported in Spain. In children's hospitals, more than 90% of cancer patients are under 15 and in adult hospitals more than 90% are over 40; thus, no hospitals or care systems focus exclusively on adolescents. The most frequent neoplasias in declining order are lymphomas, germinal tumours, central nervous system tumours, leukaemia, soft tissue sarcomas, thyroid carcinomas and skin tumours [1].

Survival of adolescents with leukaemia, lymphoma, soft tissue sarcoma and Ewing's sarcoma is worse than in children. Possible reasons may be the treatment of children in cooperative national and international trials and the different biological behaviour of tumours in adolescents. Acute lymphoblastic leukaemia (ALL) is a model in adolescent oncology. Results obtained to date in adolescents with ALL treated in the high-risk group of paediatric protocols have been satisfactory. Consequently, adolescents with ALL should be treated with paediatric intensive protocols and not with 'adult-type' protocols [2].

A vaccine against common high-risk types of human papillomavirus (HPV) associated with the risk of cervical cancer has been recently approved. The vaccine is being recommended for adolescent girls and young women, before they become sexually active. As HPV types 16 and 18 are implicated in 70% of cervical cancers, they are ideal targets for a new vaccine [3].

Cancer treatment in childhood has been associated with late complications including endocrine, neurocognitive and cardiopulmonary sequelae. Furthermore, childhood cancer survivors are at increased risk for second malignancies. In a recent study, patients treated with a combination of radiotherapy and chemotherapy had a 2-fold increased second cancer risk compared to patients treated with chemotherapy alone. Approximately 1 in 715 young adults is a survivor of childhood malignancy; however these individuals are at increased risk of treatment-related morbidity or even mortality. That study suggested that at least 44% of survivors reported adversely affected health status [4].

Endocrinologic late effects are very frequent, and particularly involve the thyroid, gonads and growth. Better understanding of these complications has led to the modification of protocols and establishment of strategies for diagnosis and early treatment. Individual risk is determined by the treatment received, age at treatment, subsequent lifestyle and individual susceptibility [5]. In several cases, susceptibility can be identified by genetic studies. Some examples of genetic susceptibility are: hereditary retinoblastoma, genetic variation in the leptin receptor gene, obesity in childhood ALL survivors and pharmacogenetic risk factors for osteonecrosis of the hip in children with leukaemia.

Fertility preservation in childhood cancer has become an important area of research. In recent years, significant advances have been made in this area. Ovarian tissue cryopreservation is an experimental technique for girls at risk of infertility and premature ovarian failure. Further research is required to assess the clinical effectiveness of ovarian cryopreservation, and limit the risk of reintroducing cancer cells in the patient. Gonadotropin-releasing hormone (GnRH) analogues are the only available medical protection for gonad-toxic chemotherapy. Treatment with a GnRH agonistic analogue induces

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a temporary prepubertal milieu. The hypo-oestrogenic condition induced diminishes ovary perfusion, thereby minimising the penetration of the gonad-toxic substances into the follicles. GnRH analogues before and during chemotherapy preserve fertility and ovary function in teenagers [6–9].

Physicians have an obligation to educate survivors on the potential impact of cancer diagnosis and treatment on their health and to provide follow-up care by creating and implementing programmes for the prevention and early detection of late effects.

One of the topics discussed was the need to include adolescents with cancer in clinical trials and promote units that provide highly specialised care, address treatment, give information, education, social support and other requirements of teenagers and their families [10].

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