

SHORT COMMUNICATION

Developing strategies for long-term follow up of cancer survivors

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The anticancer treatment has been increasingly successful over the past three decades. With current treatment, over two-thirds of children with cancer and more than half of adult cancer patients can be expected to survive their disease. As a result, there now exists a rapidly growing population of long-term survivors with increased risk of premature morbidity and mortality-induced by therapy. It has become apparent that these patients often face complex of organ damages and psychosocial problems. The awareness of the possible long term complications of therapy is important for optimal health care for the current survivors and also for modifying future treatment regimens to avoid therapy that is associated with unacceptable morbidity and mortality. (*Tab. 1, Fig. 1, Ref. 17.*)

Key words: anticancer treatment, cancer, long-term follow up, oncology, cardiology.

Great advances in the field of oncology have created a growing population of people who are cured of malignancy. It is expected that the number of long-term survivors of cancer will increase. Long-term survivor is a patient who has been free of cancer for more than 5 years.

Within Slovakia, currently there is estimated approximately 250 000–300 000 long-term survivors of adult cancer and about 2500–3000 children and young adults who are long-term survivors of childhood cancer. During past two decades numbers of tumours in adults have increased two times in our country. Since 1995 there have been more than 20 000 cases newly diagnosed with malignancy each year. We still rank among countries with relatively high incidence and mortality in males and with moderate values of both indicators in females. On the other side, there are stable numbers observed in incidence of malignant tumours in children for over 25 years (approximately 170 cases each year) (4).

The survival rate of oncologic patients has considerably improved in developed countries. There has been a striking improvement of survival in patients with childhood cancer - from 28 % in 1960 to 70 % in 1996 (8). Over two-thirds of children with cancer and more than half of adult cancer patients can expect to survive their disease in Slovakia.

During the past decade, research and clinical priorities have focused primarily on methods of early detection and treatment of acute malignant disease with the introduction of highly effec-

tive, intensive and aggressive treatment strategies, but less attention has been directed toward the study of late medical and psychosocial effects of therapy occurring months and years after treatment (1, 3, 5, 7, 12, 13, 17).

It is estimated that only one-third of childhood cancer survivors is without late complications (12). Late complications can arise in any organ system (Tab. 1).

Spectrum and frequency of late complications diagnosed in 650 survivors followed in the Long-term Follow-up Clinic at the Memorial Sloan-Kettering Cancer Center is presented in Figure 1 (13). Over half of these patients have been treated with combination chemotherapy and radiation and one quarter have undergone bone marrow/stem cell transplantation.

Many complications are easily managed, a minority of complications can be life-threatening (secondary malignancies, cardiotoxicity, respiratory dysfunction, infection). The risk of treatment related death is greatest in patients treated with radiation,

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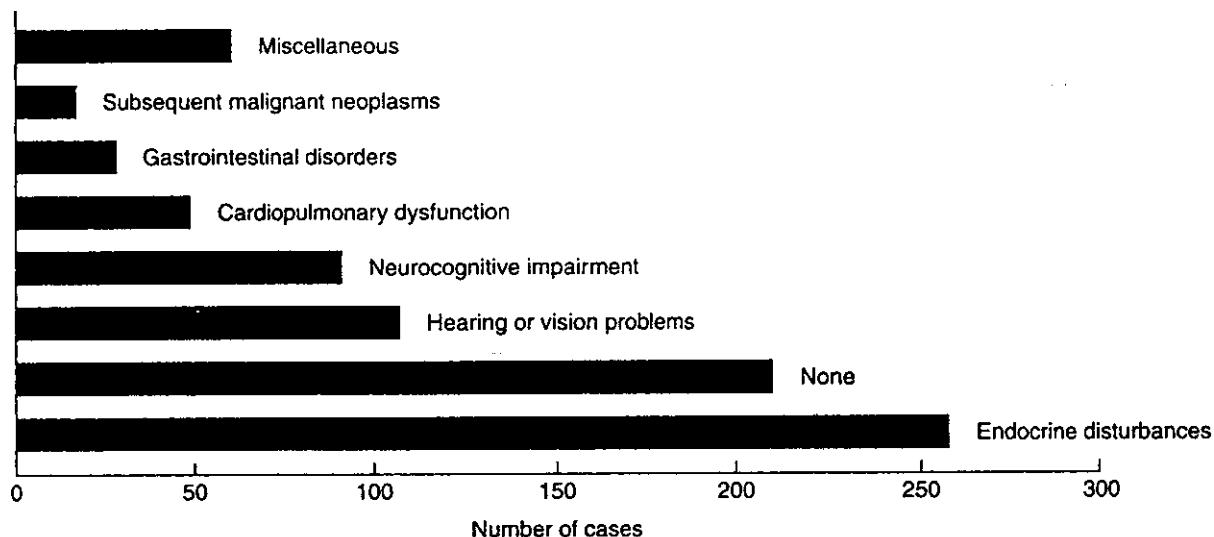


Fig. 1. Late complications diagnosed in the 650 survivors followed in the Long-term Follow-up Clinic at the Memorial Sloan-Kettering Cancer Center (Sklar, 1999).

anthracyclines, alkylating agents or epipodophyllotoxins (8, 12, 13, 14, 15, 16).

Models of systematic holistic care rather than solely a short-term "care" from physical point of view are needed in these patients.

Without these models "*It is as if we have invented sophisticated techniques to save people from drowning, but once they have been pulled from the water, we leave them on the dock to cough a sputter on their own in the belief that we have done all we can*" (6).

Much of the beginning work in this "new dimension" of oncology has been done with survivors of childhood cancers. At the Memorial Sloan-Kettering Cancer Centre, the Long Term Follow Up Clinic in New York has provided long-term clinical care to survivors of childhood and adolescent cancer since 1991.

In 1993, Childhood Cancer Survivor Study (CCSS) was created as a component of the Long Term Follow Up Study. 27 participating centers in the USA and Canada is coordinated by University of Minnesota. The CCSS is a retrospective cohort of 20 346 childhood cancer survivors diagnosed between 1970 and 1986, it also includes 3500 siblings of survivors, who serve as controls (8). The study was recently funded by National Cancer Institute for continuation through 2004. The International Society

of Paediatric Oncologists (SIOP) developed guidelines for the management of survivors of childhood cancer in 1996. The American Society of Paediatric Haematologists/Oncologists (ASPHO) published recommendations for long-term care in the same year. The American Academy of Paediatrics (AAP) published a set of follow up guidelines in 1997 and United Kingdom of Children Cancer Study Group in 2001 (2).

Continuity of care for survivors of childhood malignancies is provided in late-effects clinics using a multidisciplinary team (a medical director, a nurse specialist and a social worker with close collaboration with paediatric oncologist, radiation oncologist, internist, endocrinologist, cardiologist, gynaecologist, ophthalmologist, neurologist, psychologist). An active role of nurse practitioners and clinical nurse specialists in long-term follow up programmes can be learnt from the USA and the United Kingdom.

Within the UK, the direct care of individual and high-risk survivors is provided by a speciality care provider (early identification of actual late effects and anticipation of potential late effects of therapy, plans appropriate interventions etc.) and educator (provides information and support to patient and families, lecturing at meetings, education role within the community, school teachers). Clinical programme manager, researcher and consultant play an important role in indirect care of the population of survivors (2).

The investigators at our Department of Clinical Pathophysiology, School of Medicine, Comenius University play an important role as speciality care providers in the multidisciplinary team for follow up following anticancer therapy in cancer survivors treated at the Department of Paediatric Oncology in Children's University Hospital. Since March 1994 until May 2002 we have performed cardiac monitoring for early detection of cardiotoxic effects of therapy in 338 paediatric oncologic patients during and/or after potential therapy, together 780 registrations of standard ECG and high-resolution ECG (more than half of patients

Tab. 1. Treatment-related complications in cancer patients.

Cardiac/vascular	Neuropsychologic
Cytogenetic	Ophthalmologic
Dental	Orthopedic
Endocrinologic	Psychosocial
Educational	Pulmonary
Gastrointestinal	Renal
Hearing	Reproduction
Hepatic	Second cancers
Neurologic	

have been evaluated 2–9 times). We make cardiac monitoring of these patients in close collaboration with Department of Paediatric Cardiology of Children's University Hospital (their experts have performed 183 echocardiographic evaluations of cardiac status in subgroup of our paediatric oncologic patients since 2000) (9, 10, 11).

We play also role as educators paediatricians, primary care physicians, family practitioners oriented to the preventive medical and psychosocial care of long-term survivors. For example, it is important for physician to be aware of the possibility valvular heart disease, premature myocardial infarction, heart failure, syncopal episodes after cardiac irradiation and/or cytostatic therapy. The onset of syncopal episodes should lead to evaluation of cardiac complications after anticancer therapy (1, 7, 17).

A great percentage of long-term survivors of adult cancers have no long-term follow up. The primary care physician may have an important role in their follow up. There is considerably less information about late effects of anticancer therapy in adults cancer patients. Information to guide and follow up of survivors of cancer will come from national population based cohort studies, large multicentre clinical studies and randomised clinical trials designed to evaluate long-term toxicities associated with different treatment strategies.

Regular cancer and therapy-specific evaluations for at least 10 years after treatment and preferably the rest of one's life are essential in cancer survivors.

However, not all survivors of cancer need the same intensity of follow up. Factors influencing the level of follow up following treatment for cancer include – type of cancer, location and extent of malignancy on diagnosis, type and intensity of treatment modalities, age, in children – developmental status of the child at diagnosis, genetic/familial predisposition and other risk factors (2).

Long-term assessment will not necessarily eliminate delayed effects of therapy, but will enable survivors to take charge of their lives and make more informed decisions about issues affecting the quality of their lives. Awareness of risk can improve detection of late effects early – when are most treatable.

Staying healthy can be a challenge for every cancer survivor in the years after cancer therapy.

Cancer survivors who have a solid understanding of late effects can affect their medical outcomes, they can avoid of health risks such as smoking, sun exposure, they can be encouraged to change health promotion behaviours. According to CCSS 28 % childhood cancer survivors reported cigarette use with actuarial estimated incidence of 32 % by age 40.11 % reported use of other tobacco products (ASCO Congress presentation 2001).

The awareness of the possible long term complications is important not only for optimal health care for the current survivors but also for modifying future treatment regimens to avoid therapy that is associated with unacceptable morbidity and mortality. Thus the population of cancer survivors presents researchers and clinicians with both opportunity – to gain new knowledge about the long term effects of cancer and therapy and an obligation – to educate survivors and provide long-term follow up care.

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