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LETTER TO THE EDITOR

Mortality Experiences Among 15+ Year Survivors of Childhood and Adolescence Cancers

To the Editor:

We read with great interest the paper by Lawless et al., which was first published on-line and also appears in this issue of *Pediatric Blood & Cancer* (1). It was rewarding to see that there are still single institutions large enough to be able to perform long-term evaluation of patients. In the Nordic countries, with their small populations, we must rely on collaboration across national borders in order to collect information permitting analysis. On the other hand, we are lucky in having the unique possibility of long term follow-up by using different types of population-based registers.

In the early 1990s, the Nordic childhood cancer cohort was established as a collaborative project of Association of Nordic Cancer Registries (ANCR) and Nordic Society of Paediatric Haematology and Oncology (NOPHO). Among other studies based on this cohort, a paper on late mortality was published in 2001 (2). In the same issue of the *Journal of Clinical Oncology*, a large hospital-based study from the US was published by Mertens et al. (3) and the two studies were commented upon in an Editorial (4). Both studies showed about 11-fold increase in mortality among 5-year survivors of cancer. Only the latter study was referred to by the present authors.

Our study cohort included 13,604 patients diagnosed in the same period of time as patients in the study of Lawless et al. Table 4 in our paper shows that there were 6,840 patients followed up for 15+ years, and 4,395 of them for 20+ years, totally generating 57,746 person-years at risk. Between 15 and 20 years of follow-up, 121 patients died, giving standard mortality ratio (SMR) of 5.1, 95% CI 4.2 – 6.1. After 20+ years of follow-up, 163 patients died (SMR 3.7, 95% CI 3.2 – 4.4). SMRs for death due to a second cancer were 3.2 and 3.5, respectively. Overall, 46 patients died of a second cancer at 15+ years of follow-up, while 51 patients succumbed to a second cancer during 5-15 years of follow-up. Our SMRs for second cancer are lower than in the study of Lawless et al., perhaps reflecting less intensive treatment in our population-based cohort.

We observed that the pattern of causes of death was dependent on the length of follow-up and on primary diagnosis. For all patients, the proportion of death from the first tumor decreased from 82% during 5 to 10 years after diagnosis to 34% 20 years or more after diagnosis. On the contrary, the proportion of death from a second cancer increased at the same points of time from 3% to 22%. Also, the primary diagnosis had a strong influence on this pattern; for example, in Hodgkin disease second cancer was the leading cause of death at 20 years of follow-up. Thus, not only the length of follow-up, but also the composition of the cohort regarding the primary diagnoses plays a significant role for subsequent mortality. That is why it is important to follow-up both hospital-based and population-based cohorts of childhood cancer survivors.

Neither the study of Lawless et al. nor our study examined the role of therapy of primary tumors for the development of excess mortality. It was, however, reassuring to see in the Nordic study that for death due to second malignancy the hazards were not significantly different between two periods of diagnosis (1980-89 and 1960-79).

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