

Abstract

ALL-STAR Lungs: Late pulmonary adverse effects and pulmonary function in children and adolescent survivors of acute lymphoblastic leukemia (NOPHO ALL2008 cohort)

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Introduction

The most common childhood cancer, acute lymphoblastic leukemia (ALL), affects approximately 35 children and adolescents in Denmark each year. Childhood ALL survival rates have risen from 50% to 90% in developed countries within the past three decades as recently established in the contemporary treatment protocol cohort, the NOPHO ALL2008. Studies have also revealed a severe toxicity rate of 50% during treatment. Pulmonary function deficits (PFD) and obstructive respiratory disorders grade 3-5 occur in 9 % and 10 % of childhood ALL survivors respectively. Hematopoietic stem cell transplantation decreases forced vital capacity and diffusion capacity compared with chemotherapy treatment only. Previous studies fall short because they study only irradiation, now obsolete and known to cause PFD, other older treatment regimens, and because they lack controls and have register-based data as their sole reference. Forgoing these shortcomings, we aim to uncover late pulmonary adverse effects (LPAE) and PFD in childhood NOPHO ALL-2008 survivors.

Methods

This national observational cohort study includes examination of a childhood ALL survivor cohort treated according to the NOPHO ALL-2008 protocol during 2008-2018 (N=317) and matched controls including physical examination, lung function testing, and questionnaires. The primary outcomes are incidence of LPAE and PFD in ALL survivors compared with matched controls.

Perspectives

The study will provide national results regarding the burden of LPAE and PFD in childhood ALL survivors, expectedly leading to an optimization of current national follow-up management in regard to prevention, earlier diagnosis, and treatment of LPAE.

Keywords

Paediatrics, Respiratory system, Oncology