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Older Patients with Myeloma Derive Similar Benefit from Autologous Transplantation

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A B S T R A C T

Autologous hematopoietic cell transplantation (AHCT) for plasma cell myeloma is performed less often in people >70 years old than in people ≤70 years old. We analyzed 11,430 AHCT recipients for plasma cell myeloma prospectively reported to the Center for International Blood and Marrow Transplant Research between 2008 and 2011, representing the majority of US AHCT activity during this period. Survival (OS) was compared in 3 cohorts: ages 18 to 59 years (n = 5818), 60 to 69 years (n = 4666), and >70 years (n = 946). Median OS was not reached for any cohort. In multivariate analysis, increasing age was associated with mortality (P = .0006). Myeloma-specific mortality was similar among cohorts at 12%, indicating an age-related effect on nonmyeloma mortality. Analyses were performed in a representative subgroup comparing relapse rate, progression-free survival (PFS), and nonrelapse mortality (NRM). One-year NRM was 0% for age >70 years and 2% for other ages (P = not significant). The three-year relapse rate was 56% in age 18 to 59 years, 61% in age 60 to 69 years, and 63% age >70 (P = not significant). Three-year PFS was similar at 42% in age 18 to 59 years, 38% in age 60 to 69 years, and 33% in age >70 years (P = not significant). Postrelapse survival was significantly worse for the older cohort (P = .03). Older subjects selected for AHCT derived similar antimyeloma benefit without worse NRM, relapse rate, or PFS.

INTRODUCTION

Plasma cell myeloma is the most common indication for autologous hematopoietic cell transplantation (AHCT); however, a large number of eligible subjects are not offered a transplantation because of advanced age [1-3]. Randomized studies confirm the benefit of autologous transplantation in subjects ≤65 years of age, but these studies typically excluded older subjects [4,5]. The median age at diagnosis of patients with myeloma is 69 years and prospective transplantation studies in these older subjects are limited or use lower doses of conditioning [6]. Single-institution retrospective studies suggest that older persons with myeloma may receive an autologous transplantation with low risk of nonrelapse mortality (NRM) [7-18]. It is also well established that the recent dramatic improvements in survival have accrued disproportionately to younger patients, with relatively minor improvement in survival of those above age 60 [19].

We analyzed the effects of age on outcomes in persons with myeloma receiving upfront autologous transplantation.

SUBJECTS AND METHODS

Data Source

The Center for International Blood and Marrow Transplant Research (CIBMTR) is a voluntary group of more than 450 transplantation centers worldwide that contribute data on allogeneic and autologous transplantations to a statistical center at the Medical College of Wisconsin in Milwaukee or the National Marrow Donor Program Coordinating Center in Minneapolis, Minnesota. Participating centers are required to register all transplantations done consecutively in a prospective fashion. Subjects are followed longitudinally, with yearly data update. Computerized checks for errors, physicians' review of submitted data, and on-site audits of participating centers are used to ensure data quality and compliance. Studies conducted by the CIBMTR are performed with a waiver of informed consent and in compliance with Health Insurance Portability and Accountability Act regulations as determined by the institutional review board and the privacy officer of the Medical College of Wisconsin. All CIBMTR centers contribute to the registration or transplant essential data. Detailed data are collected on the comprehensive report form (CRF) level on a subset of registered subjects and include detailed disease and pretransplantation and post-transplantation clinical information. Statistical methods (weighted randomization schema) are used to ensure that the CRF subset are representative of the transplant essential data cohort.

Study Population

Outcomes of 11,430 AHCT recipients with plasma cell myeloma between 2008 and 2011 (n = 11,430) reported from 148 transplantation centers in the United States and Canada were analyzed. During this period, the CIBMTR collected 60% of AHCT activity performed in the United States [20]. The study population included only those receiving a single AHCT within 24 months of diagnosis and receiving high-dose melphalan alone as conditioning.

Statistical Plan

The objective of this study was to analyze the effect of age on survival, NRM, relapse rates, and progression-free survival (PFS) after transplantation. Survival after AHCT was compared and subject to multivariate analyses in 3 age-dependent cohorts: ages 18 to 59 years (cohort 1, n = 5818), 60 to 69 years (cohort 2, n = 4666), and ≥70 years (cohort 3, n = 946).

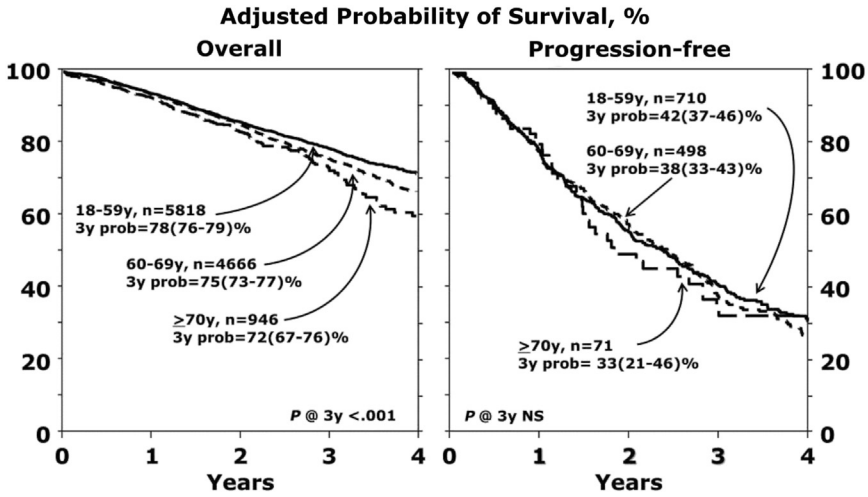

Figure 1. Adjusted probability of survival. (Left) Shows OS and (Right) shows PFS.