

Differences in Characteristics of US Hematopoietic Stem Cell Transplantation Centers by Proportion of Racial or Ethnic Minorities

Christopher J. Schwake,¹ Mary Eapen,^{1,2} Stephanie J. Lee,³ César O. Freytes,⁴ Sergio A. Giralt,⁵ Willis H. Navarro,⁶ J. Douglas Rizzo,² Koen van Besien,⁷ Fausto R. Loberiza, Jr.⁸

¹Department of Pediatrics, Medical College of Wisconsin, Milwaukee, Wisconsin; ²Center for International Blood and Marrow Transplant Research, Health Policy Institute, Medical College of Wisconsin, Milwaukee, Wisconsin; ³Department of Medical Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ⁴Department of Hematology, University of Texas Health Science Center at San Antonio and South Texas Health Care System, San Antonio, Texas; ⁵M.D. Anderson Cancer Center, Houston, Texas; ⁶Department of Hematology, University of California San Francisco, San Francisco, California; ⁷Department of Hematology, University of Chicago, Chicago, Illinois; ⁸Department of Internal Medicine, Section of Oncology/Hematology, University of Nebraska Medical Center, Omaha, Nebraska

Correspondence and reprint requests: Fausto R. Loberiza, Jr., MD, MS, Department of Internal Medicine, Section of Oncology/Hematology, University of Nebraska Medical Center, 987680 Nebraska Medical Center, Omaha, NE 68198-7680 (e-mail: flobberiza@unmc.edu).

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ABSTRACT

Racial or ethnic minorities with leukemia who receive HLA-identical sibling hematopoietic stem cell transplants (HSCTs) are reported to have worse survival when compared with whites. Characteristics of US HSCT centers according to the proportion of ethnic minorities who undergo transplantation were compared to explore systematic differences among centers; the association with 100-day mortality was evaluated to determine whether center factors may explain the observed discrepant survival among ethnic minorities. One hundred sixteen US transplantation centers that performed HLA-identical sibling transplantations for leukemia were analyzed. We compared physician and health care provider staffing, transplantation unit procedure and resources, and medical center organization according to the volume procedure ratio of ethnic minorities who underwent transplantation and also according to the ratio of Hispanics who underwent transplantation. Centers that performed transplantation in a higher proportion of ethnic minorities were more likely to perform fewer transplantations per year, to have fewer devoted transplant beds, to be in an urban setting, to have a lower physician to patient volume ratio, and to follow up survivors 1 year after transplantation. Centers that performed transplantation in a higher proportion of Hispanics were more likely to perform fewer transplantations per year and to have fewer devoted transplantation beds, were less likely to perform outpatient transplantations, were more likely to be in an urban setting, and were less likely to have posttransplantation immunization protocols. Observed differences in center factors were not associated with 100-day mortality after adjustment for disease severity. Our results suggest that the inferior survival reported in ethnic minorities after HSCT may not be readily explained by center effects.

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KEY WORDS

Ethnic minorities • Transplantation centers • Hematopoietic stem cell transplantation

INTRODUCTION

Numerous differences exist in health care access, utilization, and outcomes among racial and ethnic groups for a wide array of medical and surgical con-

ditions in the United States. Minorities have fewer procedures performed for medical conditions such as coronary artery disease, peripheral vascular disease, and degenerative joint disease [1-11]. Furthermore, minorities with these conditions are often reported to

have greater in-hospital and postprocedure morbidity and mortality. These inequalities have also been well documented in oncology. Multiple published studies on colorectal, genitourinary, breast, and lung cancer, as well as on the leukemias and lymphomas, have shown higher mortality among racial and ethnic minorities [12-21]. Differences in procedure choice for certain conditions have also been related to race and ethnicity [15,22,23].

Disparities in outcomes among different races and ethnicities also extend to the hematopoietic stem cell transplantation (HSCT) setting [24-26]. HSCT is an important treatment modality for different leukemias and lymphomas, aplastic anemia, multiple congenital immune deficiencies, and other malignancies. Recently published data from the Center for International Blood and Marrow Transplant Research (CIBMTR [formerly IBMTR]) showed decreased survival rates for Hispanics with acute or chronic leukemia when compared with whites between 1995 and 1999 in the United States and Canada [25].

Articles on patients with malignant diseases have identified patient factors (socioeconomic status [SES], patient preferences, transportation, and family support), clinical factors (stage of disease, age at diagnosis, and comorbidities), and health care structural factors (type/status of health insurance, type of institution, and geographic region) that may individually or collectively affect survival disparities among different races and ethnicities [27]. Additional studies have examined the effect of different hospital and physician characteristics on morbidity and mortality [28-33]. Many of these studies, however, did not examine the relationship between the racial and ethnic demographic characteristics of their samples and the variances among their hospitals' characteristics. Such examinations of hospital characteristics in the context of racial and ethnic compositions are sparse not only in the general medicine and surgical literature, but also in the oncologic and HSCT settings.

We compared the physician and health provider characteristics, transplantation center procedure volume and resources, and medical center characteristics of HSCT centers in the United States that perform transplantation in a higher proportion of ethnic minorities, specifically Hispanics, with characteristics of centers that perform transplantations in a predominantly white population, and we compared their 100-day survival while adjusting for clinical severity and other significant center characteristics. We hypothesized that differences in HSCT center characteristics, according to the proportion of ethnic minorities who undergo transplantation, are independent of survival.

METHODS

Data Collection

Data for this analysis were obtained from the CIBMTR center characteristics annual survey. The CIBMTR is a voluntary working group of more than 400 transplantation centers worldwide that contribute detailed data on consecutive allogeneic HSCTs to the Statistical Center at the Health Policy Institute of the Medical College of Wisconsin (Milwaukee, WI). According to recent HSCT center census data, approximately 40% of all allogeneic transplantations are registered with the CIBMTR, and 45% to 50% of those are from the United States and Canada. Participating centers are required to register all consecutive transplantations, and compliance is monitored with on-site audits. Data from patients who undergo transplantation are collected longitudinally with yearly follow-up. The study protocol and survey questionnaire received institutional review board approval.

For this analysis, only data from HSCT centers in the United States were used. This population included 187 centers that had performed related allogeneic or autologous transplantations between 1998 and 2000 for hematologic malignancies: acute lymphoblastic leukemia, acute myeloblastic leukemia, chronic myelogenous leukemia, Hodgkin lymphoma, and non-Hodgkin lymphoma. All centers received a detailed inquiry regarding multiple characteristics of their medical organizations and providers. An itemized listing of these variables is presented in the "Analysis" portion of this section. Of the 187 centers surveyed, 163 (87%) responded, 6 (3%) refused to participate, and 18 (10%) were excluded because those transplantation teams no longer contribute data to the CIBMTR. Of the 163 transplantation centers that completed the inquiry, 113 (69%) performed HLA-identical sibling HSCT. An additional 3 non-CIBMTR US HSCT centers participated in the survey. Thus, a total of 116 US HSCT centers were included in the descriptive part of the study.

Study Population

The patient's ethnicity was abstracted from data submitted by the transplantation center to the CIBMTR. Patients considered to be ethnic minorities in the database are reported to be "African American," "Caribbean black," "South or Central American black," or "black unspecified" descent; "Caribbean Hispanic," "Mexican/Southwestern United States Hispanic," "South or Central American Hispanic," or "Hispanic unspecified" descent; "Asian Indian," "Filipino," "Hawaiian/Polynesian," "Japanese," "Korean," "Northern Chinese," "Southeast Asian/Southern Chinese," or "Oriental unspecified" descent; and "Native American," "American Indian," or "Native Alaskan/Eskimo/Aleut." We limited the analysis to centers performing

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