Biol Blood Marrow Transplant 22 (2016) 564–570

Biology of Blood and Marrow Transplantation

journal homepage: www.bbmt.org

ASBMT American Society for Blood and Marrow Transplantation

Success of an International Learning Health Care System in Hematopoietic Cell Transplantation: The American Society of Blood and Marrow Transplantation Clinical Case Forum

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Article history:
Received 12 December 2015
Accepted 14 December 2015

Key Words:
Autologous stem cell transplantation
Allogeneic hematopoietic stem cell transplantation
Case discussions

A B S T R A C T

The American Society for Blood and Marrow Transplantation (ASBMT) Clinical Case Forum (CCF) was launched in 2014 as an online secure tool to enhance interaction and communication among hematopoietic cell transplantation (HCT) professionals worldwide through the discussion of challenging clinical care issues. After 14 months, we reviewed clinical and demographical data of cases posted in the CCF from January 29, 2014 to March 18, 2015. A total of 137 cases were posted during the study period. Ninety-two cases (67%) were allogeneic HCT, 29 (21%) were autologous HCT, and in 16 (12%), the type of transplantation (autologous versus allogeneic) was still under consideration. The diseases most frequently discussed included non-Hodgkin lymphoma (NHL; n = 30, 22%), acute myeloid leukemia (n = 23, 17%), and multiple myeloma (MM; n = 20, 15%). When compared with the US transplantation activity reported by the US Department of Health and Human Services, NHL and acute lymphoblastic leukemia cases were over-represented in the CCF, whereas MM was under-represented ($P < .001$). A total of 259 topics were addressed in the CCF with a median

Financial disclosure: See Acknowledgments on page 569.
Authorship statement: M. -A. P. and W. A. W. contributed equally to this work.

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http://dx.doi.org/10.1016/j.bbmt.2015.12.008

of 2 topics/case (range, 1 to 6). Particularly common topics included whether transplantation was indicated (n = 57, 41%), conditioning regimen choice (n = 44, 32%), and post-HCT complications after day 100 (n = 43, 31%). The ASBMT CCF is a successful tool for collaborative discussion of complex cases in the HCT community worldwide and may allow identification of areas of controversy or unmet need from clinical, educational and research perspectives.

INTRODUCTION

Hematopoietic cell transplantation (HCT) is a life-saving procedure for patients with high-risk malignant or nonmalignant hematologic disorders or solid tumors. However, HCT carries significant risk of treatment-related morbidity and mortality [1].

There are multiple opportunities for highly complex clinical decision-making along the HCT trajectory, from patient selection (eg, interpretation of disease and patient-related factors influencing candidacy for HCT) to HCT approach (eg, conditioning regimen, graft source and manipulation, donor selection) or HCT complications (eg, management of graft-versus-host disease [GVHD], organ toxicity, infections, relapse, late effects). HCT-related technology and practice are continually evolving and improving, adding additional complexity to clinical decisions [2]. Although numerous clinical guidelines and evidence-based consensus statements have been published on these and other topics [3-13], cases featuring unique characteristics emerge every day in clinical practice. Not surprisingly, previous research has documented significant variation in clinical decision-making among transplantation health care professionals, including patient referral to transplantation centers, supportive care practice, and management of immunosuppression to prevent and/or treat GVHD [14-17]. Additionally, evidence-based reviews and other published treatment guidelines are inherently limited by lags in time to publication, which may result in months to years from conception to dissemination after peer review and editing.

Because HCT is a field characterized by significant risk of procedure-related morbidity and mortality, significant resource utilization, and variation in practice among trained professionals [18,19], it represents an ideal environment for application of a learning health care system. As defined by the Institute of Medicine, “A learning healthcare system is [one that] is designed to generate and apply the best evidence for the collaborative healthcare choices of each patient and provider; to drive the process of discovery as a natural outgrowth of patient care; and to ensure innovation, quality, safety, and value in health care” [20,21]. Although several resources within the field of HCT already exist to support a learning health care system, such as the Center for International Blood and Marrow Transplant Research, the National Marrow Donor Program, the American Society for Blood and Marrow Transplantation (ASBMT), and the Foundation for the Accreditation of Cellular Therapy, there are relatively few widely available resources to assist in daily decision-making in clinical practice and help the HCT community learn continuously from the experience of other clinicians in a relatively real-time fashion.

We hypothesized that a secure, online forum for discussing challenging clinical care issues within the field of HCT would be significantly utilized by the global HCT community and that discussions within this forum would reflect variation among HCT professionals’ approaches to clinical care issues. In addition, discussions on the forum could potentially identify areas of controversy or areas of unmet need, not only in the clinical sense but also from an educational perspective. We also hypothesized that this forum would allow relatively real-time discussion and dissemination of contemporary practice patterns, without the delays associated with more formal and traditional publications. We now describe the experience of the ASBMT Clinical Case Forum (CCF), a secure online forum for the discussion of challenging HCT cases.

METHODS

CCF Development

ASBMT, through the Committee on Education and the Subcommittee on Web-Based Learning, developed a secure online forum for discussion of challenging clinical care issues (www.asbmt.medting.com). The forum was named the *ASBMT Clinical Case Forum*. The software for the ASBMT CCF was made available through collaboration with Best Doctors (Boston, MA), a company that specializes in remote medical consultations. The ASBMT CCF contains several features that facilitate secure and informative case submission and discussions. Participants must login securely before accessing site content. After being granted access to the site, participants may submit a case, read others’ cases and comments, or submit new comments on cases. To submit a case, participants enter a title and free text clinical data into a submission dialog box, in addition to optional inclusion of deidentified pathology slides, radiological images (supported through the integrated MedViewer imaging platform, Best Doctors), photographs (eg, dermatologic lesions), and other ancillary data (Supplementary Figure 1). The site is monitored for uploading of any information that has not been deidentified. Participants can also assign cases to 1 or more topic groups, enabling cases to be easily searched using key words. After they have been posted, cases may receive subsequent comments from other CCF participants, with comments appearing sequentially, directly below the case submission (Supplementary File). The CCF software supports translation to other languages, allowing global participation and facilitating the development of the CCF into an international initiative. This feature is particularly important in transplantation, as a global transplantation community provides a platform for users in less-developed countries with less mature transplantation programs to connect with more experienced transplantation teams.

In February 2014, coincident with the annual BMT Tandem Meetings, the ASBMT CCF was launched as an ASBMT member benefit. For the first 6 months, access to the CCF was also granted to nonmembers who had attended the annual meeting. In the year that followed, the CCF has been available to physicians, nurses, advanced practitioners, pharmacists, and trainees for case posting and commentary.

Data Abstraction and Definitions

After the ASBMT CCF had been open for approximately 1 year, the ASBMT Committee on Education reviewed the data associated with cases and comments posted through March 18, 2015. Institutional review board approval was obtained to conduct this minimal-risk research. One data abstractor (W.A.W.) summarized the case topic and assigned the case to 1 or more categories associated with the HCT process. A second data abstractor (P.B.) reviewed these determinations and additionally determined the urgency of the case and dates of comments. *Urgency* was determined based on clinical information posted and was defined as a case needing an answer in <72 hours, based on the opinion of the reviewers. A third investigator (M.A.P.) reviewed all information and was available to adjudicate in case of any discrepancies. US transplantation activity for the year 2013 reported in the Health Resources and Service Administration of the US Department of Health and Human Services (http://bloodcell.transplant.hrsa.gov/RESEARCH/Transplant_Data/US_Tx_Data/Data_by_Disease/national.aspx) was used to compare the distribution of diseases in the CCF with the actual HCT activity across the country.