

Department of Transfusion Medicine

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General Summary

1. To establish guidelines that could help distinguish transfusion-related acute lung injury (TRALI) from transfusion-associated circulatory overload (TACO), a study group (T. Tasaki, principal investigator) was formed with a Health and Labour Science Research Grant last year. In the second year of this research, the proportion of donors with antileukocyte antibodies among female platelet donors was shown to be 11.7%. However, the exact proportion of patients exhibiting respiratory distress among those receiving such antibody-containing blood products remains unclear, although antileukocyte antibodies are considered a causative factor of TRALI. Furthermore, no significant difference in SpO₂ was found on the basis of whether the platelets patients received contained or did not contain antileukocyte antibodies. However, because we did show a lack of distress in patients receiving platelets without HLA-matching antibodies, more detailed analysis of the characteristics of antibodies, such as specificity and titer against the recipients' HLA phenotype, should be carried out.

2. To improve the safety of blood transfusion at the bedside, the College of Transfusion Nurses was established in Japan in 2011. Because 3 years have passed since its establishment, we sent a questionnaire of 46 questions to all 284 certified transfusion nurses (CTNs) to survey the changes in their working circumstances. 135 of 284 CTNs (47.5%) replied. The most pronounced change was that 66 of 135 CTNs (48.8%) became involved in transfusion education. Ninety-three of 135 CTNs (68.9%) felt they have improved their teaching skills for patients having transfusions.

3. In Japan, transfusions are performed even in small hospitals. For the safety of blood transfusion, accurate knowledge of transfusion medicine is necessary for physicians, nurses, and medical laboratory technologists. However, many trainees receive an insufficient education because of a lack of resources. A practical guide was created by the Study Group on Transfusion Reaction Monitoring Systems in Medical Institutions. Educating hospital staff with this practical guide will promote a higher level of transfusion operations, which will subsequently lead to improved patient outcomes. (Fujii Y, et al, Yamaguchi University)

Research Activities

1. In almost 30% of patients with TRALI, antileukocyte antibodies are found in the blood products used for their treatment. Therefore, while establishing new guidelines, we have evaluated the risk of distress due to transfusion of such blood. The subjects were patients who had received platelets derived from female donors. One sealed segment from each platelet product was frozen and screened for antileukocyte antibodies with LABScreen Multi test (One Lambda, Inc., Canoga Park, CA, USA). If the result

was positive, the specificities of the antibodies were identified with the LABScreen Single Antigen assay (One Lambda, Inc.). After informed consent was obtained, HLA typing was performed with the blood of patients who had received platelets containing antileukocyte antibodies. The relationship between antileukocyte antibodies in the donor blood and dyspnea in the recipients was investigated. The SpO₂ levels were checked before and 6 hours after the transfusion of platelets. Of the 282 specimens, 33 (11.7%) were positive for antileukocyte antibodies. The HLA typing of 3 recipients has shown that none carried an HLA phenotype corresponding to the specificities of the antileukocyte antibodies. The mean SpO₂ was reduced more in patients who had received platelets containing antileukocyte antibodies than in patients who had received platelets without such antibodies; however, the difference in antibody levels was not statistically significant. Studies of the relationship between adverse events caused by donors' antileukocyte antibodies and recipients' HLA phenotype are now underway.

2. Although the system of the College of Transfusion Nurses was only recently established, CTNs possess a large body knowledge of blood transfusion, including the management of adverse reactions, transfusion testing, and patient care, and have already improved the safety of transfusion at the bedside. We believe that the safety of blood transfusion in Japan will be improved in the future by the introduction of this new system in cooperation with transfusionists and technologists who have already been certified. (Tasaki T, et al. 24th Regional Congress of the International Society Blood Transfusion, Kuala Lumpur, Malaysia, 2013)

3. A practical guide to prevent transfusion errors in hospitals was created by the support of a Health and Labour Science Research Grant for Research on Regulatory Science of Pharmaceuticals and Medical Devices. This guide was written in both English and Japanese. Many figures and tables are used to aid understanding of the text. The guide can be seen at the Website of the Japan Society of Transfusion Medicine and Cell Therapy. (Fujii Y, Tasaki T, et al. AABB annual meeting, Denver, 2013)

Publications

Odaka C¹, Kato H², Otsubo H¹, Takamoto S², Okada Y¹, Taneichi M¹, Okuma K¹, Sagawa K³, Hoshi Y, Tasaki T, Fujii Y⁴, Yonemura Y⁵, Iwao N⁶, Tanaka A⁷, Okazaki H⁸, Momose SY⁸, Kitazawa J⁹, Mori H¹⁰, Matsushita A¹¹, Nomura H¹², Yasoshima H¹³, Ohkusa Y¹, Yamaguchi K¹, Hamaguchi I¹ (¹Nat Inst Infect Dis, ²Aichi Med Univ, ³Kurume Univ, ⁴Yamaguchi Univ, ⁵Kuma-

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mitama Hosp, ¹¹Shibetsu City Hosp, ¹²Sanraku Hosp, ¹³Yao Hosp).** Online reporting system for transfusion-related adverse events to enhance recipient haemovigilance in Japan: a pilot study. *Transfus Apher Sci.* 2013; **48**: 95-102.