The Art of Compromise in Transfusion/Transplantation Medicine (and Some Parallels in Classical Literature)

Andreas Sputtek^a Thomas H. Eiermann^b

^a MVZ Labor Limbach Neumünster GmbH, Neumünster,

^b University Medical Center Hamburg Eppendorf, Hamburg, Germany

According to the World Health Organization (WHO), ‘Sexual orientation is not to be regarded as a disorder’ [1]. In Germany there is still a permanent deferral from blood donation of men who have sex with men (MSM, also known as ‘males who have sex with males’) [2]. The permanent deferral from blood donation of MSM changed in England, Scotland and Wales in 2011 to a 12-month deferral since last relevant sexual contact. What are the reasons for this change, and could this be of interest for other countries as well? Is this a suitable compromise or is this selling one’s soul to the devil as Faust did in the classic German legend? In the first paper of this issue Slowther et al. [3] describe the policy and the practice which led to changes in the criteria for MSM to donate blood.

Platelet concentrates (because of their short shelf life) are often transfused to adults without regard for ABO compatibility. Cid et al. [4] address this problem in the second paper and present strategies to minimize the risk of hemolysis. They also focus on the risk of immunization of Rh-negative recipients by Rh-positive platelet transfusions. Or does this compromise mean to open Pandora’s box and let all evils escape and spread over the earth? By the way, in Greek mythology Zeus did not punish Pandora, as he knew in advance that she would open the box impelled by her curiosity given to her by the gods ...

RHD PCR testing may be used to reveal weak D, partial D, DEL and chimeric D+/D– donors among presumed D-negative blood donors. But can this be justified in view of the cost generated by PCR testing? How about testing for these antigens in pools and is this truly the philosopher’s stone (lapis philosophorum) which turns base metals into gold or silver? In the third paper of this issue, Wagner [5] presents this compromise where D antigen testing using the indirect antiglobulin test is replaced by *RHD* PCR testing in pools.

Increased sensitivity and specificity for detection of human leukocyte antigen (HLA) antibodies in multiplexed assays

with colored polystyrol beads coated with recombinant HLA class I and II molecules (Luminex® single antigen beads; L-SAB) has attracted tremendous interest in recent years as outlined by Lachmann et al. [6] in the fourth paper. Much has been learned to avoid the pitfalls of this very attractive new technology. But some of the inherent complexities of the major histocompatibility complex (MHC) (e.g., peptides bound to the MHC) and the immune system (e.g., effector side of the antibody heavy chain) remain to be fully addressed. In kidney transplantation, Süsal et al. [7] show in the fifth paper that to assess the clinical relevance of the HLA antibodies detected by L-SAB this new tool should be used carefully and as a complementary approach to the established complement-dependent cytotoxicity (CDC) and ELISA methods. Is this a situation comparable to what Odysseus experienced when he came close to the Sirens at sea? All his sailors had to plug their ears with wax while he was tied to the mast of the ship so he could hear what they sang without getting lured into danger. ‘Type and screen’ followed by a virtual cross-match, (restricting actual CDC cross-matches to positive virtual cross-matches) seems to be an attractive alternative to the current Eurotransplant procedure here [8].

Clonal PCR, together with next generation sequencing, aims to increase the resolution and throughput of classical antigen/gene typing. This tool has now been adapted for registry typing of volunteer stem cell donors by Hirv et al. [8]. At present the ‘digital’ typing method is not suited for recipient typing due to the complexity and time needed to obtain results. It seems to be clear here (at present) who is Dr. Jekyll and who is Mr. Hyde, but the future will have to show whether cost will remain a constraint for widespread introduction and if there will be a clinical benefit for patient care.

Under ‘natural circumstances’ (in contrast to man-made processes like transplantations), a healthy child born after a 9

months pregnancy can be regarded as a successful (haploidentical) transplantation. However, problems may arise from 'transfusions' from previous children into the mother, as shown in the paper by Schulze et al. [10]. To the authors' best

knowledge there is no parallel to this situation in the classical literature (Oedipus does not fit), but if the reader knows of a better example, we will be happy to receive a proposal.

References

- 1 UNAIDS: Men who have sex with men. www.unaids.org/en/media/unaids/contentassets/dataimport/pub/briefingnote/2006/20060801_policy_brief_msm_en.pdf (last accessed May 12, 2013).
- 2 WB-AK «Richtlinien Hämotherapie»: Erläuterungen zum Blutspende-Ausschluss von Männern, die Sexualverkehr mit Männern haben (MSM) im Kontext der Zweiten Richtlinienanpassung 2010 der Richtlinien zur Gewinnung von Blut und Blutbestandteilen und zur Anwendung von Blutprodukten (Hämotherapie). Stand 31.03.2010. www.bundesaerztekammer.de/downloads/Haemotherapie_MSM_Erlaeuterung_final.pdf (last accessed May 12, 2013).
- 3 Slowther A, Watkins NA, Kelly D: Evidence-based policy and practice leads to changes in the criteria for MSM to donate blood. *Transfus Med Hemother* 2013;40(3):155–158.
- 4 Cid J, Harm SK, Yazer MH: Platelet transfusion – the art and science of compromise. *Transfus Med Hemother* 2013;40(3):160–171.
- 5 Wagner FF: RHD PCR of D-negative blood donors. *Transfus Med Hemother* 2013;40(3):172–181.
- 6 Lachmann N, Todorova K, Schulze H, Schönmann C: Luminex® and its application for solid organ transplantation, hematopoietic stem cell transplantation, and transfusion. *Transfus Med Hemother* 2013;40(3):182–189.
- 7 Süsal C, Opelz G, Morath C: Role and value of Luminex®-detected HLA antibodies before and after kidney transplantation. *Transfus Med Hemother* 2013;40(3):190–195.
- 8 Amico P, Hirt-Minkowski P, Hönger G, Gürke L, Mihatsch MJ, Steiger J, Hopfer H, Schaub S: Risk stratification by the virtual crossmatch: prospective study in 233 renal transplants. *Transplant Int* 2011;24:560–569.
- 9 Grumbt B, Eck SH, Hinrichsen T, Hirv H: Diagnostic applications of next generation sequencing in immunogenetics and molecular oncology. *Transfus Med Hemother* 2013;40(3):196–206.
- 10 Schulze TJ, Goebel M, Scharberg EA, Bugert P, Janetzko K: Development of anti-G, anti-C, and Anti-Jk(b) in a 22-year-old mother during her forth pregnancy. *Transfus Med Hemother* 2013;40(3):207–209.