

POSTNATAL DONOR LYMPHOCYTE INFUSION AUGMENTED CHIMERISM AT THE COST OF GVHD IN LOW-LEVEL MIXED CHIMERAS

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Background and aims: In our previous studies, immune response of mixed chimeras to donor skin could be presaged as “reliable tolerance”, “possible tolerance” and “hyporesponsiveness” based upon peripheral chimerism of >3%, 0.2-3% and < 0.2% at graft placement. This study would examine whether postnatal donor lymphocyte infusion could augment chimerism.

Methods: After in utero marrow transplantation, mouse recipients were collected and grouped based upon first month peripheral chimerism of >3%, 0.2-3%, 0.01-0.19%, and undetectable. Postnatal donor lymphocytes ($5-10 \times 10^7$) were intravenously infused within 3 days after chimerism examination. Peripheral chimerism was then followed up periodically.

Results: Peripheral chimerism was rapidly boosted up within 2 hours, but eventually returned to pre-booster levels by days 7-14. It suggests an immediate additive effect of injected donor lymphocytes on the transient uprise of chimerism levels. For recipients with peripheral chimerism < 0.2%, postnatal lymphocyte infusion never enhanced peripheral chimerism at the subsequent examination. Chimerism augmentation only succeeded in 4 recipients with 1.22, 1.54, 4.01 and 4.81% chimerism. Their circulating donor cells remained around a level of 2.41-4.85% on day 7 and didn't increase to a level of >10% with multilineage expression until 1-2 months after lymphocyte infusion. However, three of them proved to have GVHD by histological examinations. In addition, lots of recipients, especially with chimerism of >0.2% died unexpectedly 1-12 weeks after infusion.

Conclusions: For low-level chimerism of >0.2%, postnatal donor lymphocyte infusion could augment donor cell levels with a latent period of 1-2 months after infusion, but often at the cost of GVHD.