

1 **Abstract**

2 **BACKGROUND:** Cross-matched platelet (cross-matched PLT) transfusion is effective
3 for immune-mediated platelet transfusion refractoriness (PTR), but is more costly and
4 time-consuming for physical cross-match than using standard PLT units. Recent studies
5 have reported the utility of human leucocyte antigens (HLA) virtual cross-matched PLT
6 (HLA-matched PLT) that is defined as HLA-A/B matched or no antibody against
7 donor-specific antigen. Here, we evaluated the effect of HLA-matched PLT for PTR in
8 post hematopoietic stem cell transplant (HSCT) recipients.

9

10 **STUDY DESIGN AND METHODS:** Our study included a total of 241 PLTs in 16
11 patients who underwent HSCT at Okayama University Hospital between 2010 and
12 2017, receiving either HLA-matched or cross-matched PLT. We calculated the 24-hour
13 corrected count increments (CCI-24) to evaluate the effect of PLTs. A CCI-24 \geq 4500
14 was considered to be a successful transfusion.

15

16 **RESULTS:** We analyzed 139 cross-matched PLTs and 102 HLA-matched PLTs. In the
17 immune-mediated PTR, the rate of successful transfusion was 60.5% for cross-matched
18 PLT and 63.4% for HLA-matched PLT ($p = 0.825$). On the other hand, the median CCI-

19 24 for cross-matched PLT transfusions and HLA-matched PLT transfusions were 1856
20 and 5824 ($p < 0.001$), with a success rate of 28.1% and 54.1% in cases with non-
21 immune-mediated PTR, respectively ($p = 0.001$).

22

23 **CONCLUSION:** The effectiveness of HLA-matched PLT is not inferior to cross-
24 matched PLT. This result indicates that physical cross-match can be omitted in post
25 HSCT PTR.