

1 *Original Article*

2 **Prolonged warm ischemia exacerbated acute rejection after lung transplantation**
3 **from donation after cardiac death in a mouse**

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23 **Keywords:** lung transplantation; rejection; organ preservation; donation after cardiac
24 death; brain dead donor

1 **Abstract**

2 **Objective:** In lung transplantation (LTx) from donation after cardiac death (DCD), the
3 donor lungs are inevitably exposed to warm ischemic time (WIT) between the cardiac
4 arrest and the initiation of cold preservation. We conducted this study to examine the
5 effect of prolonged WIT on lung allograft rejection in a murine model of LTx from DCD.

6 **Methods:** Allogeneic BALB/c→ B6 LTx from DCD was performed with a WIT of 15
7 minutes (WIT15 group, n = 5) or 60 minutes (WIT60 group, n = 5). Recipients were
8 immunosuppressed by perioperative costimulatory blockade. The lung allografts were
9 analyzed by histology and flow cytometry on day 7 after the LTx.

10 **Results:** Histologically, the rejection grade in the WIT60 group was significantly higher
11 than that in the WIT15 group (3.4 ± 0.4 vs. 2.2 ± 0.2 , $P = 0.0278$). Moreover, the intragraft
12 CD8+ to CD4+ T cell ratio in the WIT60 group was significantly higher than that in the
13 WIT15 group (2.3 ± 0.12 vs. 1.2 ± 0.11 , $P < 0.0001$).

14 **Conclusions:** Prolonged WIT could exacerbate the severity of lung allograft rejection
15 after LTx from DCD. Minimization of the WIT could improve the outcomes after LTx from
16 DCD.

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