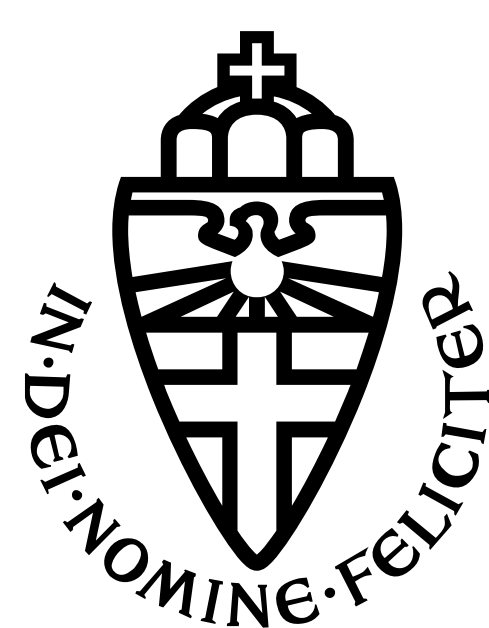




Intraperitoneally administered lidocaine attenuates thermal allodynia in a murine ‘two-hit’ chronic constriction injury model

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Background

Mechanical ventilation (hit one) during surgery (hit two) is often needed and both induce an inflammatory response. Dysregulation of the inflammatory response can cause chronic postoperative pain.

Methods

Healthy C57BL6 mice (n=56) were mechanically ventilated (MV) and allocated to receive sham (MV-sham) or chronic constriction injury (MV-CCI) surgery in the left hind paw. Plasma interleukin (IL)-1 β , IL-6, IL-10, keratinocyte derived chemokine (KC) and tumor necrosis factor (TNF)- α were determined on day 0 and 16. Sensory testing was performed on day 0, 3, 7 and 16 by cold plate test (number of lifts (NOL) and cumulative reaction time (CRT)) and von Frey test. The effect of lidocaine on cytokines and sensory testing was analyzed.

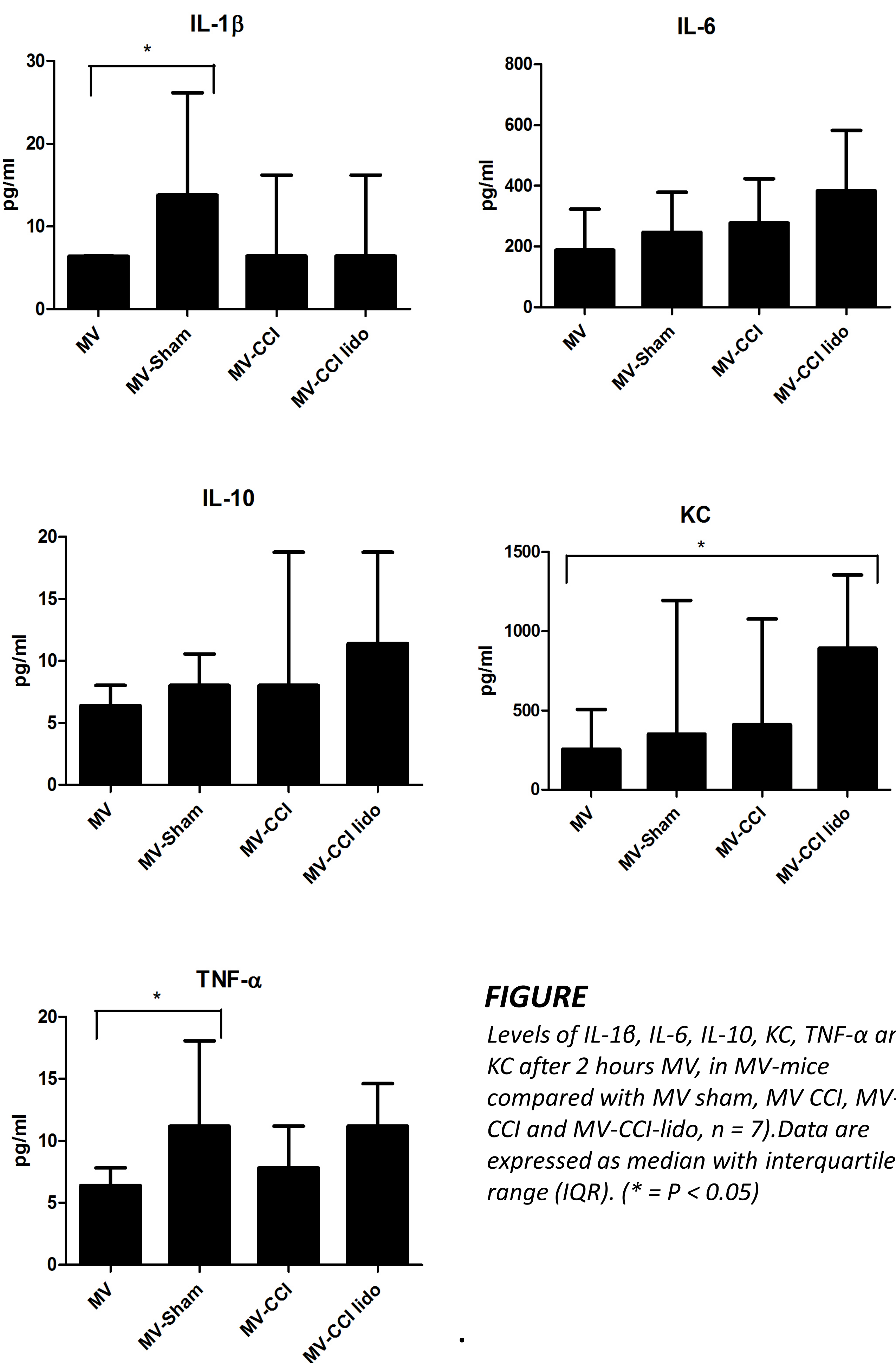


FIGURE
Levels of IL-1 β , IL-6, IL-10, KC, TNF- α and KC after 2 hours MV, in MV-mice compared with MV sham, MV CCI, MV-CCI and MV-CCI-lido, n = 7). Data are expressed as median with interquartile range (IQR). (* = P < 0.05)

Results

MV-Sham showed an increase in IL-1 β and TNF- α , and MV-CCI-lido increased levels of KC compared with MV on day 0. No difference in cytokine levels was observed on day 16. NOL of the left paw versus the right was increased in MV-CCI on day 7, and in MV-CCI-lido on day 7 and 16. The NOL of the left paw was decreased in MV-sham and MV-CCI-lido compared with MV-CCI on day 16. The CRT of the left paw was increased for MV-CCI on day 3 and 7, and for MV-CCI-lido on day 7. On day 16, MV-sham and MV-CCI-lido showed a decreased CRT of the left paw compared with MV-CCI.

Conclusions

Nerve injury and not systemic inflammatory response seems mandatory for development of neuropathic pain in our ‘two-hit’ model. Lidocaine attenuates cold allodynia in mice.

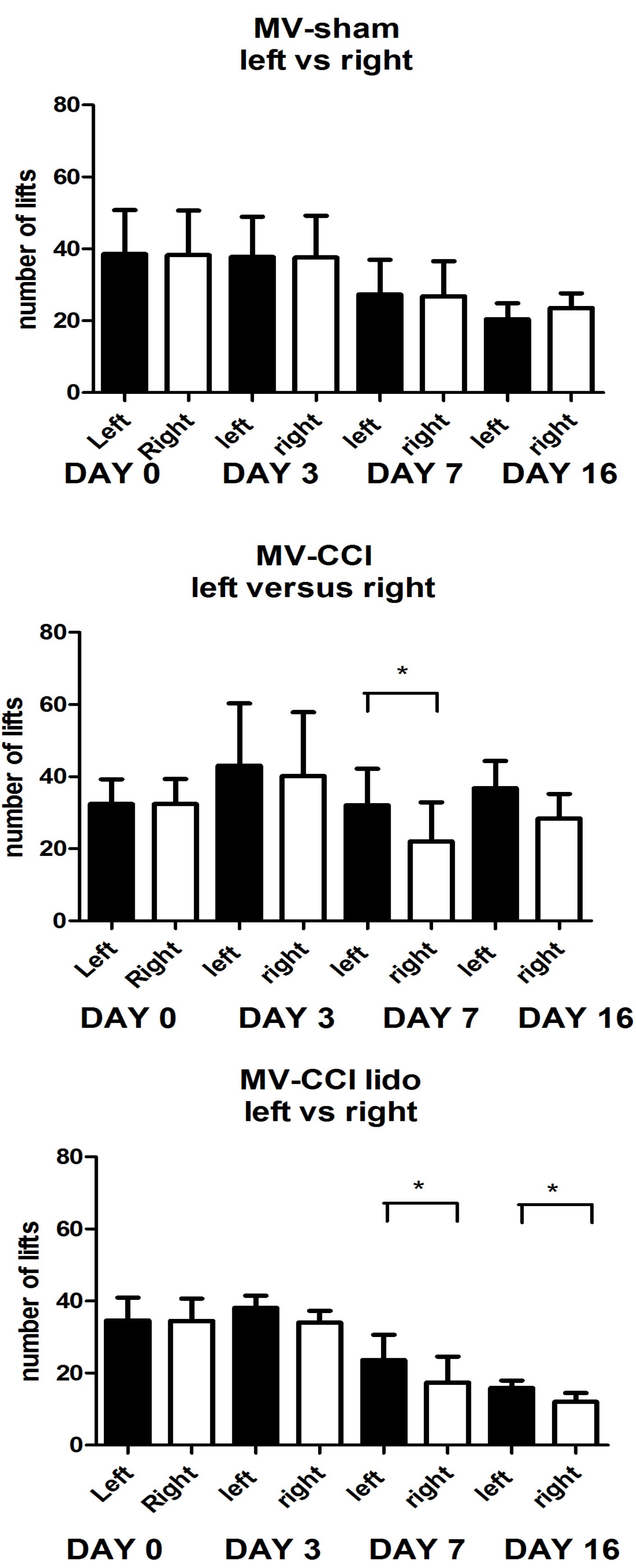


FIGURE:
Number of lifts (NOL) comparing left (CCI) versus right paw on day 0, day 3, day 7 and day 16, in MV-sham, MV-CCI and MV-CCI-lido mice. Data are expressed as mean with standard error of the mean (SEM). (* = P < 0.05)