

© 2018 Universities Federation for Animal Welfare
The Old School, Brewhouse Hill, Wheathampstead,
Hertfordshire AL4 8AN, UK
www.ufaw.org.uk

Animal Welfare 2018, 27: 13-20
ISSN 0962-7286
doi: 10.7120/09627286.27.1.013

Hair cortisol concentrations in New Zealand white rabbits subjected to surgery

T Peric^{*†}, A Comin[†], M Corazzin[†], M Montillo[†], F Canavese[‡], M Stebel[§] and A Prandi[†]

[†] Department of Agri-Food, Animal and Environmental Sciences, University of Udine, Via delle Scienze 206, 33100 Udine, Italy

[‡] Hôpital Estaing, CHU of Clermont Ferrand, Place Lucie et Raymond Aubrac, 63100 Clermont-Ferrand, France

[§] Department of Life Sciences, University of Trieste, Via Giorgieri I, 34127 Trieste, Italy

* Contact for correspondence and requests for reprints: tanja.peric@uniud.it

Abstract

The aim of this study was to assess hair cortisol concentrations in New Zealand white rabbits (*Oryctolagus cuniculus*) that were subjected to relocation and surgery to evaluate HPA-axis activity; in addition, we used this marker of cortisol secretion to evaluate the allostatic load of animals undergoing surgery. After a period of acclimatisation, which lasted 40 days from their arrival at the enclosure, 19 rabbits were subjected to T1–T12 dorsal arthrodesis (RS), 19 were sham-operated (SS), and 19 were non-operated (CON). Hair samples were collected at the time of arrival (ST1) at the animal facility, and seven other sets of hair samples were collected at 40-day intervals from the same area of skin for a period of 240 days as re-shaved hair (anagen phase): immediately before surgery (ST2) and after the surgery (ST3, ST4, ST5, ST6, ST7, and ST8). The transition from the rabbitry to the animal breeding facility led to a significant increase in cortisol concentration (ST2) in all of the groups. At ST3, the RS group presented higher cortisol concentrations than those of the SS group and the CON group. At ST4, the experimental groups showed similar values that remained constant until ST8. The results show that the management of rabbits undergoing surgery should be evaluated very carefully, and hair cortisol concentrations may provide a means of avoiding the dangerous cumulative effects of additional stressors close to surgery.

Keywords: animal welfare, cortisol, hair, HPA axis, rabbit, surgery