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Titel des Beitrags:
Functional outcome in female rats after 45 minutes of deep hypothermic circulatory arrest: gender matters.

Abstract:
Background After adjusting for cofactors, female gender remains an independent risk factor. The aim of our study was to investigate the role of gender on functional outcome 14 days after 45 minutes of deep hypothermic circulatory arrest (DHCA) in rats.

Methods After institutional animal care committee Institutional Review Board approval, 40 male and 40 female rats were randomly divided into two groups (40 DHCA, 40 controls). The rats were neutered or sham-neutered and 40 of them were subjected to DHCA with 40 controls remaining naïve. Postoperative functional performance was assessed with modified hole-board test. Brain morphology was assessed using hematoxylin and eosin (HE) staining and cerebral inflammation/apoptosis determined immunohistochemically. Data were analyzed using general linear models (post hoc analysis of variance [ANOVA] and Bonferroni t tests) and Kruskal-Wallis (post hoc Mann-Whitney U test) (p<0.05).

Results Cognition and behavior after 45 minutes of DHCA were comparable to that of four naïve rats in all four DHCA groups. Motor function and morphologic outcome were better in females. Nuclear factor kappa B (NFkB) was upregulated in the female normal group. Activated caspase-3 was higher in females whereas poly(ADP-ribose) polymerase was in males. Of note is the secondary finding of a high drop-out rate during the early postoperative phase in the female groups (16 out of
Conclusions Postoperative motor skills were better in females, with less neuronal damage, more neuronal NFκB, and activated caspase-3. However, the chance finding of a high mortality rate in females warrants investigation with mortality as the principal aim, focusing on heart, liver, lung, kidney, and intestine with regard to its rate.