## **Filament perforation model**

For the mouse filament perforation model of SAH, the goal of a meta-review was the determination of variances in mortality, SAH severity grade, and vasospasm, and their experimental moderators, as many researchers are facing incomparable results. Alpdogan et al. searched the databases PubMed, Embase, and Web of Science for articles describing in vivo experiments using the SAH perforation mouse model and measuring mortality, SAH grade, and/or vasospasm. After screening, 42 articles (a total of 1964 mice) were included in a systematic review and meta-analysis. Certain model characteristics were insufficiently reported, e.g., perforation location (not reported in six articles), filament (material (n = 15) and tip texture (n = 25)), mouse age (n = 14), and weight (n = 10). Used injective anesthetics and location of perforation showed large variation. In a random-effects metaanalysis, the overall animal mortality following SAH was 21.3% [95% CI: 17.5%, 25.7%] and increased with longer observational periods. Filament material significantly correlated with animal mortality (p = 0.024) after the exclusion of hyperacute studies (time after SAH induction < 24 h). The reported mean SAH grade was 10.7 [9.6, 11.7] on the scale of Sugawara (J Neurosci Methods 167:327-34, 2008). Furthermore, the mean diameter of large cerebral arteries after SAH was reduced by 27.6% compared to sham-operated non-SAH mice. Uniforming standards of experimental procedures and their reporting are indispensable to increasing overall comparability<sup>1)</sup>.

Muroi et al. aimed to report and discuss the detailed technical-surgical approach and difficulties associated with the circle of Willis perforation (cWp) model, with reference to the existing literature.

First, the cWp model was reproduced using ddY mice following scarification at 0 h, Days 1, 2, and 3 after SAH. Second, C57BL/6 mice were subjected to SAH with histological examination on Days 1, 2, and 3. Sham-operated mice were sacrificed on Day 2. Neurological performance, amount of subarachnoid blood, cerebral vasospasm (CVS), and neuronal injury were assessed. Relevant articles found in the MEDLINE database were reviewed.

Induction of SAH was successfully reproduced. The volume of subarachnoid blood decreased with time due to resorption. Neurological performance was worse in SAH compared with sham. Signs of CVS could be confirmed on Days 2 and 3, but not Day 1. The cumulative number of microthrombi was significantly higher on Days 2 and 3, but not Day 1. Apoptotic and degenerative neurons were found in the cortex and hippocampal area. Our review of the literature revealed the cWp model to be the most frequently used. The present findings largely confirmed previously published results. However, detailed technical-surgical description and its discussion were sparse, which we provide here.

The current study provides additional useful information characterizing the cWp model. This model may be of first choice at present, as important pathologies can be reproduced and most findings in the literature are based on it <sup>2</sup>.

## 1)

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