Experimental vasospasm models are irreplaceable for the evaluation of new antivasospastic drugs. Döring et al. from Göttingen assessed the reliability of in vivo vasospasm induction by ultrasound application in the chicken chorioallantoic membrane model (CAM). After incubation of fertilized chicken eggs for four days, a fenestration was performed to enable examination of the CAM vessels. On the thirteenth day, continuous-wave ultrasound (3 MHz, 1 W/cm2) was applied on the CAM vessels for 60 s. The ultrasound effect on the vessels was recorded by life imaging (5-MP HD-microscope camera, Leica®). The induced vessel diameter changes were evaluated in a defined time interval of 20 min using a Fiji macro. The vessel diameter before and after sonication was measured and the relative diameter reduction was determined. The first reduction of vessel diameter was observed after three minutes with an average vessel-diameter decrease to 77%. The maximum reduction in vessel diameter was reached eight minutes after sonication with an average vessel diameter decrease to 57% (mean relative diameter reduction of 43%, range 44-61%), ANOVA, p = 0.0002. The vasospasm persisted for all 20 recorded minutes post-induction. Vasospasm can be reliably induced by short application of 3 MHz-ultrasound to the CAM vessels. This might be a suitable in vivo model for the evaluation of drug effects on vasospasm in an experimental setting as an intermediary in the transition process from in vitro to in vivo assessment using animal models [1)].

1)
Döring K, Schroeder H, Fischer A, Sperling S, Ninkovic M, Stadelmann C, Mielke D, Rohde V, Malinova V. In Vivo Vasospasm Induction by Ultrasound Application in the Chicken Chorioallantoic Membrane Model. Transl Stroke Res. 2022 Jan 21. doi: 10.1007/s12975-021-00960-y. Epub ahead of print. PMID: 35061211.