Robert M. Berne CVRC Seminar

The Robert M. Berne Cardiovascular Research Center Presents

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Microglial cyclooxygenase-1 modulates cerebral basal capillary tone *in vivo*

Microglia and border associated macrophages have been implicated in hypercapnia, but it is unknown which myeloid cell modulates which vessel type. Previously, we documented in mice myeloid cell association with the brain vasculature but did not distinguish their localization along the vascular tree. Using molecular approaches to distinguish microglia and perivascular macrophages, we show that microglia are the only myeloid cells associating with capillaries. To determine if loss of microglia is sufficient to reduce capillary tone, we employ global and focal ablations and find significant reductions in capillary diameter and red blood cell flux, suggesting vasodilatory regulation by microglia. Cyclooxygenase-1 (COX1), an enzyme with known vasodilatory action, is predominantly expressed by microglia. To determine the necessity of microglial COX1 in regulating cerebral basal capillary tone in vivo, we perform genetic ablation and find a significant reduction in capillary flux and diameter. Together, this study using male mouse models reveals a role for microglial COX1 in maintaining basal capillary tone in vivo.

Thursday December 11, 2025
11:00 AM-12:00 PM
MR5 Room 3005

Refreshments served

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