Feeding artery

The medullary or nutrient artery (arteria nutricia).

Morphological research suggested the feeding artery of brain arteriovenous malformation (bAVM) had vascular remodeling under the high blood flow; however, the underlying molecular mechanisms were unclear.

Chen et al. constructed 32 simplified AVM rat models in four groups: the control group (n = 6), 1-week high-blood-flow group (n = 9), 3-week high-blood-flow group (n = 7) and 6-week high-blood-flow group (n = 10). The circumference, blood velocity, blood flow, pressure, and wall shear of the feeding artery were measured or calculated. The arterial wall change was observed by Masson staining. RNA sequencing (RNA-seq) of feeding arteries was performed, followed by bioinformatics analysis to detect the potential molecular mechanism for bAVM artery remodeling under the high blood flow.

They observed hemodynamic injury and vascular remodeling on the feeding artery under the high blood flow. RNA-seq showed immune/inflammation infiltration and vascular smooth muscle cell (VSMC) phenotype transformation during remodeling. Weighted gene co-expression network analysis (WGCNA) and time series analysis further identified 27 key genes and pathways involved in remodeling. Upstream miRNA and molecular drugs were predicted targeting these key genes.

They depicted molecular change of bAVM arterial remodeling via RNA-seq in high-blood-flow rat models. Twenty-seven key genes may regulate immune/inflammation infiltration and VSMC phenotype transform in bAVM arterial remodeling [1)]

1)
Chen B, Tao W, Yan L, Zeng M, Song L, Huang Z, Chen F. Molecular feature of arterial remodeling in the brain arteriovenous malformation revealed by arteriovenous shunt rat model and RNA sequencing. Int Immunopharmacol. 2022 Mar 2;107:108653. doi: 10.1016/j.intimp.2022.108653. Epub ahead of print. PMID: 35247777.