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Kurzfassung: Dural AV-malformations (DAVF) are acquired vascular anomalies, exhibiting pathological AV-shunt from meningeal arteries to venous channels with close relation to the dura mater. DAVF can occur anywhere along the cranial or spinal dura and are typically associated with an initiating biological event, most often a venous thrombosis, triggering and allowing for developing direct arterialization of venous channels. The resulting AV-shunts, depending on patient specific anatomic conditions, lead to venous overload and location specific degradation of the normal venous outflow of the central nervous system (CNS), including venous outflow inversion and consecutive secondary development of local or generalized venous hypertension (VHT). Current MR techniques allow for assessing the different steps of DAVF evolution, for demonstrating the presence of AV-shunting, and where present, for identifying and evaluating signs of VHT. Further, the main feeding arteries are often identified on MRA, allowing for planning of catheter based evaluation and where indicated, of endovascular treatment (EVT).

Concerning MR evaluation of CNS VHT, MR can assess many disease facets. CNS venous anatomy, edema, signs of venous infarction, hemorrhagic transformation, calcifications, and atrophy, all can be identified by MR. If any signs of VHT are present, active treatment, in general, EVT is indicated. In presence of a cranial DAVF without signs of VHT in MR, observation, rather than EVT is considered. In view of other symptoms, such as pulsatile tinnitus, EVT of a cranial DAVF may be indicated to alleviate a patient of symptoms. In presence of a spinal DAVF, even without any signs of VHT, we propose active treatment to prevent from secondary, irreversible degradation of the venous drainage system of the spinal cord.

In summary, current MR techniques allow for a critical assessment of cranial and spinal DAVF and treatment is nowadays mainly based on EVT.