

**On-line Table: 4D-CTA in the diagnostic work-up of brain AVMs and dAVFs**

Author	Pathology	Study Type	No. Subjects	Methods	Standard of Reference	No. of Readers	Results	Discussion Points
Wang et al 2014 <sup>26</sup>	AVM	Observational cohort study	17	Comparing 4D-CTA vs DSA in diagnosing bAVMs	DSA	2 Blinded independent	4D-CTA had the same ability as DSA to distinguish the main feeding arteries in all cases; in addition, the diagnosis of draining veins in 4D-CTA successfully displayed all of the vessels found by DSA	In the identification of smaller and specific arterial branches, there were discrepancies between the 2 methods in 1 patient
Fujiwara et al 2013 <sup>29</sup>	dAVF	Observational cohort study	29	4D-CTA and DSA studies were retrospectively analyzed and compared in diagnosing and classifying dAVFs	DSA	2	Diagnosis: 4D-CTA depicted 97% of dAVFs at the correct location Classification: 4D-CTA correctly classified 94% according to the Cognard classification Feeding arteries: compared with DSA, 52% of the feeding arteries were detected; this could be increased to 71% with volume-rendering superimposed on brain surface images and MIPs 4D-CTA correctly diagnosed and classified dAVFs in all 3 cases as confirmed with DSA	In the assessment of feeding arteries, the interobserver agreement and intermodality agreement were moderate ( $k = 0.498$ and $0.533$ , respectively)
Beijer et al 2013 <sup>33</sup>	dAVF	Descriptive case series	3	Descriptive case series of 3 cases comparing 4D-CTA vs DSA in diagnosing and classifying dAVFs	DSA	NA		
Yamaguchi et al 2013 <sup>34</sup>	Spinal dAVF	Descriptive case series	4	Descriptive case series of 4 cases comparing 4D-CTA vs DSA in diagnosing and classifying spinal AVFs	DSA and time-resolved contrast-enhanced MRA	2 Nonblinded	4D-CTA could detect the following: 1) All perimedullary draining veins 2) Location of dAVFs in 3 of 4 cases 3) Direction of flow in all cases 4D-CTA diagnosed all bAVMs and misclassified only 1 bAVM according to the Spetzler-Martin grade In 10 cases, full agreement between DSA and 4D-CTA regarding diagnosis and Borden classification; in 1 patient, a slow-filling dAVF was missed with 4D-CTA 4D-CTA followed up a benign dAVF in case 1, recognized cortical reflux in case 2, and visualized a small AVM with equivocal planar imaging findings in case 3 The assumption is made that 4D-CTA will be helpful in the diagnosis and follow-up of AVMs and dAVFs	High effective radiation dose was reported of >40 mSv
Willems et al 2012 <sup>27</sup>	AVM	Observational cohort study	17	Comparing 4D-CTA vs DSA in diagnosing and classifying brain AVMs	DSA	3 Blinded		With 4D-CTA, deep venous drainage was missed in 1 patient
Willems et al 2011 <sup>32</sup>	dAVF	Observational cohort study	11	Comparing 4D-CTA vs DSA in diagnosing and classifying dAVFs	DSA	2 Blinded		
Brouwer et al 2010 <sup>30</sup>	AVM and dAVF	Descriptive case series	3	Comparing 4D-CTA vs DSA in diagnosing and classifying dAVFs and AVMs	DSA	NA		In case 2, DSA elucidated the angioarchitecture of the complex lesion in much more detail; however, this did not have clinical consequences
Salomon et al 2009 <sup>31</sup>	AVM and dAVF	Author description of initial experience with 4D-CTA	NA	NA	NA	NA		

**Note:**—NA indicates not applicable; bAVM, brain arteriovenous malformation.