

Capillary telangiectasia of the brainstem: MR features

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Cerebral vascular malformations are usually divided into arteriovenous malformations, developmental venous anomalies, cavernous angiomas and capillary telangiectasias with capillary telangiectasias accounting for 16%-20% of all vascular malformations at autopsy studies [1]. Capillary telangiectasias primarily occur in the brainstem and consist of numerous thin-walled vessels separated by normal brain parenchyma [2]. About two thirds of these lesions show an enlarged draining vein extending from the lesion to the surface of the pons [2-4]. To the present state of knowledge telangiectasias maybe acquired lesions rather than developmental lesions, which is supported by autopsy studies suggesting that capillary telangiectasia is most prevalent in adults [5]. Magnetic resonance (MR) imaging is the modality of choice in the visualization of these lesions, which are not seen in catheter angiography.

Figure 1 shows typical features of a capillary telangiectasia as a well-defined lesion with a typical location in the right side of the pons. The lesion in this case has a diameter of about 2 cm without any mass

effect. An associated enlarged draining vein was seen in the gadolinium enhanced sequence.

On T2*-weighted gradient-echo sequences these lesions present with low signal. Considering the high sensitivity of susceptibility-weighted imaging (SWI) for low-flow-vessels as occurring in vascular malformation the lesion consistently presents homogeneously hypointense on SWI with sharp margins, much better demarcated than on conventional T2*-weighted GRE images (Figure 2).

Furthermore, a relevant feature is their behaviour on diffusion-weighted images (Figure 1c) which may increase the specificity of MR in the diagnosis of such lesions. We could show in one case that capillary telangiectasias tend to show increased diffusion [6,7]. Unlike reduced diffusion high diffusion is rarely found on MR imaging. It can be seen in cerebrospinal fluid, vessels or rare pathological findings, e.g. ganglioglioma or cortical dysplasia [8].

With regard to frequent misinterpretation as tumor, ischemia or inflammation and particularly considering the high risk of brainstem biopsy for the patient it is imperative to establish reliable criteria for diagnosing vascular malformations.

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Figure 1. Capillary telangiectasia of the pons. T2-weighted TSE image shows an area with moderately increased signal in the right side of the pons (a). Gd-enhanced T1-weighted SE image reveals significant contrast enhancement (b). On diffusion-weighted MR (b value = 1000 s/mm²) the lesion is slightly hypointense (c).

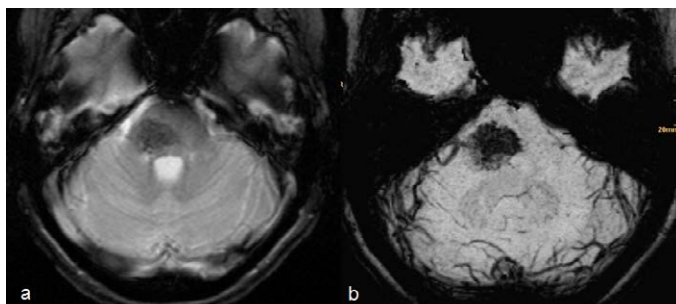


Figure 2. T2*-weighted conventional GRE shows the typical hypointensity of this lesion (a). Susceptibility weighted imaging (minimal intensity projection) allows superior delineation of the capillary telangiectasia in comparison to T2*-weighted conventional GRE (b).

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