

Lipid-rich necrotic core

Currently, [MRI](#) is the gold standard in carotid [plaque](#) imaging, with its high resolution and high [sensitivity](#) for identifying intraplaque hemorrhage (IPH), [ulceration](#), [lipid-rich necrotic core](#) (LRNC), and [inflammation](#). However, [MRI](#) is limited due to time constraints.

Identification of carotid non-hemorrhagic lipid-rich necrotic core by magnetization-prepared rapid acquisition gradient-echo imaging: Validation by contrast-enhanced T1 weighted imaging ¹⁾.

CT also allows for high-resolution imaging and can accurately detect ulceration and calcification, but cannot reliably differentiate LRNC from IPH.

PET/CT is an effective technique to identify active inflammation within the plaque, but it does not allow for assessment of anatomy, ulceration, IPH, or LRNC.

Ultrasonography, with the aid of contrast enhancement, is a cost-effective technique to assess plaque morphology and characteristics, but it is limited in sensitivity and specificity for detecting LRNC, plaque hemorrhage, and ulceration compared with MRI.

US can detect congenital variants, dissection, stenosis, and vasculopathy. In addition, correlation of US findings with both magnetic resonance imaging and computed tomography more comprehensively demonstrates the complementary nature of these imaging modalities ²⁾.

¹⁾

Wang T, Qiao H, Xu H, Xu D, Liu G, Yuan C, Zhao X. Identification of carotid non-hemorrhagic lipid-rich necrotic core by magnetization-prepared rapid acquisition gradient-echo imaging: Validation by contrast-enhanced T1 weighted imaging. Magn Reson Imaging. 2019 Aug 16. pii: S0730-725X(19)30180-8. doi: 10.1016/j.mri.2019.08.023. [Epub ahead of print] PubMed PMID: 31425806.

²⁾

Deurdulian C, Emmanuel N, Tchelepi H, Grant EG, Malhi H. Beyond the Bifurcation: There Is More to Cerebrovascular Ultrasound Than Internal Carotid Artery Stenosis! Ultrasound Q. 2015 Nov 19. [Epub ahead of print] PubMed PMID: 26588099.

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Last update: **2024/06/07 02:51**

