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Letter to Editor

Is There Still a Place for Computed Tomography Angiography in Assessing Inflammatory Large-vessel Involvement in Large Vessel Vasculitis?

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To the Editor,

We read with great interest the study by Nakagomi et al[1] on the role of contrast-enhanced computed tomography (CE-CT) in assessing large-vessel involvement (LVI) in large-vessel vasculitis (LVV).

The authors retrospectively analyzed a cohort of 27 giant cell arteritis (GCA) and 24 Takayasu arteritis (TAK) patients who underwent CE-CT at diagnosis, prior to treatment onset, and again 1-4 months later during clinical remission on treatment. They evaluated imaging findings suggesting inflammation (wall thickening and contrast enhancement), as well as vascular damage (stenosis, dilation, and calcification) in 21 different arteries. The study found a higher prevalence of inflammatory LVI in the GCA cohort (approximately 80%) than previously reported using CT angiography (65%).[2] This difference may be attributable to the retrospective nature of the study, including a predominantly LV-GCA phenotype (only 26% of patients reported headache). As expected, inflammatory findings improved after treatment; however, wall thickening persisted in more than 50% of patients, mostly without concomitant contrast enhancement, likely reflecting vascular remodeling rather than ongoing inflammation.[3,4] Conversely, no significant changes were observed in damage parameters, probably due to the short follow-up period.

Although TAK and GCA share overlapping features, they differ in several important aspects. Comparative imaging studies reveal that TAK more frequently exhibits stenotic lesions, particularly in the carotid, mesenteric, renal, and iliofemoral arteries, while patients with GCA tend to show more aneurysmal changes in some studies, though findings are not always consistent across cohorts. Cluster analysis also revealed distinct vascular patterns: in GCA, subclavian involvement is typically symmetric, while in TAK, left subclavian disease clusters with bilateral carotid artery involvement.[3]

In recent decades, imaging has accumulated significant attention in LVV and is constantly used for disease diagnosis and LV detection. Several imaging modalities are employed depending on the clinical scenario, with growing interest in functional and molecular imaging techniques. However, there is still room for CTA, as it offers excellent spatial resolution for assessing wall abnormalities, provides a comprehensive view of the aorta and its major branches with a single, rapid acquisition, and is widely accessible.[3]

To maximize its diagnostic accuracy, imaging should ideally be performed before or shortly after glucocorticoid initiation, as sensitivity and specificity may decline steeply within days or weeks.[2,3] Furthermore, although imaging is not routinely recommended for follow-up, it may offer valuable insights into disease activity and is being increasingly explored for its role in evaluating treatment response and persistent disease. Using CTA, some studies, including the one by Nakagomi et al,[1,4] show that while contrast enhancement resolves after treatment, wall thickening persists in more than half of patients, raising questions about its clinical significance and interpretation. Most of these cases may only require close monitoring, and misinterpreting such findings could lead to inappropriate therapeutic decisions, including unnecessary prolongation or escalation of immunosuppressive therapy. The emergence of hybrid imaging modalities, such as positron emission tomography (PET)/magnetic resonance imaging, and novel targeted PET/CT tracers may represent a significant advancement and appear particularly promising for detecting ongoing inflammation, even in clinical remission, where imaging signals may indicate subclinical or smoldering inflammation in some patients.[5] However, these emerging imaging modalities face several limitations. Access to them remains restricted in many centers, costs are high, and there is still a lack of standardization

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and widespread clinical validation. These challenges highlight the ongoing practical value of CE-CT in real-world clinical settings.

Finally, imaging, and especially CTA, is essential for detecting and monitoring complications, such as dilation or stenosis, over time. However, the optimal interval for serial imaging remains unclear.[3]

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