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Reply:

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REPLY:

Thank you for such a thoughtful and timely letter. It certainly brings up important and actively researched points of myelographic contrast timing and the preferred study for CSF leak detection (particularly, CSF-venous fistulas).

We do agree with Drs Mamlouk and Shen on the importance of prompt imaging after contrast injection for CSF-venous fistula localization and further evaluation of sensitivity and specificity for this type of CSF leak detection with lateral decubitus CT myelography (CTM) versus lateral decubitus digital subtraction myelography (DSM). We would like to clarify, though, that our article was not investigating these issues, but rather addressing contrast conspicuity at different energy levels and the utility of dual-energy CT for CSF leak visualization.

We concur that preferred studies and even techniques for CSF-venous fistula localization vary among institutions and are usually based on institutional and proceduralist preference, comfort level, and study familiarity. We also agree with the authors of the letter that in patients with a high suspicion of a CSF-venous fistula and negative findings on lateral decubitus DSM or lateral decubitus CTM, it may be beneficial to pursue the other technique to improve leak detection. At our institution, for example, while we do perform dynamic lateral decubitus CTMs in select patients (usually with previous negative findings on lateral decubitus DSM), our initial study for CSF leak investigation in patients without extradural spinal fluid remains lateral decubitus DSM. DSM is then followed by the dual-energy CTM with the patient in the same lateral decubitus position, usually approximately 15–20 minutes after the DSM.

Given the potential intermittent nature of the CSF-venous fistulas, in our experience, this as well as other types of CSF leaks are sometimes only or better visualized on the post-DSM dual-energy CTM (particularly on 50-keV virtual monoenergetic images), which was the focus of our article. Therefore, while efforts evaluating the sensitivity and specificity of lateral decubitus DSM versus lateral decubitus CTM for CSF-venous fistula detection continue, if CT myelography (immediate dynamic or delayed as described in our article) is pursued, proceduralists should consider dual-energy CT for optimal extradural contrast visualization.

Thank you again for your letter and the effort to improve patient care in this rapidly evolving field.

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