Author’s response to reviews

Title: Lumbar puncture-related cerebrospinal fluid leakage on magnetic resonance myelography: Is it a clinically significant finding?

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Author’s response to reviews: see over
We have carefully checked the comments of the reviewer. We agree with the referees’ suggestions, and we have responded to the comments, as shown on the following pages. Changes are highlighted in red for reviewer 1, blue for reviewer 2 and green for editorial team.

Referee comments (if any):

Referee: 1
Comments to the Author

• Well Main Shortcomings of the article are Small study group and inadequate discussion.

→ We agree with your comment referring to the shortcomings of our study. According to your comment, we have modified the Discussion section related to the limitation of the present study (Para 5, Line 1-3).

• Please update the references. For example, add the references (given below) about the gadolinium-enhanced MR myelography (cisternography), intracranial hypotension, and limitation of CT myelography. Please discuss these papers and topics briefly. For example, MR myelography is less traumatic than CT myelography (Algin O, AJNR).

→ According to your recommendation, we have added the discussion and references about the advantage of gadolinium-enhanced MR myelography over other cisternographic techniques in the Discussion section (Para 1, Line 1-8).

Referee: 2
Comments to the Author

In this case study, MR myelography (MRM) was performed in 53 patients who received lumbar puncture using a relatively thick 21G Quinke needle, and the findings and incidence of post dural puncture headache (PDPH) were investigated. A cerebrospinal fluid leak was noted on MRM in 22 of the 53 patients, but PDPH only occurred in 3.

• Comment 1 (Major Compulsory Revision)
No CSF leak was noted on MRM in 31 (=53-22) patients. The number of patients with PDPH of these 31 patients is important information, and should be clearly described in the text and discussed.

→ According to your suggestion, we have added the number of PDPH patients without definite CSF leakage on MRM in the Result section (Para 2).

As you indicated, the existence of PDPH patients without definite CSF leakage on MRM images is the important matter to discuss. So, we discussed the multifactorial factors other than CSF leakages in the Discussion section (Para 4, Line 3-8).
• Comment 2 (Major Compulsory Revision)
In the region with the description ‘CSF leak on MRM’ in Figure, only the lumbar spinal root sleeve and water component near it are present. There is no basis to identify it as a leak (i.e., the water component is CSF). I think this is often observed in normal individuals.

→
We appreciate your comment regarding the evaluation of CSF leakages on MRM. As you indicated, it is sometimes difficult to differentiate CSF leakages from mistakable findings such as water component at the intervertebral joints, root sleeves and perineural cysts. So, in the present study, we have compared postpuncture MRM with other sequences (e.g., axial and sagittal T2-weighted images) to exclude mistakable findings in each patient. We have added this explanation in the Patients and methods section (MRM protocol and image analysis, Line 9-12).

• Comment 3 (Major Compulsory Revision)
I agree with the conclusion that MRM findings should not be overestimated, but I do not agree with the viewpoint that the MRM finding represents a CSF leak. It is unacceptable to assume based on this that vasodilation is more likely to be the developmental mechanism of PDPH, rather than CSF leak.

→
In the present study, as mentioned above, we have carefully checked the MRI to rule out the mistakable findings. Thus, we are sure that fluid collections around nerve roots and paraspinal area at the lumbosacral level are “CSF leakages” and not other findings. However, we do not intend to deny your opinion that CSF leakage is the important factor of pathogenesis of PDPH. Of course, CSF leakage is the most important factor related to PDPH occurrence. So, we stated that “Although the association between PDPH and CSF abnormalities (i.e., between CSF loss and a reduction in intracranial pressure) is not disputed” in the Discussion section (Para 2, Line 1-2). In this paper, we want to emphasize two points. One is that MRM findings should not be overestimated (Conclusion section), and another is that the underlying mechanisms of PDPH are complex and multifactorial (Discussion section, Para 3 and 4).

Editorial Team
Comments to the Author

• We would additionally ask you to include the full institutional name of the ethical committee that approved the study.

→
According to your suggestion, we have added the full institutional name of the ethical committee (i.e., the Ethics Committee for Clinical Research of Nagoya City University Graduate School of Medical Sciences) in the Patients and methods section (Subjects, Line 3-4).
• Also, please include the contribution of author MN in Authors’ contribution section. This author is currently not mentioned.

→ Thank you for pointing out our mistake. We have corrected the authors from “KS and NM” to “KS and MN” in the Authors’ contribution section (Line 1).