

Dear Editors and Reviewers :

Thank you for reviewing our manuscript of transient involuntary movement disorder after spinal anesthesia (Manuscript NO: 67154). Also, thank you for giving valuable and detailed advices. We greatly appreciate for spending your time and taking efforts to improve our manuscript. Based on the comments you gave, We have studied carefully and have made correction. The main corrections in the manuscript and the responds to the reviewer's comments are a following:

Reviewer #1:

Specific Comments to Authors:**1. Case Summary :**

1) Reviewer's comment : Better to specify the duration of the involuntary movement in the case summary part.

Response : We apologize for not clearly describing the change in symptoms. The symptoms occurred 7 hours after injecting the drug, and when the patient was evaluated the next morning, the number of symptoms decreased to about once every 3 hours. And POD 2, the symptoms had completely disappeared without intervention.

2) Reviewer's comment : It is not clear when the motor and sensory assessments were performed.

Response : The evaluation of the motor and sensory was made by an orthopedic surgeon on duty in the ward immediately upon reporting of symptoms. After 2 hours passed, it was evaluated once more by the neurologist and the anesthesiologist, and the evaluation contents were the same.

2. Introduction

1) **Reviewer's comment** : Please add references for the following sentences;
“Intrathecally administered spinal anesthesia is a common anesthetic technique used for lower extremity surgeries.”

Response : Thanks for the comments. Reference have been added to the manuscript.

Lee JH, Yoon DH, Heo BH. Incidence of newly developed postoperative low back pain with median versus paramedian approach for spinal anesthesia. *Korean J Anesthesiol* 2020; 73: 518-524 [PMID: 31906607 DOI: 10.4097/kja.19409]

2) **Reviewer's comment** : Please add references for the following sentences;
“The aspects of SM-NA are different from typical myoclonus, and the etiology is unclear.”

Response : Thanks for the comments. Reference have been added to the manuscript.

Shiratori T, Hotta K, Satoh M. Spinal myoclonus following neuraxial anesthesia: a literature review. *J Anesth.* 2019; 140 [PMID: 30613902 10.1007/s00540-018-02607-z: 10.1007/s00540-018-02607-z]

3) **Reviewer's comment** : Please replace “With the patient fully awake and in the right lateral decubitus position, a lumbar puncture was performed at L3-4 using a 25-gauge Quincke needle, and 15 mg of 0.5% hyperbaric bupivacaine was administered” with “, A lumbar puncture was performed at L3-4 using a 25-gauge Quincke needle in the right lateral decubitus position, and 3 ml of 0.5% hyperbaric bupivacaine was administered.”

Response : The manuscript has been revised to reflect the suggestions you have given.

4) **Reviewer's comment** : Please specify the dose, route, and time of administration of Dexmedetomidine for sedation.

Response : We apologize for not being able to clearly state about dexmedetomidine.

Dexmedetomidine was administered for sedation. 75mcg of dexmedetomidine was injected into the vein on the left forearm for 10min, after that, continuously infused by 1.0 mcg/kg/h. It was stopped 30 min before the end of surgery.

3. Laboratory Examinations

1) **Reviewer's comment** : Please attach the postoperative serum electrolyte, complete blood count, and renal and hepatic function results as a supplementary file.

Response : We made a supplement and added it in the manuscript.

4. Final Diagnosis

1) **Reviewer's comment** : Please replace "The patient was diagnosed with a movement disorder following spinal anesthesia" with " myoclonus following spinal anesthesia".

Response : The manuscript has been revised to reflect the suggestions you have given.

5. Outcome and follow-up

1) **Reviewer's comment** : "On postoperative day 1, the involuntary movements subsided substantially, and on postoperative day 2, they resolved completely." is not clear, and explain it in detail.

Response : We apologize for not clearly describing the change in symptoms. The symptoms occurred 7 hours after injecting the drug, and when the patient was evaluated the next morning, the number of symptoms decreased to about once every 3 hours. And after two days, the symptoms had completely disappeared without intervention.

6. Conclusion

1) **Reviewer's comment** : You conclude additional examinations may not be required, if SM-NA is suspected. What are those additional examinations and for what?

Response :

There seems to be a lack of evidence to present this suggestion. We apologize for this.

It is necessary to conduct examinations to identify diseases that require emergent treatment. (such as epilepsy, electrolyte imbalance, tumor or infection)

However, according to the Reference,

Shiratori T, Hotta K, Satoh M. Spinal myoclonus following neuraxial anesthesia: a literature review. J Anesth. 2019; 140 [PMID: 30613902 10.1007/s00540-018-02607-z: 10.1007/s00540-018-02607-z]

No abnormal findings were confirmed in the electrophysiological examination, radiologic imaging tests, and blood examination. Furthermore, the electroencephalogram revealed no abnormal findings in the middle of the SM-NA event and after recovery. And there may be no useful examinations to elucidate the underlying mechanism of SM-NA.

Almedallah DK, Alshamlan DY, Shariff EM. Acute opioidinduced myoclonic reaction after use of fentanyl as an anesthetic drug for an emergency cesarean section. Case Rep Neurol. 2018;10:130–4. <https://doi.org/10.1159/000486891>.

Lev A, Korn-Lubezki I, Steiner-Birmanns B, Samueloff A, Gozal Y, Ioscovich A. Prolonged propriospinal myoclonus following spinal anesthesia for cesarean section: case report and literature review. Arch Gynecol Obstet. 2012;286:271–2.

Zamidei L, Bandini M, Michelagnoli G, Campostrini R, Consales G. Propriospinal myoclonus following intrathecal bupivacaine in hip surgery: a case report. Minerva Anestesiol. 2010;76:290–3.

Therefore, it may be considered to perform MRI, etc. to rule out diseases that require emergent treatment such as brain problems. However, if SM-NA is a little more suspicious, most of the tests are known to produce normal findings, so I think it

would be better to perform tests that cause pain and costly such as EMG after monitoring the progress. It was thought that these contents were insufficient in the manuscript, so I revised them.