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Amantadine may improve neurocognitive function in patients with high-grade subarachnoid haemorrhage: a case series and review of the literature

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Abstract

Background: Subarachnoid haemorrhage (SAH) has a high incidence of morbidity and mortality. The severe subsequent neurocognitive injury can limit functional and physical recovery leading to permanent disability. The role of amantadine in improving neurocognitive recovery in the setting of stroke and traumatic brain injury has been demonstrated but the role in SAH has not been extensively studied.

Objective: To conduct a case series and systematic review on literature that investigated cognitive recovery with amantadine use in SAH patients.

Methods: For the case series, a retrospective analysis was performed on patient who received amantadine for SAH at a single neurosurgical institute in Sydney Australia. For the systematic review, PubMed, CINAHL, EMBASE, Web of Science, and Scopus were searched. The search terms (“amantadine”) AND ((“subarachnoid haemorrhage” OR “SAH” OR “aneurysm*”)) and their variations were used. The primary outcome was improvement in neurocognitive outcome (Coma Recovery Scale or Glasgow Coma Scale (GCS))

Results: The studies where amantadine was initiated early showed significant improvement in level of consciousness in participants who received amantadine compared to controls. However, when initiated late, (30-180 days after ictus), studies showed there was no significant improvement in level of consciousness. The case series supported similar findings. Out of the seven eligible patients, five patients had a GCS improvement of at least 2 points when amantadine was initiated early (within 21 days after ictus).

Conclusion: Amantadine may improve neurocognitive function following high-grade SAH, particularly when commenced early. Future clinical trials with larger sample sizes and control groups are required before clinical recommendations can be made.

Keywords

Subarachnoid haemorrhage, amantadine, case series, systematic review, neurosurgery, cognitive recovery, Glasgow Coma Scale, Coma Recovery Scale

Recent Publications:

1. Muralidharan, K, Fonseka, R.D., Raftesath, J., Tang, P., & Wong, J. (2025). Amantadine may improve neurocognitive function in patients with high-grade subarachnoid haemorrhage: a case series and review of the literature – paper has been submitted to Brain Sciences and is undergoing final review before acceptance.
2. Madani, D., Fonseka, R. D., Kim, S. J., Tang, P., Muralidharan, K., Chang, N., & Wong, J. (2025). Comparing the Rates of Further Resection After Intraoperative MRI Visualisation of Residual Tumour Between Brain Tumour Subtypes: A 17-Year Single-Centre Experience. *Brain Sciences*, 15(1), 45.
3. Hallal, S. M., Túzesi, Á., Sida, L. A., Xian, E., Madani, D., Muralidharan, K., Shivalingam, B., Buckland, M. E., Satgunaseelan, L., & Alexander, K. L. (2024). Glioblastoma biomarkers in urinary extracellular vesicles reveal the potential for a ‘liquid gold’ biopsy. *British Journal of Cancer*, 130(5), 836-851.

Biography

Hello,

My name is Krishna Muralidharan and I’m currently a Neurosurgery Trainee at Royal Prince Alfred Hospital in Sydney, Australia. In 2025, I will have been a trainee for 3 years and a doctor for 5 years. I am currently working in a high-volume neurovascular centre that has seen the unfortunate effects of SAH on patients all too often. The purpose of this research was to cast light on the potential benefits of amantadine, and I look forward to virtually presenting at the 6th Edition International Neuroscience and Brain Disorders Forum. I believe this is a wonderful platform to share my research especially as a junior clinician and junior researcher. I can also send my CV if required.

I look forward to hearing from you and please contact me if you have any questions.

Regards,

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