**Impact of Amantadine on Neurocognitive Function in Aneurysmal Subarachnoid Haemorrhage: A Systematic Review and Case Series.**

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Background

Aneurysmal subarachnoid haemorrhage patients can suffer from severe neurocognitive impairments such as decreased conscious levels, memory and language impairments. Administering the Parkinson’s drug amantadine as a neuro stimulant has shown promising results in the traumatic brain injury population group but there is limited study in the aneurysmal subarachnoid patient group.

Method

We retrospectively identified eight cases at a single institution (Royal Prince Alfred Hospital, Sydney) after year 2000 with a diagnosis of an aneurysmal subarachnoid haemorrhage that were administered amantadine after ictus in an attempt to improve neurocognitive function.

We performed a literature search on aneurysmal subarachnoid haemorrhage patients who were administered amantadine and measured their neurocognitive status after year 2000. The PRISMA statement guidelines were followed when selecting studies for inclusion and extracting data. Please see **Figure 1.1**

Results

We identified eight patients at our institution that met eligibility criteria. Four patients had a GCS improvement of at least two points within 21 days after amantadine initiation. This is summarised in **Table 1.1**

The extracted data from our literature search showed in two studies (Akcil et al and Ruhl et al) where amantadine was introduced early showed significant improvement in level of consciousness in participants who received amantadine compared to the controls.

Conclusion

The case review and literature search supports Amantadine along with current standard treatment can improve consciousness levels and improve neurocognitive function in aneurysmal subarachnoid haemorrhage patients. More research is needed to find out the best population group, effective dosage and duration as well as timing of its initiation the acute care setting.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Patient | Age, sex | Aneurysm location | WFNS, mFisher | GCS on admission | GCS when amantadine commenced | Days after ictus when amantadine commenced | GCS 7 days after amantadine commenced | GCS 14 days after amantadine commenced | GCS 21 days after amantadine commenced |
| SQ | 54M | MCA | IV, III | 10 | 14 | 37 | 14 | N/A | N/A |
| GL | 83M | Supraclinoid ICA | V, III | 3 | 3 | 32 | 4 | N/A | N/A |
| RL | 76F | ACA | V, I | 3 | 11 | 18 | 12 | 12 | N/A |
| AL\* | 64F | MCA | V, III | 3 | 11 | 44 | 11 | 11 | 13 |
| EH\* | 78F | PCOM | V, IV | 6 | 11 | 47 | 13 | 14 | 14 |
| KH\* | 60F | Basilar | V, IV | 3 | 9 | 181 | 10 | 13 | 14 |
| YL\* | 61M | PCOM | IV, III | 8 | 10 | 19 | 11 | 11 | 15 |
| SD | 73F | Terminal ICA | V, IV | 5 | 13 | 23 | 14 | N/A | N/A |

**Table 1.1**. Summary of data from case series. \*: patients whom we considered had an apparently beneficial neurocognitive response to amantadine.

**Figure 1.1** PRISMA flow-chart for search strategy.



References

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