

ABSTRACT

Previous research indicated that patients treated with ruptured aneurysms in anterior communicating artery (ACoA) were vulnerable to cognitive impairments despite satisfactory neurological outcome. And patients treated with microsurgical clipping tended to have more severe cognitive impairment than those treated with endovascular embolization (i.e. coiling). These findings were captured by different neuropsychological batteries which were usually extensive but time-consuming to administer. The use of diversified tests with different scales and multi-factorial structures might add complexity in comparing and summarizing test results. In addition, many tests were English-based and had minimum requirements for educational attainment and literacy level for participants. They were unsuitable for patients of non-English speaking background and with low or no education. There was a need for developing a simple but time-efficient, effective and cross-cultural assessment tool for patients who may come with a diversity of educational, cultural and ethnic backgrounds. In this connection, a screening tool called Neuropsychological Screening Battery (NSB) was developed to overcome the above-mentioned limitations. This tool measures attention, language, learning & memory and executive functions which are common cognitive areas.

This study was aimed to apply the NSB in comparing the cognitive performance of ACoA patients treated for ruptured aneurysms with clipping and coiling methods. Given the wealth of literature findings, it was expected that the test, if sensitive, will yield findings consistent with literature predictions. Specifically, it was hypothesized that patients treated with clipping have more severe cognitive impairment than their

counterparts treated with coiling methods in areas of learning and memory as well as executive functions. Since attention and language ability may easily be compromised due to extended coverage of deficits along the perforating branches subsequent to the rupture and repair of ACoA aneurysms, it was also hypothesized that some impairment will be observed among the patient groups as compared to normal controls.

The participants included eighteen ACoA patients recruited from Prince of Wales Hospital and eighteen neurologically intact individuals recruited for control group. Our results suggested that patients with microsurgical clipping performed lower than healthy controls in all cognitive domains of attention, language, learning & memory and executive functions. While clipping group was significantly impaired in visual attention, consecutive tracking, spontaneous naming and spontaneous categorization and recall after categorization, coiling group resembled normal controls in these domains except spontaneous categorization. Coiling group shared some similarities with clipping group in their patterns of across-trials performance changes in naming, recall & recognition and categorization tasks. Our study found that the cognitive profiles of normal controls and patient groups were differentiable through the NSB. The study provided evidences about its sensitivity in identifying cognitive deficits among patients with ruptured aneurysms in anterior communicating artery (ACoA). It may be a cost-effective and time-efficient screening tool for establishing patients' cognitive profile and identifying risk of cognitive impairment, thus facilitating further neuropsychological investigation and rehabilitation planning.