Treating Depression Following Traumatic Brain Injury

A summary for clinicians

Background

Major depressive disorder (MDD) appears to be the most prevalent psychiatric disorder after TBI, with a point prevalence rate over 25%. The reported period prevalence of MDD within the first year is 42% and within the first 7 years is 61%. The prevalence of MDD after TBI represents a marked increase over the prevalence of MDD found in general population surveys. The increased risk of depression is not limited to those with moderate or severe TBI, but is also present among those with mild TBI.

Many different biological and psychosocial factors contribute to depression after TBI and basic questions remain about which treatment approaches are most effective. This summary describes findings from a systematic review conducted to evaluate the evidence supporting pharmacologic, other biological (e.g., electroconvulsive therapy), and psychotherapeutic or rehabilitation treatments for depression after TBI[1].

Key Results

There are few randomized controlled trials for depression following TBI. However, serotonergic antidepressants and cognitive behavioral interventions (CBT) appear to have the best preliminary evidence for treating depression following TBI.

In theory, pharmacotherapy, psychotherapy, and alternative approaches might be combined and balanced for individual circumstances, risk factors, and time post injury but at this time there is no evidence for the efficacy of combined therapies for depression after TBI.

Recommendations for Pharmacologic Approaches

The studies reviewed suggest that clinicians cannot assume that standard antidepressant medications will have the same efficacy and tolerability in persons with TBI as in persons without neurologic insult. It is advisable to start with low doses of medications with slow titration toward a therapeutic response while at the same time being cognizant of adverse effects that may be more common in neurologically injured patients such as seizures, sedation, and cognitive dysfunction. On the basis of the 13 studies included in this review, the review authors make the following recommendations:

- Due to their favorable side effect profile, an SSRI is a good first line antidepressant for TBI patients. There is the most evidence supporting the use of sertraline and citalopram. Among the SSRIs, sertraline has the most dopaminergic effect, thus potentially having a positive impact on cognition.

Clinical Tip :

When assessing or measuring depression, use depression measures that have been validated in the TBI population, such as the Patient Health Questionnaire depression scale (PHQ-9).

1. Fann, J., Hart, T., Schomer, K. (2009). Treatment for Depression Following Traumatic Brain Injury: A Systematic Review. Journal of Neurotrauma 2009 Aug 21. [Epub ahead of print]

- More data is needed on the efficacy and tolerability of SNRIs (e.g., venlafaxine, milnacipran) in this population. However, data from a small study of milnacipran (which is not available in the United States or the UK) after TBI, and SNRI efficacy data from other populations suggesting higher rates of remission and documenting analgesic effects, suggest that SNRIs may be another reasonable option in this population.
- Evidence of possible reduced efficacy and higher risk of side effects (e.g., seizures) from TCAs may limit the use of this class in this population.
- Traditional MAOIs are not recommended due to lack of efficacy data and potentially serious side effects, particularly when dietary restrictions are not adhered to in a population with a high rate of cognitive difficulties.

Recommendations for Other Biological Approaches

There is some evidence to support the efficacy and tolerability of electroconvulsive therapy (ECT), low-intensity magnetic field exposure, biofeedback, and acupuncture for treating depression after TBI. However, the weak study designs and small samples included in this research make these results highly preliminary. On the basis of five studies included in this review (1 on ECT, 2 on magnetic stimulation, 1 on biofeedback, and 1 on acupuncture) the review authors make the following recommendations:

- A single study on the use of ECT provides some evidence supporting its use, but cognitive side effects need to be monitored closely. The authors of the study also recommend adapting ECT by using unilateral electrode placement and a lower frequency of applications
- Magnetic stimulation, biofeedback, and acupuncture currently have inadequate evidence to support their use for reduction of depression in people with TBI.

Recommendations for Psychotherapeutic & Rehabilitation Approaches

The psychotherapeutic and rehabilitation studies included in this review included both pre- and post-treatment measures of depressive symptoms; however, none of them were designed specifically to evaluate treatments for depression. Thus, there is insufficient evidence to support practice recommendations at this time. However on the basis of eight studies (4 on CBT, 2 on mindfulness meditation, and 2 on multi-faceted rehabilitation treatments), the review authors make the following recommendations:

- CBT-based treatments are an option for individuals with TBI as three of the 4 CBT-based studies reported positive effects of treatment on mood. However, there was considerable variability in the treatment models used in this set of studies, so it is difficult to identify the elements of the intervention that contributed to the effect. Studies in other clinical populations have shown CBT to have efficacy comparable to that of antidepressant medication. When CBT-based treatments are pulled apart to compare the cognitive components of CBT (e.g., examination and correction of distorted thinking) with the behavioral components (e.g., engaging in more reinforcing activities), research has tended to show superiority for the latter. According to one meta-analysis, therapies focusing on behavioral activation, even in simple forms such as activity scheduling, are at least as effective for depression as CBT. Thus, holistic treatment programs that include activity scheduling and increasing positive interaction with the environment as well as problem-solving and goal-setting training may have good potential to improve mood and overall psychological well-being for people with TBI.
- Mindfulness meditation and multi-faceted rehabilitation interventions currently have inadequate evidence to support their use for reduction of depression in people with TBI.

Systematic Review Process

Search strategy: We searched English-language peer-reviewed citations from PubMed, CINAHL, PsycINFO, ProQuest, Web of Science, and Google Scholar.

Selection criteria: Articles that reported any treatment modality investigating depression and depressive symptomatology; depression reported as either a primary or secondary outcome; conducted in adults older than 18 years of age; population included persons with traumatic brain injury (but need not be exclusively TBI) written in English; published after 1980 and were peer reviewed. It was also decided during the full review to only include studies that reported quantitative scores using a validated depression diagnostic or severity instrument both pre- and post-intervention.

Two reviewers screened the abstracts of 658 articles on TBI and depression to identify 57 articles meeting the inclusion criteria. Disagreements were resolved through discussion. Next reviewers extracted information about research design, sample information, details of the interventions, outcome measures, and main outcomes. Articles were excluded if the detailed full review revealed that they did not meet the initial criteria. After extracting data and reviewing in full the 57 articles, 26 articles met the final criteria. One additional article was added at the recommendation of an external reviewer for a **final set of 27 articles included in the review.** Evidence was classified based on American Academy of Neurology criteria.

The University of Washington Model Systems Knowledge Translation Center is funded by the US Department of Education, National Institute on Disability and Rehabilitation Research, Office of Special Education and Rehabilitative Services(grant number H133A060070)