

Treating distressing islands of memory: severe TBI and EMDR treatment for distressing experiences during post traumatic amnesia

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Abstract

'Severe' Traumatic Brain Injury (TBI) survivors are likely to be hospitalised and experience Post Traumatic Amnesia (PTA): a transient state of confusion, disorientation and memory loss, until the return of continuous memory. Survivors often experience distressing 'islands' of memory during PTA, and this can exacerbate psychological deterioration and lead to additional poor outcomes if left untreated. The literature for neuropsychological rehabilitation is well established in the multidisciplinary delivery of services for severe TBI, but the alleviation of post-traumatic distress caused during PTA has received little attention to date. This case report demonstrates how Eye Movement Desensitisation Reprocessing (EMDR) therapy might provide psychological improvement in clients who sustain severe TBI with distressing 'islands' of memory during PTA and provides a 4 year follow up to measure sustained benefits.

Survivors of severe TBI have by definition experienced a near death event. Consensus has moved on from earlier opinions that severe TBI was mutually exclusive with post-traumatic stress disorder (PTSD) due to loss of consciousness, with evidence that approximately 27% of severe TBI patients meet the full clinical criteria for PTSD at 6 months post injury [1] and signs of elevations in stress hormone exist at one week for those who do go on to develop PTSD [1].

Severe TBI survivors will often have a prolonged stay in ICU experiencing confusion, delirium, mechanical ventilation, restrictive care practices, sedation, injury pain, intrusive medical procedures and a growing realisation of potential mortality, and 'islands' of memory. 'Islands of memory' can often be distressing presenting challenges to optimal recovery during neurorehabilitation, including poorer

psychosocial outcomes [2].

Neuropsychological treatment typically involves aspects of psychoeducation, cognitive rehabilitation, the implementation of strategies to compensate for cognitive problems and, where appropriate, brief psychological therapy interventions for associated psychological difficulties. Eye Movement De-Sensitisation Reprocessing (EMDR) is based on the idea that negative thoughts, feelings and behaviours are the result of unprocessed memories. The treatment involves procedures that include focusing simultaneously on spontaneous associations of traumatic images, thoughts, emotions and bodily sensations and bilateral stimulation (bilateral eye stimulation predominantly). EMDR evidence in brain injury is scarce with some recent attention in alleviating emotional symptoms in cases of mild TBI [3], although its use is growing.

Case Study

'Maria' was a UK born female in her 50s. She sustained a severe traumatic brain injury causing unconsciousness, skull fracture, right frontotemporal extradural haematoma, left posterior temporal contusions, subarachnoid haemorrhage and a last recorded GCS of 3 before sedation and induced coma for 8 days. Maria's intracranial pressure was monitored via a bolt, but no neurosurgery was elected. She experienced PTA for 3 weeks. She had no clear recall of events on the day of the index event. She also received severe orthopaedic injuries to the neck, back and ribs, and it was deemed that her chances of survival were relatively low. She was in intensive care for 11 days, and under hospital care for approximately 4 weeks. She received community based NHS neurorehabilitation and thereafter at 9 weeks post injury, received private multidisciplinary neurorehabilitation through the litigation process.

An initial home visit assessment was provided for Maria at her family home.

Table 1. Repeatable Battery for Neuropsychological Status (UK norms)

Scale	Index Score	Percentile
Immediate memory	117	87th
Visuospatial/constructional	126	96th
Language	131	98th
Attention	125	95th
Delayed memory	119	90th
Total	141	99.7th

On first meeting her presentation was non-remarkable other than occasional high-level word finding difficulties, and slightly flattened mood. Physical pain from her injuries was still evident. Maria was highly educated and appeared motivated to recover as far as possible. At the time of initial neuropsychological assessment she had returned to work on a part-time basis with reasonable adjustments to include increased breaks and reduced management responsibilities. She had no significant psychological or neurological history and was in good health before the brain injury. Maria was asked, from her perspective, what has been the impact of her brain injury. She replied:

"I'm frustrated by my slowness and inefficiency at work.... I become frustrated at times and although my colleagues have been supportive I probably put pressure on myself. I tried to get back to normal as soon as possible. I haven't cried since the injury... I sometimes feel that people have to spell out their intentions as I find it more difficult to pick up on social nuances. I'm not as good at remembering new things. Memories fade quicker from my awareness and I have to write more down now since the accident."

Her cognition during initial neuropsychological assessment was assessed using the Repeatable Battery for Neuropsychological status - UK (RBANS-UK). Results mirrored expectations of high intellect with an overall index score of 141, putting Maria in the top 99.7% compared to UK based cognitively healthy age-related peers. Maria's performance on standardised memory tasks and information processing cognitive tasks was weakest in comparison to her other domain scores, but still considerably above 'average'. These results were consistent with Maria's perceived cognitive changes. She passed embedded measures of performance validity (reliable digit span).

Following neuropsychological assessment, Maria received feedback on her results and two psycho-education sessions on brain injury. No further cognitive assessments were undertaken as it became clear that Maria had more prominent emotional based therapeutic needs. She reported:

"The impact upon children who I teach was distressing. Reading the cards of well wishers

was very hard. I found it hard to process others emotions... before realising the impact upon myself."

Maria soon explained that she had become distressed from her experiences particularly her survival and recovery within acute medical care and PTA especially. She was assessed for symptoms of psychological trauma at the start of the subsequent session and was found to have significant residual post-traumatic stress. A discussion with Maria and the treating team was undertaken it was agreed that neuropsychological treatment efforts would prioritise the treatment of her post-traumatic distress using Eye Movement Desensitisation Re-Processing Therapy (EMDR).

She completed EMDR based measures at start of treatment, at mid-point review, on final treatment (after 8 EMDR sessions) and at 4 years long term follow up. Nine 1.5 hour EMDR sessions, across a 6 month period were undertaken. The first EMDR treatment session provided EMDR focused baseline measures. Maria scored significantly on Impact of Events Scale - Revised (IES-R) at start of EMDR treatment, indicating severe symptoms of intrusive memories, avoidance behaviours and physiological hyper-arousal and surpassing cut-offs for PTSD (see Table 2). At this initial point, prior to treatment she also rated her psychologically traumatic memories associated with the accident and her recovery as significantly distressing (see Table 2).

During the first session EMDR treatment protocol moved on to orientate Maria to the therapeutic model explaining the Adaptive Information Processing (AIP) model (see [4] for more information). For Maria this made sense and she reported a clear fit with her experiences

in acute care during PTA. Safe place practices were developed. History taking was conducted to establish the key distressing memories which she had held on to and was distressed most by. For Maria there were several key memories, which all revolved around feeling helpless and in pain. She explained her most distressing memory to be:

"The key distressing memory was waking up - my first awareness of being in ICU. I recall the breathing tube being removed from my throat. It was painful and I am not sure if I was trying to pull it out, or if it was being removed. I didn't know where I was or who was there. It felt like a nightmare, without the chance to realise it wasn't real."

Maria engaged well with the model and chose her negative cognition (NC) connected to her distressing memories, as: "I am vulnerable" and developed the positive cognition (PC): "I can cope with this. I am capable." She identified and activated the most distressing memory on the second session. Desensitisation required few cognitive interweaves (verbal prompts to elicit constructive progress). She was a very psychologically minded intellectual, who appeared to develop insight toward her psychological experience of the injury across the course of treatment. As the sessions progressed with successful 'subjective units of distress' 0-10 (SUD) reductions on each memory targeted, in turn, her validity of cognition' 1-7 VOC strengthened. Midway through treatment she reported:

"I have experienced a loss of identity and became a person I didn't recognise... The physical injuries aside - I felt I had become a person who wasn't me. I had felt like someone who needed support, in contrast to the independent person I had become across my life."

As the main distressing memory (channel) was successfully reprocessed, additional distressing memories were targeted. Her 'islands of memory' during PTA were chosen by her.

"In the times during PTA, when I saw myself I didn't recognise myself. It felt like I had woken up in someone else's body. I felt like I didn't understand why I was there. I felt at the time delusions regarding doctors having put me there. In my head it made sense that it was their fault and that made it hard to accept treatment. Everyone was concerned about the physical injuries - because they were so real, painful and visible, they took up my attention too. But there was a paranoia that the people helping me were hurting me. Every procedure which was painful

Table 2. Psychological Trauma Results

Measure	Initial Assessment	Final Treatment (8 sessions)	4 year review
IES-R	45	16	3
SUDs	8	1	3
VOCs	1	6	7

felt persecutory. I couldn't see them as helpers but part of the problem."

Maria completed her 8th EMDR session and was re-administered with all EMDR focused assessments (see results section). A planned small number of 'top-up' sessions were not completed as her litigation was settled during the following period and funding for private treatment was terminated because of this.

Results

Maria scored 45 on the IES-R at pre-EMDR treatment. This reflected severe symptoms of intrusive memories, avoidance behaviours and physiological hyperarousal, surpassing cut-offs for Post Traumatic Stress Disorder (PTSD). At this initial point, prior to treatment she also rated her 'subjective units of distress (SUDs)' associated with her PTA and acute recovery as 8 out of 10, in terms of the level of distress these memories were still causing (10 being most severe).

At the end of the 8th session midpoint her IES-R scores fell to 16, demonstrating significant reduction in intrusive memories, avoidance behaviours and physiological hyper-arousal symptoms. Her SUDs fell to 1, demonstrating significant reduction in subjective distress. Her 'validity of cognition scale' (VOC) raised from 1 to 6 out of 7, showing increased belief in her positive cognition of: "I can cope with this. I am capable". At 4 year follow-up her IES-R

fell further to 3 demonstrating continued long term progress in symptom reduction. Her VOC was 7, however, her subjective distress (SUDs) increased slightly to 3.

By the time the long-term follow-up was arranged she had reflected how her way of coping had changed:

"I do talk to myself and be kinder to myself. I can rationalise things. If I find myself getting uptight about something I will talk myself through it with reassurance." When I have returned to hospital for a review it still raises feelings, but each time it has gotten easier and caused less response."

She reported her ongoing distress with the key memory as residing at 3. She described ongoing difficulties as:

"Fatigue is the main ongoing issue. I have changed things in my life so I don't feel things so badly. The fatigue gets worse through the course of the day and it is accumulative when I have a busy week. I can rest now. I still get neck and back pain and still receive physiotherapy and chiropractor treatment. I do a lot of running and yoga. I need to find time in the day to have quiet time. I have remained social but sometimes need moments of quiet and have some strategies such as popping outside or taking a deep breath."

Discussion

This case study shows promise for the application of EMDR for those who sustain severe brain injuries with associated psychological trauma during recovery. Although the wider positive effects of neurorehabilitation and neuropsychological rehabilitation cannot be neatly disentangled from the benefits of integrating EMDR, the alleviation of specific psychological trauma based symptoms was clear at end of treatment and long-term follow up in this case. Unfortunately, in this case there was very mild residual symptoms, which would likely have been addressed if treatment was not compelled to cease following litigation settlement. The further implications of this case provide support for the compatibility of EMDR for those receiving multidisciplinary neuro-rehabilitation. The case highlights the need to address psychological health following the physical focus on patient survival from severe

brain injuries. The general absence of evidence for EMDR in TBI populations is baffling and warrants further empirical investigation. Single case series methodology is a good starting point, but controlled designs would test treatment efficacy compared to other treatments and hopefully better inform neuropsychological rehabilitation practice. Qualitative enquiry may also help us understand how EMDR can work for TBI clients, as Maria's comments allude to. EMDR training for Neuropsychologists provides a logical route for strengthening skills in meeting the psychological needs of TBI clients who show symptoms of psychological traumatisation. The successful integration of EMDR into multidisciplinary neurorehabilitation during litigation appears to be feasible. Long term occasional 'top-up' EMDR sessions may be required to ensure relapse prevention.

Key Points

1. Survivors of severe TBI can be psychologically traumatised post-event, especially through periods of PTA, 'islands of memory' and confusion.
2. EMDR can be integrated within wider neurorehabilitation and neuropsychologists should consider EMDR training.
3. Whilst EMDR is an evidence-based treatment for psychological trauma and stress mediated conditions, it is absent from the neuropsychological literature!

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