

CASE REPORT

MEMANTINE AUGMENTATION IN THE TREATMENT OF FRONTAL LOBE SYNDROME IN PATIENTS WITH END-STAGE RENAL DISEASE: A CASE REPORT

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Abstract

Objective: This case report highlights the challenges in managing Frontal Lobe Syndrome (FLS) in a patient with end-stage renal disease. **Methods:** This is a case description of a 58 year-old gentleman who presented with behavioural changes: irritability, mood lability, aggression, psychosis, and overfamiliarity. His presenting symptoms were in keeping with (FLS) with positive findings on Computed Tomography (CT) scan of the brain and also neuropsychological assessments. Difficulties arose in attempts to control his aggression without further compromising his renal function. **Results:** The usage of the commonly used antipsychotics in controlling aggression was restricted in view of the patient's renal impairment. Augmentation with low dose memantine proved to be beneficial in this case, without causing further deterioration in renal function. **Conclusion:** The use of memantine to augment the effect of risperidone was observed to be safe and successful in managing the behavioural changes associated with FLS in adults with end-stage renal disease. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 93-96.*

Keywords: Frontal Lobe Syndrome, Aggression, Diabetes, End-Stage Renal Disease, Memantine

Introduction

Frontal lobe syndrome (FLS) is known to be associated with aggression, impulsivity, mood lability and social inappropriateness[1]. The changes in personality associated with the syndrome can be challenging as well as devastating to his/her loved ones when the patient starts becoming destructive. It is well-recognized that the treatment of FLS is tailored to its aetiology. Adults with Type 2 diabetes and hypertension are at higher risk for this condition as diabetes is associated with frontal lobe volume reduction [2], while hypertension is associated with frontal lobe atrophy [3]. Cerebrovascular accidents are also common in these two illnesses, where silent infarcts can occur at any site of the brain, including the frontal lobes [4]. Complications

from medical illness may influence the effectiveness of management. This case report highlights the challenges in managing this syndrome in a patient with end-stage renal failure, in whom the use of the usual dosage range of antipsychotics is not advisable.

Case Report

Mr. AB began having changes in his behaviour in September 2012. The changes included overfriendliness (from a person who prefers to stay at home, he spends a lot of his time strolling around the housing area on his wheelchair making remarks to passers-by), spending sprees (buying many small toys such as cars and airplanes for collection) and hoarding compulsion (bringing home broken electrical goods with plans to fix them, which

he never did). His spending sprees made him popular among children in the housing area as he would lavish them with candies.

Later he became easily irritable and demanding. This occurred about a month after the behavioural changes started. As the irritability set in, lability of mood followed (he would easily snap at his wife but later be seen crying over trivial matters). He was also verbally as well as physically abusive. He started shouting with foul words, kicking and punching at the furniture, breaking glasses, throwing things at homes. There were times when he hit his wife.

At the same time he also started having persecutory delusions that his neighbours were against him and planning to do bad things to him (which he was not able to specify). There was also presence of auditory hallucination, where he admitted hearing voices of his friends talking to him. His wife claimed she had seen him talking and laughing to himself. He had stopped sexual relations with his wife for many years due to erectile dysfunction associated with diabetes. However, he recently started making sexual advances towards her and when she declined, he would accuse her of having an affair.

There was no marked memory impairment but his wife noted some impairment in his cognitive functioning such as frequently misplacing things and needing reminders for self-care. He also needed assistance with dressing as well as eating as he had become somewhat clumsy; wearing shirts inside out and being messy at the dinner table despite absence of physical deficits. She described her husband as an almost totally changed man. Before his symptoms began, AB reportedly was a caring, quiet and reserved person. He used to work as a technician with a telecommunication company and colleagues described him as a hardworking and easy person to get along with. He had to take early retirement (at the age of 42) as his poor diabetic control resulted in bilateral below knee amputation of both legs and also poor eye-sight. Later he developed end-stage renal failure requiring haemodialysis. He also has hypertension and hypercholesterolaemia.

One night AB broke a glass window and threatened to kill himself with a broken piece of glass following an argument with his wife. Police assistance was sought to help bring him to the hospital. A CT scan of the brain done on admission showed multifocal infarcts of both frontal lobes. The infarcts in the left lobe were noted to be recent. This scan was compared with a CT scan that was done in August the same year (he was complaining of facial numbness at that time) and no infarcts in the left frontal lobe was noted then. Haematological and biochemical analyses were all within normal/acceptable limits. He was admitted to stabilize his condition and a careful history taking was taken from the patient as well as corroborative history from his family members (wife, daughter and son-in-law). No remarkable findings were detected on clinical examination apart from the bilateral below knee amputations as well as diabetic retinopathy on fundoscopy. AB was also noted to have poor reasoning as well as poor grasp of the consequence of his actions. For example, he claimed that breaking the furniture was acceptable as they were his belongings and that abusing his wife was also acceptable because of his invalid condition.

He scored 27/30 for his mini-mental state examination (MMSE)[5]. This is not surprising as MMSE is not a sensitive tool for frontal lobe dysfunction [6]. His Frontal Assessment Battery score was 12/18, which was inconclusive to directly point towards frontal lobe dysfunction [7]. There was impaired performance on Trail Making Test and Matrix Reasoning tasks, which indicated poor performance on executive functioning. His performance on both verbal memory and non-verbal memory was severely impaired (2 standard deviations below normal). Poor information processing speed and working memory were evident with low score on Digit Span and Digit Symbol Task.

Based on the above findings, a diagnosis of Frontal Lobe Syndrome was made. Risperidone was started to manage his aggression. The dose was titrated up rather slowly due to his poor renal function, hence slow response was observed. His aggression only slightly improved at 2mg but no further increment of dose was possible to avoid dose

related side-effects due to impaired excretion. His family was keen to care for him at home at this point despite medical advice against discharge. He was re-admitted the same day as he had attempted to jump out his room window after a row with his wife.

After careful consideration, memantine 5mg nocte, off-label, was added. Memantine, an NMDA (glutamate) receptor antagonist was chosen because it is indicated in dementia with

behavioural and psychological symptoms of dementia (BPSD) [8] and many of the patient's symptoms represent BPSD. Thereafter, his condition continued to improve. His psychosis diminished and his mood was more manageable. His family members were given psychoeducation with regards to his behavioural symptoms, course of his illness and also on how to manage him at home. His renal function was monitored and no deterioration was observed.

Table 1. Renal profile results

| Renal Profile (Normal values) | On admission | 5 days after memantine | 6 months post memantine |
|--------------------------------------|---------------------|-------------------------------|--------------------------------|
| Na (135 – 150) | 135 | 134 | 138 |
| K (3.5 – 5.0) | 4.0 | 4.5 | 3.7 |
| Urea (2.5 – 6.4) | 8.9 | 12.8 | 8.4 |
| Creatinine (62-106) | 526 | 482 | 484 |

*These results are post-dialysis analysis

Mr. AB was finally discharged home after 22 days of admission. His discharge medications were risperidone 1mg BD and memantine 5mg nocte. At his follow-up visit, his wife claimed that she had reduced his memantine dose to 5mg every other night due to sedation. Nonetheless, she reported that he has been manageable, though not back to his usual self. There have been instances of behavioural outbreaks, which were manageable as well as tolerable. He continued to remain relatively well on further follow-up appointments. Family members were able to accept the changes in his personality.

Discussion

For Mr. AB, the areas of concern in his condition are impulsivity and aggression. Risperidone was the drug of choice in his initial treatment plan because of its safety and tolerability profile, effectiveness and also cost. However, due to the problem of end-stage renal failure, caution was needed with regards to dosage and titration. It is interesting to note that augmentation with memantine helped to improve his condition remarkably. Though memantine is not advisable in patients with renal disease, there is no absolute contra-indication for the use of low-dose memantine. This case highlights the importance of

individualised care. There were no signs of deterioration in his renal function on subsequent follow-ups.

Conclusion

The combination of low dose memantine with an antipsychotic in controlling aggression associated with frontal lobe syndrome in older adults with end-stage renal failure maybe safe and beneficial.

Acknowledgement

The authors wish to thank the Director of the UKM Medical Centre for permission to publish this case data.

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Received: 2 June 2013

Accepted: 25 July 2013