

IV-NAD Infusion Treatment in Alzheimer's Patient: A Case Report

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ABSTRACT

Alzheimer's disease is a terminal, degenerative neuromuscular disease that affects cognition, motor function, and, occasionally, personality. While a cure has yet to be found, there have been drugs created to slow the progression of the disease. In this report, we describe the effect that IV NAD BR+ (nicotinamide adenine dinucleotide brain restoration plus) infusions had on an Alzheimer's patient and his symptoms. The patient is a 73-year-old male who was diagnosed with Alzheimer's Disease in 2013. The patient was prescribed Namenda XR, and, in April of 2015, began NAD infusion treatments, along with continued Namenda. Only 3 months later, there was a notable subjective improvement in the patient's memory and attitude. The patients decline following missed treatments due to COVID-19, and his subsequent treatments and their outcomes have been documented as well.

Keywords: NAD Alzheimer's disease; Dementia NAD BR+ Nicotinamide adenine dinucleotide; Brain; Neurological

Abbreviations: NAD BR+: Nicotinamide Adenine Dinucleotide Brain Restoration Plus; MMSE: Mini Mental State Exam; MoCA: Montreal Cognitive Assessment

INTRODUCTION

NAD (nicotinamide adenine dinucleotide) is found in all living cells and is used for cellular metabolism and regeneration. NAD can be administered to patients via an IV solution [1,2]. These infusions are thought to have many neurologic benefits, including decreased cravings and withdrawal side effects during detox and increased cognitive performance in both Alzheimer's and Parkinson's patients [3]. With this case study, the research group has been investigating the long-term effects of NAD infusion treatments on a patient diagnosed with Alzheimer's disease. NAD infusions work in part by triggering the enzyme responsible for DNA repair [4]. This, in turn, helps to repair damaged nerve pathways which may aid in reducing the progression of Alzheimer's.

The NAD infusion treatment protocol began with a solution of Nicotinamide Adenine Dinucleotide Brain Restoration Plus (NAD BR+) administered intravenously, using a solution of 750 mg of NAD mixed into 500 mL normal saline each day for four days initially, followed by monthly 1-day boosters of the same dosage. The goal of this study was to determine if the patient's symptoms would improve with the use of IV NAD, as seen in a previous study done by Springfield Wellness Clinic, in which various neurological benefits were observed in a Parkinson's patient [3].

CASE PRESENTATION

The patient is a 73-year-old well-nourished male, diagnosed with

Alzheimer's dementia in 2013. The patient's medical history includes no chronic conditions but does include full remission from prostate cancer and a surgical history that includes a coronary artery bypass graft, a cholecystectomy, and a rotator cuff repair. Both the patient's mother and maternal uncle suffered from Alzheimer's, and his father was diagnosed with heart disease.

The patient reported mild forgetfulness and difficulty remembering conversation details and order of events, beginning in 2011. After a brain scan-which showed mild, generalized atrophy and no significant white matter disease-and an EEG that returned normal, he noticed a worsening of symptoms, including difficulty handling complex material. However, he denies decline in performance for the company with which he was employed. Multiple modalities have been employed in the treatment of the patient's Alzheimer's disease. He experienced adverse side effects while taking both Aricept and an Exelon patch, but tolerated Namenda XR well. He denied any changes in personality or dexterity with the disease.

The primary modes of assessment of the patient's cognitive health have been the Montreal Cognitive Assessment (MoCA) and the Mini-Mental State Exam (MMSE). In June of 2014, the patient scored a 21/30 on the MoCA, which fell within indicated mild cognitive impairment [5]. The treatment was conducted at Springfield Wellness Center in Springfield, Louisiana in April of 2015 using NAD BR+ from Archway Apothecary in Covington, Louisiana. Initial treatment consisted of 750mg of NAD in

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MMSE and MoCA Scores Over Time

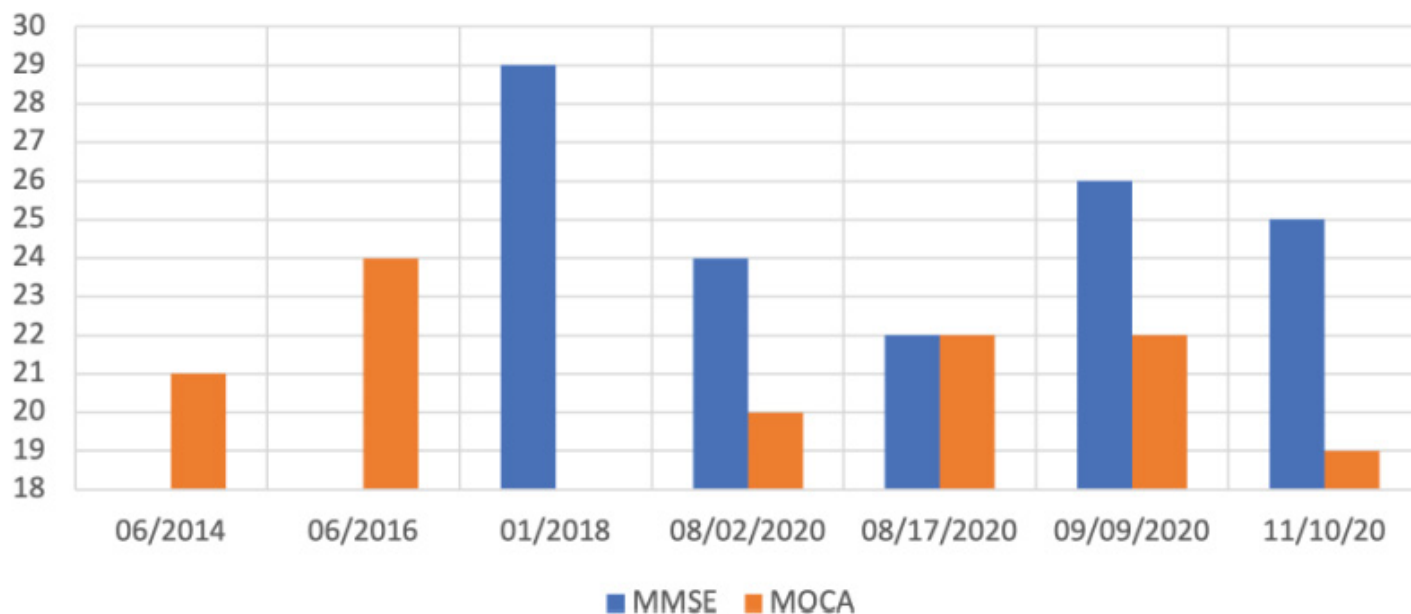


Figure 1: Chart detailing test dates and scores for patient with Alzheimer's disease undergoing NAD infusion treatments.

solution with 500mL of IV normal saline solution, over four days. The patient was advised to use NAD nasal spray and dissolvable NAD tablets between treatments. By June 2015, he reported subjective improvements in memory, and in June of 2016, after monthly boosters of IV NAD, he seemed to be markedly improved. He was administered another MoCA test during the same month and scored a 24/30. This score still fell within the range of mild cognitive impairment, but with a 3-point increase from the previous assessment.

In January 2018, the patient scored 29/30 on an MMSE, which indicated a "questionably significant" degree of impairment [6]. The patient continues to receive monthly IV NAD boosters to the present day. He received treatment every 35.9 days on average from January of 2018 through March of 2020, never skipping more than one month at a time and continued to report a stable cognitive state. Due to the COVID-19 pandemic, the patient missed 4 months of boosters. In August of 2020, when the patient returned for treatment, repeat testing showed that there was a slight decline in cognitive state, with a 20/30 on the MoCA and a 24/30 on the MMSE. Due to the large gap in boosters, the patient was asked to return two weeks early for his next booster. The results of his mid-August testing revealed a two-point decrease in MMSE and a two-point increase in MoCA, with both scores at 22/30. On September 9, the patient's MoCA remained at a 22/30, while his MMSE rose to 26/30. His most recent visit on November 10, 2020-after a nearly two-month gap in treatments-yielded an MMSE of 25 and a MoCA of 19.

DISCUSSION

We can observe a great deal of fluctuation in mental status as demonstrated by the MoCA test. His score initially rose from a 21/30 to a 24/30. As mentioned previously, this initial rise in score took place immediately following the start of NAD treatments. However, after missing four months of treatments due to the COVID-19 pandemic, the patient experienced a 4-point drop

in score to a 20/30. The MoCA score ranges for mild cognitive impairment are 19-25, with an average of 22; the mild Alzheimer's disease range is 11-21, with an average of 16. As indicated by this 20/30, the patient fell in this overlap, but was nearer the upper limit of mild Alzheimer's disease. Since the patient's return after the pandemic, we have seen the scores increase again to a 22/30 two visits in a row. At his November visit, there was a decline to 19/30. Due to the severity of this decrease following a gradual increase of MoCA scores, the low score may be an outlier. It could be an indicator of exhaustion on that day in particular, resulting in his inability to perform well after having completed the first cognitive test, which yielded only a one-point decrease, as we will review momentarily.

The patient scored a 29/30 in 2018 on the MMSE. This subsequently fell to a 24/30, following his break from treatment in March-August 2020. Questionably significant degree of impairment, or "no cognitive impairment" on the MMSE is defined as a score of 24-30. The patient was still within this range but was closer to the lower limit. Further interpretation of the MMSE reveals that cognitive impairment was in its mild stage, which is a decline from the "questionably significant" degree of impairment from the 2018 test [6]. By mid-August 2020, his MMSE dropped to 22/30 into the "mild" degree of impairment category, indicating significant cognitive decline. Most recent testing revealed an improvement to "questionably significant" once again. This is a promising increase, as it shows that his treatments following the break increased his cognitive function to the level noted months previously. Figure 1 contains a concise timeline of test dates and results.

It was observed that the patient appears to have the least amount of difficulty with the short-term memory. When asked to recall 5 words for the MoCA done in early August 2020, he was able to repeat all 5 immediately. However, after 5 minutes had passed, the patient was unable to recall any of the 5 words. In the MMSE administered on the same date, the patient was given 3 words to remember and was only able to recall 2 out of the 3 words, approximately 2 minutes later.

The most promising aspect of this study was the data collected after the patient returned to treatment following his absence from the clinic due to COVID-19. There was a clear decline in his cognitive state preceding his return to treatment. His test results after resuming treatment (excepting only the November MoCA) indicated that his cognitive function improved from “mild” to “questionably significant” degree of impairment on the MMSE scale. Despite the fact that his MoCA remained in the mild cognitive impairment category, those individual scores rose.

CONCLUSION

The patient’s reports make a promising case. His cognitive ability did not decline significantly over this period, and much of the patients’ cognitive function was actually improved from beginning NAD treatments. In addition, the patient also experienced no changes in personality, changes in dexterity, or other adverse side effects as a result of the NAD treatments. Furthermore, there was a noticeable improvement in the patient’s mood immediately following treatments. Because of the mild condition of his case, further study should be done to determine whether this treatment regimen will be beneficial to other Alzheimer’s patients who are in the more advanced stages of the disease. A larger study would need to be conducted to validate and replicate findings. With continued trials and treatments, this treatment has the potential to benefit Alzheimer’s patients worldwide.

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