Management of Depression in ALS With the Use of Methylphenidate and Sertraline

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Abstract

Amyotrophic lateral sclerosis (ALS) is now a well-known disease that was first described by Charcot in the 19th century. It is a relentlessly progressive neurodegenerative disorder, with voluntary muscle action progressively affected, voluntary movement progressively weakened, weakness, disability, and eventually death. The loss of motor neurons results in the primary clinical symptoms and produces impairment affecting limb, bulbar, axial, and respiratory function. The focus of research and treatment has been on the loss of motor neurons, but equally debilitating and associated problems with ALS include mood alterations such as depression and anxiety. Initial depression has been associated with shorter survival time. Quality of life appears to be more dependent on psychological factors such as depression and hopelessness being common in ALS patients. Quality of life can be improved with treatment in ALS patients, however, there are no controlled trials supporting certain pharmacological treatments. Combination treatments with SSRI and methylphenidate has demonstrated enhanced clinical response in mood, well-being, higher rate of remission, and enhancement in cognitive functioning in the geriatric population. Herein we describe the management strategy for one patient with ALS and comorbid depression.

Case Presentation

Patient is an 80-year-old male with no history of depression or other mental illness, who presented to ALS neurology clinic at the age of 73, due to trouble balancing on one foot when walking and difficulty withstairs. He was diagnosed with ALS and then obtained second opinion at another institution where the diagnosis was confirmed. Since that time, his condition has been very slowly progressive.

He described onset of depression beginning after he was diagnosed with ALS. Over the following years, his physical health slowly declined and he became significantly less independent. His mood symptoms include anxiety, decreased energy, and difficulty concentrating. He started initial treatment seeing a counselor and started on citalopram. The medication was effective for 6 weeks marked by brighter affect and reduction in anxiety. However, the medication waned in its effectiveness over time, so bupropion was added. Citalopram and bupropion were discontinued shortly after, due to concern for worsening cognitive function and worsening withdrawal, depression, and anhedonia.

Psychiatry was curbside consulted for further assistance with medication management. Next medication options were given to either change from citalopram to sertraline for lack of effectiveness, add adjunct treatment of mirtazapine or adjunct treatment of methylphenidate. Methylphenidate was ultimately the first choice recommendation as it is often used to target symptoms of apathy, particularly in conjunction with an antidepressant. Mechanism of methylphenidate treating apathy is effect on catecholamine’s and dopamine. Methylphenidate was started by his neurologist. However, it was not further increased due to concerns for side effects in geriatric patients, and it was referred for full psychiatric evaluation and medication management.

On initial psychiatric evaluation for his mood symptoms, he was still taking methylphenidate which was providing only minimal to mild relief. He still had symptoms of depressed mood, fatigue, loss of energy, diminished anxiety, and worry. Recommendations were made to start sertraline. Patient started to see mild improvements on sertraline including improvements in mood, irritability, anxiety, and social engagement. However, during the following video visit, patient reported being more withdrawn, feeling depressed, hopeless, and helpless. Due to worsening symptoms, sertraline was further optimized. Prior to next monthly visit, his wife reached out to describe patient being more confused, having trouble making decisions, and worsening difficulty with using a computer. Due to worsening symptoms and possible side effects, sertraline was decreased between appointments.

During the next visit, patient continued to complain of feelings of isolation, increased irritability, and being withdrawn with worsened depression. Sertraline was further decreased with plan to completely titrate off due to cognitive decline. After sertraline was discontinued, patient had major “meltdown” where he refused to go to an activity he normally enjoys. He was diagnosed with ALS and obtained second opinion at another institution where the diagnosis was confirmed. Since that time, his condition has been very slowly progressive.

One month later, at sertraline 12.5 mg and methylphenidate 5mg twice a day, patient and his wife reported increased motivation, feeling more expressive, less social withdrawal, decreased depression, and objectively more conversational on the phone. Methylphenidate was optimized to 10mg twice a day and sertraline continued at 12.5 mg once a day. He continues to demonstrate improvement in depression, with improved symptoms as listed above, and will continue to follow up on outpatient basis.

FLAIR MR images from a patient with ALS (right) and a control subject (left), showing bilateral hyperintensities of the corticospinal tract in subcortical white matter and posterior limb of capsula internal in the ALS patient.

Timeline

- **Symptoms:** Anhedonia, Decreased Energy and Concentration
  - Medication Trial: Citalopram 20mg Daily + Bupropion 150mg Daily - Methylphenidate 5mg Daily

- **Symptoms:** Depressed Mood, Fatigue, Decreased Concentration, and Anxiety
  - Medications: Sertraline 150mg Daily, Consider Ritalin Addition

- **Symptoms:** Improved Mood, Decreased Irritability and Anxiety, Fatigue
  - Medication: Sertraline 190mg Daily

- **Symptoms:** Insomnia, Depressive Mood, Feelings of Hopelessness and Helplessness
  - Medication: Sertraline 200mg Daily

- **Symptoms:** Confusion, Indecisive, and Increased Difficulty using a Computer
  - Medication: Sertraline 190mg Daily, Consider Ritalin Addition

- **Symptoms:** Increased Motivation, Mood Swings, Leading to Suicidal Thoughts, Depression W/o Sertraline
  - Medication: Sertraline 15mg Daily and Methylphenidate 5mg Twice a Day

- **Symptoms:** Increased Motivation, Expressive, Decreased Social Isolation, Sleep and Mood Improved, and Mental Stimulation
  - Medication: Sertraline 12.5mg Daily and Methylphenidate 5mg Twice a Day

Discussion

Depression has a prevalence of 34% in patients diagnosed with ALS. Currently there is not data identifying utilization of medications for ALS patients for depression aside from traditional antidepressants. To the best of our knowledge, there are no case reports that have reported methylphenidate or stimulants in general as treatment adjunct to antidepressants for depressive symptoms in ALS. This patient responded to sertraline and methylphenidate combination at relatively low doses. This is noteworthy as the patient was not able to tolerate higher doses of the antidepressant sertraline and citalopram was not found to be effective. The use of stimulants was trialed in a single patient, so more studies will be needed to confirm the utility of this class of medications and combination in the ALS population with depressive mood symptoms. Further literature on treatment of depression in ALS is needed including different pharmacological measures and treatment modalities. We suggest that in addition to an antidepressant, stimulants can be considered to help specific symptoms including motivation, energy, and concentration.

References