

Methylphenidate augmentation during antidepressant treatment for depression in HIV: a case report

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Abstract. Depression is prevalent among patients with severe or chronic illnesses. Fatigue and apathy are symptoms that are commonly encountered in such conditions. Methylphenidate as a central nervous system stimulant might present additional benefits when administered as an additional therapy for depression. We present a case report of a patient with HIV infection who had received anti-retroviral therapy to slow down the HIV virus progression and antidepressants as indicated by the diagnosis of major depressive disorder. Due to the delayed response to antidepressants, however, methylphenidate was prescribed as an additional therapy. The administration of methylphenidate helped the patient respond better especially in regard to the chronic fatigue experienced. The improvement of Hamilton Depression Rating Scale (HDRS) was also evident. During the administration of methylphenidate, antidepressants and ART were continuously provided.

1. Introduction

Patients affected with certain diseases, chronic infection, brain trauma, and patients who receive palliative care might present with depressive symptoms. Presenting symptoms include declined cognitive function, sleep disorders, fatigue, and apathy. [1-3] Patients with HIV infection are at a significant risk of experiencing depressive symptoms. With an extended course of depression, patients' adherence to anti-retroviral (ARV) medication might be affected and this would subsequently lead to increased mortality and morbidity. Some antidepressants have been proposed for managing this condition but only 25% up to 35% patients achieved improvement with antidepressant monotherapy. In this case, the administration of additional medications might be necessary to help maintaining and even improving patients' quality of life [4].

Methylphenidate is a short-acting stimulant that acts in the central nervous system. This medication is the drug of choice for paediatric patients with attention deficit/hyperactivity disorder (ADHD). The mechanism of action involves increasing the availability of monoamine neurotransmitters in the synapse (e.g. norepinephrine, serotonin and dopamine) by blocking their uptake as well as increasing their release. [5] Methylphenidate could be provided as an additional therapy for conditions that might present simultaneously with depression. This addition might accelerate and enhance the effect of antidepressants, even in patients with history of resistance to antidepressants. [6,7] The side effects induced by methylphenidate are relatively negligible hence its improved tolerability, especially in patients with chronic medical conditions [8,9].

2. Case Report

A 30-year-old HIV positive male entrepreneur presented to the clinic with chief complaints of prolonged weakness and diminished excitement. He was diagnosed with HIV infection four years ago, and contracted the infection from an unprotected intercourse. Two months following the diagnosis, he was urged to receive anti-retroviral therapy (ART) due to the low CD4 count of 260 cells/mm³. The



regimen provided consisted of 150 mg lamivudine, 300 mg zidovudine and 200 mg nevirapine twice daily. Current CD4 count was 600 cells/mm³. One month after receiving ART, he recalled feeling depressed and attempting suicide by cutting his wrist. He quickly 'came back to clear consciousness', however, and stopped his action immediately. No formal treatments were sought for the depressed mood. Instead, he drank alcoholic drinks and worked harder to get himself busy to escape the feeling of sadness. Patient's mother was known to suffer from postpartum depression after giving birth to him.

After some significant period of stability, two years ago he started to feel depressed again. He mentioned feeling more and more useless as his business started to deteriorate. He began to experience frequent sadness, easy fatigability, loneliness, and a feeling of demoralisation. He had tried to control the symptoms himself, until he finally decided to present to the clinic two months ago. After a thorough examination, he met the criteria of major depressive disorder based on Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5). Laboratory results for liver function tests and thyroid hormones were within normal limits. He had previously received 10 milligrams of escitalopram for a month but due to a persistent headache after the start of therapy, the medication was replaced with 20 milligrams of fluoxetine and he still receives the medication to date. He also received five sessions of cognitive behavioural therapy (CBT). With these measures, he reported improvements in his symptoms except for the relatively steady course of easy fatigability and apathy.

He presented with Hamilton Depression Rating Scale score of 20, that subsequently improved to 7. Physical and laboratory examinations revealed no abnormal findings. Changes in body weight, blood pressure, and other side effects were not evident.

The patient was then provided with 10 milligrams of methylphenidate per day that was divided into two doses of 5 milligrams each dose. One dose was taken in the morning, and the other one in the afternoon. After one week, the afternoon dose was then increased to 10 mg as he reported feeling sleepy during afternoon. Three weeks after being provided with methylphenidate, his condition improved greatly. His excitement improved, he resumed his previous activities, and began promote his business. His weakness and fatigue also improved. Once an adequate period of stability has been achieved, methylphenidate tapering off is bound to proceed.

3. Discussions

Depression is the most prevalent neuropsychological disorder encountered in patients with HIV infection and this disorder might occur in any phase of the disease. When not properly managed, depression might affect medication adherence and serve as a predictor for adverse clinical outcomes. [3,10,11] The patient in this case presented with several risk factors for depression, including genetics (the positive family history), social problems relating to employment, and current ART use. These factors might combine to result in an even greater risk for the patient to suffer from depression. In addition, some types of ART such as efavirenz has been associated with depressive symptoms, whereas zidovudine and lamivudine have been associated with fatigue and insomnia. [11]

Methylphenidate has demonstrated efficacy in treating depression in diverse patient populations. Its rapid effect and minimal side effects have been proposed as reasons for this efficacy. [12] During a three weeks period of observation, methylphenidate has been reported to accelerate drug response in patients receiving SSRI when compared to placebo. [7] Despite the unclear mechanism for its efficacy, methylphenidate has been hypothesized to bind to dopamine transporter in the presynaptic cell membrane, which subsequently block dopamine reuptake and increase extracellular dopamine level. This leads to increased amount of post-synaptic dopamine, especially in striatum, which results in increased stimulus and motivation. Methylphenidate also inhibits norepinephrine and serotonin reuptake. [1] This medication has demonstrated its efficacy in patients with chronic fatigue syndrome as indicated from significant improvements in Checklist Individual Scale (CIS) and Visual Analog Scale (VAS) scores when compared to placebo [6].

As demonstrated by the case, addition of methylphenidate for the depression therapy in patients with HIV infection has induced improvements in symptoms, and the improvement is especially profound with fatigability. Methylphenidate has also been proved to be effective to improve a declined

cognitive function and reduce daytime sleepiness among patients with brain trauma. [2] This medication is well absorbed in the intestine with peak plasma concentration achieved within 1 to 3 hours and a half-life of 2 hours. [12] In addition to the regained excitement to go back to work, the patient in this case presented no side effects of methylphenidate, which further delineate its well tolerability [13,14,15].

4. Conclusions

Depression is a mood disorder that commonly occurs in patients with HIV infection. This condition should prompt immediate management to reduce the risk of increased mortality and morbidity. For cases of depression that don't seem to respond adequately to standard therapy, methylphenidate could be offered as an additional therapy to improve the therapeutic effect of antidepressants. Improvements with methylphenidate appeared relatively rapid and it has virtually negligible side effects. Patients have reported improvements in depressive symptoms (including fatigue, day time sleepiness and lost excitement) within three weeks of methylphenidate administration as an addition to antidepressants. The administration of methylphenidate has no effect on the efficacy of ART taken by the patient.

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