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Reporting a Case of Injecting Methylphenidate (Ritalin) Tablets, Intensified Symptoms of Schizophrenia or Induce Separate Mental Disorder?

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	Abstract
Background:	Methylphenidate is one of the classic amphetamines which can cause or exacerbate psychotic symptoms in schizophrenia patients.
Case Report:	In this paper, a young man is presented with injection of methylphenidate tablets with acute cellulitis due to this injection and the related symptoms. In the first hospitalization and after recovery from psychotic disorder due to tablet injections, he was under treatment with anti-psychotics because of other symptoms related to schizophrenia. Although the patient was regularly under schizophrenic medication after discharge, he was hospitalized twice more due to psychotic symptoms that appeared after injecting methylphenidate.
Conclusion:	This report shows psychotic symptoms in schizophrenic patients after injecting methylphenidate. These symptoms cannot be prevented even by anti-psychotic medication of background disease. This case shows the existence of two kinds of psychoses, functional (due to schizophrenia) and organic psychoses (due to methylphenidate use) in the same patient.
Key words:	Methylphenidate, Injection, Schizophrenia, Psychotic disorders.
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Introduction

Methylphenidate is one of the classic amphetamines and like dextroamphetamine and methamphetamine applies its primary effect by releasing catecholamine especially dopamine in pre-synaptic terminals. These effects are especially stronger on dopaminergic neurons that are stretched from tegmental abdominal area to the cortex and limbic area. This road is called reward pathway and its activation is possibly due to the main addictive mechanism of amphetamines. Other groups of amphetamines are called designers that apply their effects by releasing catecholamines and serotonin.¹

Due to the rapidly effective quality of these drugs, their behavioral signs and tolerance to them immediately emerge. This issue increases the risk of abuse and dependency in prone cases and because of this; these drugs are categorized among controlled medicine. These sympathetic followers are used in a wide range to treat attention deficit disorder/hyperactivity and narcolepsy; because there is no other medicine as effective in treating these disorders. These drugs are effective in treating medical disorders or in surgeries generating secondary depression or deep impercipienty.¹

Although stimulants have been used since years ago, psychosis that follows them is noticed recently. Various studies show incidence or exacerbation of psychotic symptoms after using methylphenidate. However, this paper is presenting a schizophrenic patient with injections of methylphenidate, who experienced psychotic symptoms after injection of methylphenidate even with appropriate anti-psychotic treatment. In other words, two kinds of psychoses including a functional one related to the background disease and an organic one related to drug abuse are reported in this patient.

Case Report

The patient was a 38-year-old single man from Kerman city who was admitted in Shahid Beheshti Hospital of Kerman four years ago because of aggression and behavioral change for the first time. According to the patient, he has been using oral Ritalin for the past 6 months and in the recent months, he has diluted tablets in water and injected intravenously and after injection, the shape and meaning of objects have changed for him. He had sometimes injected even up to 4 Ritalin tablets. According to the patient, he feels that he has

parasitic infection and he sees cockroaches with blue color crewel on his body and because of that he has burned different parts of his body by cigarettes to destroy them. Also, he sees these bugs on the floor and around objects and because of that he fired house items many times and even fired his bed, TV and personal computer (PC). Even once, his entire house was burned in fire. Sometimes he washed objects with water to destroy bugs. He would stand under the shower for hours to send away these bugs. People around him have always seen him playing with water or fire. Along with these symptoms, he was suspicious to others and believed that they have prepared amulet for him and followed him sometimes. He complained of sleeplessness and restlessness. In physical examination, multiple skin abscesses and acute cellulitis caused by injections were visible on different areas of his body and there was bilateral pitting edema on his legs. He had also tachycardia and there was no problem in the brain CT scan and heart echocardiography.

In psychological condition examination, he was restless and to some extent irritable. He also had flight of ideas and noted vision and touch fantasies as well as delirium of harm and damage and being under control. Attention was reduced but immediate, near and far memories were natural. Also, knowledge of time, place and person was normal. Impairment in judgment and vision was evident. The patient was hospitalized for the diagnosis of psychotic disorder due to Ritalin injection and after preventing Ritalin consumption and recovery from infection symptoms, fornication signs were resolved. In later interviews with the patient, schizophrenic symptoms such as deliriums of pessimism and being under control were detected and the patient was treated for schizophrenia diagnosis. After discharge, in spite of regular medication, he was hospitalized for two times and both times it was after Ritalin tablet injections and he was discharged after disease symptoms were controlled and there was no obstacle for medication. By preventing Ritalin consumption after discharge, he has not experienced psychotic symptoms yet and his background disease is under control with anti-psychotic drugs.

Discussion

Methylphenidate blocks DAT like cocaine. Therefore in some people, it creates a cocaine high experience. However, some people in spite of dopamine transporter (DAT) block cannot

experience high sensation and it shows that blocking DAT is not enough for high experience. Similar to cocaine, absorption of methyl phenidate is high in the brain and the maximum concentration is in brain striatum. However, it has less injection abuse compared to cocaine.² In a study on 22 cases of methylphenidate injections, it is reported that poisoning symptoms by methylphenidate is similar to cocaine and other amphetamines, but has higher mortality and morbidity rate.³ In other case reports, reversible hemiplegia after carotid injection of Ritalin⁴ and also lung edema⁵ and severe emphysema⁶ after injecting methylphenidate are reported. Psychotic symptoms after consumption of stimulants are also reported.⁷ In some people psychotic disorders are emerged due to amphetamine. Although the signs of this disorder is similar to schizophrenia, flat affect and schizophrenia speechlessness do not exist in this disorder. In a case report, a 15 year old child with Attention Deficit Hyperactivity Disorder (ADHD) who was under treatment with a low dosage of methyl phenidate had complicated visual delusions in forms of seeing mice around him.⁸ In schizophrenic patients also consumption of stimulants causes severity of psychotic symptoms. In a review study, one dosage of stimulant drugs (methylphenidate or dextroamphetamine) can slightly increase psychotic scoring in 50% to 70% of schizophrenic patients and in 30% of cases there was no increase. There has been few studies on long term effects of stimulant drugs so far.⁹

Another study reported intensification of psychotic symptoms in schizophrenia after consumption of methylphenidate. This condition did not exist in mania or depression. Also, the effect of methylphenidate in intensification of psychosis was reported to be higher than other amphetamines such as dextroamphetamine.¹⁰

In the presented patient, at the beginning the diagnosis was psychotic disorder due to me-

thylphenidate, but during the hospitalization and after the effects of methylphenidate was resolved, other symptoms of schizophrenia were observed and the patient was treated and discharged with this diagnosis. Several months later, the patient was hospitalized again with psychosis symptoms after consumption of methylphenidate in spite of anti-psychotic medications. In other words, this patient experienced a particular type of psychosis when using a high dosage of methylphenidate and the specific sign of that was fornication and touch delusions and after hospitalization and preventing him from consuming stimulant, psychotic symptoms would go away and fornication delusions would be completely resolved, but schizophrenia symptoms were as usual and this process was repeated twice again. This shows that schizophrenia medication cannot prevent relapse of psychotic symptoms in the case of stimulant consumption. This has been shown by other studies as well.⁹

On the other hand, based on DSM-IV criteria, the diagnosis can be organic psychotic disorder if the patient does not have any other background disorder. The dominant view about schizophrenic patients who take stimulants is that their background symptoms are intensified and probably this view has lead DSM-IV to know the organic psychotic disorder acceptable if there is no other background psychotic disorder such as schizophrenia. Of course one case cannot provide sufficient evidence to challenge DSM-IV criteria, but this case brings up a challenging question of the possibility of two kinds of functional and organic psychosis in one patient. Authors think that further case reports on this issue may provide the hypothesis of the existence of organic psychosis along with functional psychosis at the same time.

Conflict of interest: The Authors have no conflict of interest.

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گزارش یک مورد از تزریق قرص متیل فنیدیت (ریتالین)، تشدید علائم اسکیزوفرنیا یا اختلال روانی مجزا؟

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چکیده

متیل فنیدیت از جمله آمفتامین‌های کلاسیک می‌باشد که مصرف آن ممکن است باعث ایجاد یا تشدید علائم روان‌پریشی در بیماران اسکیزوفرنی شود.

در این مقاله مرد جوانی با تزریق قرص‌های متیل فنیدیت و سلولیت حاد ناشی از تزریق و علائم ناشی از آن معرفی شد که در اولین بستری و بعد از بهبودی روان‌پریشی ناشی از تزریق قرص‌ها، به علت وجود علائم دیگر مربوط به بیماری اسکیزوفرنی تحت درمان با آنتی‌سایکوتیک قرار گرفت. بعد از ترخیص، هر چند بیمار به طور منظم تحت درمان دارویی اسکیزوفرنی بود ولی دو بار دیگر به علت علائم روان‌پریشی، که بعد از مصرف تزریقی متیل فنیدیت ظاهر شده بود، بستری گردید.

این گزارش نشان دهنده ظهور نوعی از علائم روان‌پریشی در بیماران اسکیزوفرنی بعد از سوء مصرف متیل فنیدیت تزریقی می‌باشد که حتی درمان آنتی‌سایکوتیک بیماری زمینه نیز نمی‌تواند از بروز آن جلوگیری کند. این مورد وجود دو نوع سایکوز فانکشنال (ناشی از بیماری اسکیزوفرنی) و سایکوز ارگانیک (ناشی از مصرف متیل فنیدیت) را در یک بیمار نشان می‌دهد.

متیل فنیدیت، تزریقی، اسکیزوفرنی، اختلال روانی.

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