Sentetik kanabinoid intoxikasyonu ile gelişen sinüs taşikardisinin i.v lipit infüzyonu ile tedavisi: İki olgu bildirimi

Intravenous Lipid Emulsion as a Treatment of Sinus Tachycardia Induced by Synthetic Cannabinoid Intoxication: Two Case Reports

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ABSTRACT

Synthetic cannabinoid usage has been gradually increasing. Intoxication related to synthetic cannabinoid usage is becoming more common, and life-threatening cases are encountered in the general hospitals and psychiatry emergency services. Unlike cannabis, acute intoxication symptoms of synthetic cannabinoid are similar to the effects of stimulants and sympathomimetic usage. During synthetic cannabinoid usage, side effects such as diaphoresis, nausea, vomiting, appetite changes, hyper/hypotension, chest pain, tachycardia/bradycardia, respiratory depression, confusion, psychomotor agitation, somnolence and sedation can be seen. The most common physical side effect is tachycardia. In this report, two cases of sinus tachycardia induced by synthetic cannabinoid usage, which were treated with intravenous lipid emulsion, were discussed.

Key Words: Synthetic cannabinoid, sinus tachycardia, intravenous lipid emulsion.

ÖZET

Sentetik kanabinoid kullanımı yaygınlığı giderek artmaktadır. Sentetik kanabinoid kullanımı ile ortaya çıkan intoksikasyon vakaları genel acil ve psikiyatrik acil servislerinde sıkça karşılaşılan ve hayatı tehdit eden durumlardan biridir. Sentetik kanabinoidlerin kanabinisten farklı olarak, akut intoksikasyon belirtileri daha çok uyarıcı ve sempatomimetik madde kullanımında görülen etkilere benzemektedir. Kullanımı sırasında terleme, bulantı, kusma, iştah değişiklikleri, hipertansiyon/hipotansiyon, göğüs ağrısı, taşikardi/bradikardi, solunum depresyonu, konfüzyon, psikomotor ajitasyon, sommolans ve sedasyon arasında değişkenlik gösteren yan etkiler görülebilir. En sık görülen fiziksel yan etkisi ise taşikardidir. Bu yazıda, sentetik kanabinoid kullanımı sonrası sinüs taşikardisi gelişen ve tedavide i.v lipit infüzyon tedavisi verilen iki olgu tartışılmıştır.

AnahtarKelimeler: Sentetikkanabinoid, sinüs taşikardisi, intravenöz lipit infüzyonu.

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INTRODUCTION

Synthetic cannabinoids, including JWH-018, bonsai and Jamaica, affect CB1 and CB2 cannabinoid receptors. CB1 receptors are responsible for the psychoactive effects, such as mood elevation, anxiety and panic reactions, of cannabinoids. They are also responsible for motor function decline, impairment in memory and time perception and visual and auditory hallucination (1). Chronic usage of synthetic cannabinoid may cause addiction, withdrawal symptoms and psychiatric symptoms, similar to long-term cannabinoid usage (2, 3). However, the acute intoxication symptoms of synthetic cannabinoid are similar to the effects of stimulant and sympathomimetic usage; their acute intoxication symptoms are different from cannabis usage (3). During usage, side effects, such as diaphoresis, nausea, vomiting, appetite changes, hyper/hypotension, chest pain, tachycardia/bradycardia, respiratory depression, confusion, psychomotor agitation, somnolence and sedation, can be seen (4). The most common physical side effect is tachycardia. In patients with cannabinoid intoxication, a psychomotor activity decline, sedation and lethargy can be seen. However, in synthetic cannabinoid intoxication, agitation and irritability are the most common symptoms after tachycardia (5).

Treatment of sinus tachycardia induced by synthetic cannabinoid intoxication is a common emergency in general hospitals and psychiatry emergency services. Intravenous (IV) lipid emulsion is used for toxicities induced by psychiatric treatments of haloperidol, sertraline, quetiapine, bupropion, lamotrigine and organic disorder treatments (6). In the literature, cases of successful lipid infusion treatment for tachycardia occurred after drug intoxication, as cardiotoxic side effects are expressed (7, 8). In this report, two cases of sinus tachycardia induced by synthetic cannabinoid usage, which were dramatically improved after lipids, are presented.

CASE 1

A 24-year-old male patient presented to psychiatry emergency services with complaints of nausea, hot flushes, and a burning pain in the eyes, irritability, tachycardia and discomfort. According to the history taken from the patient and his intimates, he had been using cannabinoid for four years and synthetic cannabinoid for the last month; he did not have any treatment. He took synthetic cannabinoid approximately three hours ago, and his complaints started two hours ago. He was conscious, oriented and cooperative. His vital signs were recorded as temperature 38°C, tension 100/75 mmHg and pulse 160/minute. No abnormalities were detected in his biochemistry and complete blood parameters, but sinus tachycardia was observed in his electrocardiogram. The synthetic cannabinoid metabolites were not detected due to their undetectability in the present conditions in his urine metabolite; the other substance metabolites were also negative. He was consulted to the general emergency services with a prediagnosis of substance intoxication. A symptomatic treatment was done, followed by a 100 ml bolus injection. An infusion of 0.5 mL/kg/min of 20% lipid solution (trade name ClinOleic, 20% lipid emulsion for IV infusion 500 ml) for the sinus tachycardia was started. After 30 minutes of applying a total of 500 ml lipid infusion, the sinus tachycardia was resolved. After 24 hours of observation, the vital symptoms were stabilized, the patient was directed to this service and treatment for substance use disorder was planned.

CASE 2

A 28-year-old male patient presented to psychiatry emergency services with complaints of aggression, restlessness, nausea, vomiting, hot flushes, tachycardia and auditory hallucination. He had a history of approximately 10 years of more than one mixed-substance usage; he only had one year of synthetic cannabinoid usage. His intimates described a recent incremental usage and a decrement in the withdrawal from the usage. It was learnt that he was with his friends six hours ago. He was conscious and semi-oriented. In his mental state examination, anxiety, agitation, aggression, depersonalization, auditory hallucination, irritability and an elevated mood were observed. His vital signs were recorded as temperature 37°C, tension 110/60 mmHg and pulse 155/minute. No abnormalities were detected in his

biochemistry and complete blood parameters. Sinus tachycardia was observed in his electrocardiogram. Synthetic cannabinoid metabolites were not detected due to their undetectability in the present conditions in his urine metabolite; other substance metabolites were also negative. For his agitation, 5 mg intramuscular form of haloperidol was given. He was consulted to the general emergency services with a prediagnosis of substance intoxication. His symptomatic treatment was done, followed by a 100 ml bolus injection. An infusion of 0.5 mL/kg/min of 20 % lipid solution (trade name ClinOleic 20% lipid emulsion for IV infusion 500 ml) for his sinus tachycardia was started. After 24 hours of observation, his vital symptoms, electrocardiographic changes and heart rhythms were stabilised; the patient was discharged.

DISCUSSION

Although synthetic cannabinoid is similar to cannabinoid, the acute intoxication symptoms of synthetic cannabinoid are similar to the effects of stimulant and sympathomimetic usage (9). The most common symptoms of synthetic cannabinoid usage are expressed as tachycardia, perception changes, impaired vision, visual hallucination, irritability, aggression, nausea, hypokalaemia, mydriasis and hyperglycaemia (10). In synthetic cannabinoid intoxication, there is no antidotal treatment, and symptomatic and supportive treatments are suggested (11). Benzodiazepine for agitation and olanzapine and haloperidol for psychotic symptoms can be used (9, 11). IV benzodiazepine can be used for seizures due to synthetic cannabinoid intoxication (12). In addition, a lipid infusion treatment can be used for tachycardia and hemodynamic instability induced by synthetic cannabinoid intoxication. In this report, two presented cases with intoxication signs and sinus tachycardia were stabilised with IV lipid emulsion.

IV lipid emulsion treatment has been recently used as an efficient antidote for lipophilic drug intoxication instead of local anaesthetics (13). For example, in a study with a high-dose usage of lipophilic clomipramine, which causes cardiovascular collapse, lipid infusion treatment was quicker than sodium bicarbonate treatment for the cardiac side effects, such as hypotension (14). Similarly, in an elderly man's suicide attempt with sertraline and quetiapine, conscious impairments were rapidly resolved with an early administration of lipid infusion; the drug intoxication symptoms were prevented (15). In a patient with high doses of lamotrigine and bupropion, prolonged cardiac arrest was not responding to cardiac reanimation. However, it was dramatically resolved after one minute of lipid infusion, and the heart rate increased (16). In a study conducted on rats, the collapse of cardiac and hypotensive side effects occurred after cocaine intoxication, such as synthetic cannabinoid intoxication; the patient's hemodynamic was recovered with IV lipid infusion (17). It is observed that lipid infusion treatment is a positive inotropic for the heart and rapidly increases the arterial blood flow and pressure (18). Fourteen case reports were identified in which IV lipid emulsion was used to treat toxicities due to local anaesthetics and other medications (amitriptyline, diltiazem, bupropion, dosulepin, lamotrigine, quetiapine and verapamil). Thirteen cases demonstrated a beneficial response in reversing systemic toxicity (19).

In addition, three case reports supported the use of lipid emulsion to reverse systemic toxicity, including seizures, electrocardiogram abnormalities and cardiac arrest, resulting from the administration of levobupivacaine, ropivacaine, bupivacaine or mepivacaine (20). The effect of lipids on these drugs is probably reversing the systemic toxicity by decreasing the active drug amount on the target tissue (21).

In these case reports, the metabolites of the substance in urine were evaluated, but metabolites of synthetic cannabinoids were not detected. According to information received from the relatives of the patients, the patients took synthetic cannabinoid. In this article, similar to the literature, lipid infusion treatments were used for the tachycardia and hemodynamic instability induced by synthetic cannabinoid intoxication. While evaluating the cases with intoxication symptoms and tachycardia due to synthetic cannabinoid usage in general and psychiatric emergency services, it should be noted that IV lipid emulsion could be a treatment option.

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