

Synthetic Cannabinoid Can Do Voiding Dysfunction: Reporting of three cases

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ABSTRACT

Synthetic cannabinoids (SC) have been distributed as an alternative to Cannabis marijuana, it is not legal in many countries. Cannabinoid receptors and their endogenous ligands termed as the cannabinoid system have been used as molecular targets for the treatment of various diseases, including neurodegenerative diseases, neuropathic or inflammatory pain, cardiovascular disorders and metabolic syndrome. A lot of study have been done and are continuing about anti proliferative effect of SC on many cancers various. We aimed to share our experience the effect of synthetic cannabinoid to voiding by evaluating three cases.

Keywords: Synthetic cannabinoid, voiding dysfunction.

Introduction

Synthetic cannabinoids (SC) have been distributed as an alternative to Cannabis marijuana, it is not legal in many countries [1]. "Bonzai" is the known name in Turkey. SC may lead to more severe toxic effects than natural cannabinoids, possibly due to their potent and unpredictable actions on endogenous cannabinoid receptor systems in the central nervous system at animal study [2, 3]. Psychosis, pulmonary toxicity, acute kidney injury, tachycardia, bradycardia, myocardial infarction, autonomic hyperactivity, seizures, euphoria and suicidal behavior are known adverse events by SC using [4- 10]. We aimed to share our experience the effect of synthetic cannabinoid to voiding by evaluating three cases.

Cases Presentation

Case-1

A 22 year old man patient has come to our polyclinic with poor urinary stream symptom for 1 year. He seemed lethargic and him speech was slowly. There is no any significant thing in patient's medical history. Physical examination was normal. Penis was circumcised and external meatus was normal. Urinalysis was clean. Urinary system ultrasound examination was done. Bilateral renal parenchyma and pelvis were normal. Post voiding residual urine volume was about 100 cc. We have done uroflowmetry examination. Maximum flow rate 8.7 ml/sec and voiding pattern was staccato. We have not seen any abnormal finding on neurological examination when we have done neurology consultation. We have suggested urethrocytoscopy to patient. We have done urethrocytoscopy. Urethra was normal, bladder was no trabeculate and capacity was about 500 cc. Bladder neck and prostate were normal. After examination, when patient woke up, he was very excited and aggressive. We have consulted the patient to psychiatry. We learned that he takes synthetic cannabinoid. We suggest to him to going to rehabilitation clinic. Him symptoms has been normal

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after three months, when he cut using synthetic cannabinoid completely. Maximum flow rate 31 ml/sec, average flow rate 20 ml/sec were on uroflowmetry examination.

Case-2

A 28 year old man patient has come to our polyclinic with poor urinary stream, hesitancy and intermittency symptoms for 9 months. He seemed euphoric. He said the use synthetic cannabinoid regularly for 2 years. He has been injured with knife before 2 years ago and urethral catheterization was inserted during hospitalization. Physical examination was normal. Penis was circumcised and external meatus was normal. Urinalysis was clean. Urinary system ultrasound examination was done. Bilateral renal parenchyma and pelvis were normal. Prostate volume was 20 cc. Post voiding residual urine volume was about 50 cc. We have done uroflowmetry examination. Maximum flow rate 9.1 ml/sec and voiding pattern was staccato. We have not seen any abnormal finding on neurological examination when we have done neurology consultation. We have done urethrocytoscopy thinking urethral stricture by urethral catheterization previously. Urethra was normal, bladder was slightly trabeculate and capacity was about 450 cc. Bladder neck and prostate were normal. We suggest to him to going to rehabilitation clinic. His symptoms has been normal after three months, when he cut using synthetic cannabinoid completely. Maximum flow rate 27 ml/sec, average flow rate 18 ml/sec were on uroflowmetry examination.

Case-3

A 48 year old man patient has come to our polyclinic with poor urinary stream, hesitancy and terminal dribbling symptoms for 2 years. He seemed worried. He said the use synthetic cannabinoid regularly for 2 years. He was tortured for two years before 30 years ago. Physical examination was normal. Penis was circumcised and external meatus was normal. Prostate was felt small and regularly on digital rectal examination. Urinalysis was clean. Urinary system ultrasound examination was done. Bilateral renal parenchyma and pelvis were normal. Prostate volume was 25 cc. PSA level was 0,8 ng/dl. Post voiding

residual urine volume was about 120 cc. We have done uroflowmetry examination. Maximum flow rate 7.6 ml/sec and voiding pattern was staccato. We suggested alpha blocker treatment for 1 month. The patient's symptoms continued after one month. We have not seen any abnormal finding on neurological examination when we have done neurology consultation. We have done urethrocytoscopy. Urethra was normal, bladder was slightly trabeculate and capacity was about 400 cc. Bladder neck and prostate were normal. We suggest to him to going to rehabilitation clinic. But the patient has not gone to rehabilitation clinic. His symptoms continue still.

Discussion and Conclusions

Cannabinoid is a family of complex chemical molecules. Their actions by binding to and activating specific G α -i protein-coupled receptors named as cannabinoid receptor, CB1 (Central receptor) and CB2 (Peripheral receptor) [11, 12]. CB1 and CB2 have been synthesized from mammalian tissues, the main difference between them being their tissue expression [13]. CB1 receptors mostly presence found in the central nervous system, where they mediate cannabinoid psychoactive effects [14, 15]. CB1 receptors are also present in peripheral nerve terminals, in extra-neural tissues such as testis, uterus, eye, vascular endothelium, spleen and adipocytes [15]. CB2 receptor expression is mostly restricted to area of B lymphocyte [16]. Cannabinoid receptors and their endogenous ligands termed as the cannabinoid system have been used as molecular targets for the treatment of various diseases, including neurodegenerative diseases, neuropathic or inflammatory pain, cardiovascular disorders and metabolic syndrome [12]. A lot of study have been done and are continuing about anti proliferative effect of SC on many cancers various [17].

Our information about SC is limited. All of studies are animal study or case reports. This molecule is illegal in many countries. Prospective study is impossible. We think the voiding dysfunction effect of SC is by impacted cannabinoid receptor in peripheral and central nerve system. Serotonin uptake velocity increase by the time on chronic cannabinoid user

patients [18]. Serotonin uptake causes to detrusor contractility inhibition, increases bladder capacity and urethral closure pressure [19, 20]. Patients' voiding patterns were staccato. We know staccato pattern is sign of detrusor sphincter dyssynergia. Bladder underactivity and sphincter overactivity are probably outcome of chronic cannabinoid using. So, chronic cannabinoid using causes voiding dysfunction indirectly. All three patients' symptoms were late onset. We think this effect is not related to abuse. Because, no one has signed of abuse symptoms and we found no one findings of abuse(cardiac, pulmonary or kidney dysfunction). We think this effect is related regularly using SC. Voiding dysfunction effect is unlike other adverse event, it is not abuse effect.

SC using is very common in many cities. We can see patients in emergency department in life threatening situation like as cardiac or pulmonary dysfunction. Voiding dysfunction is may be first symptom except behavioral characteristics. Physician must be alert and think SC using on unexplained situation for voiding dysfunction, particularly young patients.

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