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Comparing the Effect of Electroconvulsive Therapy, Buprenorphine and Methadone in the Management of Methamphetamine Dependency and withdrawal Craving

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Abstract

Background: Methamphetamine induced disorders and use disorders are growing problems globally.

Objective: To scrutinize the effect of electro convulsive therapy (ECT), buprenorphine and methadone in the therapy of methamphetamine dependence and withdrawal craving.

Results: ECT is more useful than buprenorphine and methadone in the management of methamphetamine dependency and withdrawal craving.

Discussion: Our findings showed although ECT, buprenorphine and methadone are all effective in the treatment of methamphetamine dependency and withdrawal craving, however, ECT is more effective than buprenorphine and also buprenorphine is more beneficial than methadone. This is a novel and interesting result.

Conclusion: To our understanding, our work was a new report comparing the usefulness of ECT, buprenorphine and methadone in the treatment of methamphetamine craving, therefore our study could illustrate new information.

Keywords: ECT; Buprenorphine; Methadone; Methamphetamine craving

Introduction

Methadone and buprenorphine are synthetic medications and agonists of opioid mu receptor[1,2]. Opium is a natural material and an opioid receptor agonist which is resulted from opium poppy. Opium has been an ancient narrative of medicinal, recreational and social acceptance in some regions of the earth such as opium-producing countries of the East since numerous centuries ago[3,4]. Methadone and buprenorphine has been under assessment for the treatment of dependency to opioid since many years ago[5]. Studies comparing buprenorphine with methadone, indicated that buprenorphine is more useful and also safer than methadone[6,7]. Some research workers indicated that 8 mg of buprenorphine per day is as potent as 60 mg of methadone contemplating retention rates and opioid negative urine[8].

Buprenorphine and methadone lessen the incidence of problems related to substance dependence[4,9,10,11]. Among neuro psychiatric disorders, substance related and associated disorders, especially psychostimulants and opioids induced problems have been designated as puzzle. Presently, psychostimulants and opioids induced mental problems have resulted more referrals to emergency units, hospitals and outpatient clinics[12-19]. Currently in Iran, stimulants and opioids abuse and induced disorders have received more attention, consideration and care than the previous time such that have encouraged and resulted more attending and admission to addiction treatment centers[12-19].

In the past, methamphetamine was illegally imported in from other countries especially the West, but presently it is synthesized and prepared illegally in Iran in ‘underground’ laboratories. We should remind that the methamphetamine prepared in Iran is much stronger and is commonly associated with psychosis. Sometimes, a single episode of abuse could be associated with delusions of persecution and hallucinations.

The FDA approved use of ECT is mostly for the treatment of resistant depression, resistant mania, chronic schizophre-
nia, high risk suicidal acts, and catatonia[11]. The FDA approved use of buprenorphine and methadone (opioid substitutions) is for the treatment of opioid withdrawal symptoms[11]. Now we are using buprenorphine and/or ECT as a new method for the treatment of severe methamphetamine withdrawal craving, because we think that (our rationale) buprenorphine and/or ECT, can increase opioids and/or dopamine in the brain (like methamphetamine) and so decrease methamphetamine withdrawal craving and also biochemistry involved in opioid dependency is more or less similar to that of methamphetamine. ECT makes a balance in the quantity of neurotransmitters in brain[11]. Ahmadi, et al showed that ECT can treat craving, dependency and psychosis induced by methamphetamine abuse[15-19].

We ourselves made a scale and confirmed it empirically for reliability and validity to test the level of craving, ranging from 0 to 10 (0 means no craving at all and 10 means severe craving). We instructed the subject exactly about rating as well[13,14]. Validated and reliable craving Scale: 0-1-2-3-4-5-6-7-8-9-10. (opioid and cannabis addiction). As far as we understand there is not controlled reports and information on this matter globally, therefore, this case-study may represent the most useful and important information.

Patient demonstration

VM was a 37 year old widowed, graduate in high school, and unemployed. He lived in Shiraz city of Fars province in south of Iran with his parents. VM began abusing of opioids, since 19 years prior to admission (PTA). Since 8 years PTA he began occasional use of methamphetamine (crystal). VM has been a regular smoker of heroin and heavy smoker of methamphetamine since 5 years PTA.

In short, VM was brought to emergency room of Ebnesina hospital by his mother, while he was suffering from agitation, anxiety, restless, depression, and self-injury. He had been a smoker of heroin and also a heavy smoker of methamphetamine for 5 years prior to admission. VM stopped smoking of heroin and methamphetamine and began 90 mg of methadone per day since 2 weeks PTA. He reported that the mean of methamphetamine craving was 6 out of 10 during this 2 week period. After a couple of days he was transferred to Dual Diagnosis Ward. In psychiatric interview and examinations he was anxious, depressed, agitated and restless. Physical and neurological examinations were normal. Serology for HBV, HCV and HIV were normal. Urine drug tests were positive for methadone and benzodiazepines only which was compatible with the patient’s history.

VM was given medications and after several days, the dosages were increased to reach optimal dosages (Buprenorphine 16 mg/day to subside opioid withdrawal and also methamphetamine craving; Olanzapine 30 mg/day, Valproate-Na 1000 mg/day, Chlorpromazine 300 mg/day to manage agitation, depression, and restlessness). He was closely evaluated and interviewed for psychiatric symptoms every day. VM was especially and precisely monitored and interviewed (by a nurse who was blind to the patient’s medications) for methamphetamine withdrawal craving only, 3 times a day (morning, afternoon, and evening).

The mean of the methamphetamine craving scores for 3 weeks duration of hospitalization during which patient was taking buprenorphine was 1 (Mean = 1). In short, mean of the methamphetamine craving scores for the 2 weeks duration of taking methadone at home was 6 (Mean = 6); and for the 3 weeks duration of hospitalization that patient was taking buprenorphine was 1 (Mean = 1).

VM was taking medications and was monitored daily. After 3 weeks of hospitalization he was discharged. Shortly after discharge he stopped taking medications and began smoking of methamphetamine. Few days later he was admitted in dual diagnosis ward again.

In exact and complete physical and neurological examinations we could not find any abnormal findings. Urine drug screening tests were positive for methamphetamine and opioid only. Serology for HIV and hepatitis were normal.

According to DSM-5 criteria, and also complete medical, psychiatric, and substance use history VM was diagnosed as “methamphetamine induced psychosis” Due to severity of symptoms such as withdrawal craving, agitation, restlessness and inappropriate behaviors we began the same medications as before and also ECT.

At the beginning day of medications and ECT, the methamphetamine craving score was 5.33. After 2 weeks of hospitalization and taking 8 sessions of ECT, the craving score dropped significantly. At the present time, he has not complaint of methamphetamine craving. He also does not report any significant complaints of restlessness, agitation, insomnia, and depression.

Discussion

As our interview and patient’s monitoring 3 times a day showed, patient experienced the least methamphetamine withdrawal craving when he was taking both ECT and buprenorphine 16 mg per day (Mean score = 0.5). Patient reported more methamphetamine withdrawal craving when he was taking both ECT and buprenorphine in the management of methamphetamine withdrawal craving, therefore this case study add new information to the literature.

Conclusion

To our knowledge, there is not any published controlled report comparing the efficiency of ECT, methadone and buprenorphine in the management of methamphetamine withdrawal craving, therefore this case study add new information to the literature.

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References