

Treatment of Methamphetamine Dependence with Electroconvulsive Therapy (ECT) in Iran: A Critical Note

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Objective: This comment article reviews the literature to explore whether the use of ECT for the treatment of methamphetamine dependence can be justified by scientific rationale and/or evidence.

Method: This article reviews the literature on the use of ECT in addictive disorders. It describes a patient with methamphetamine dependence treated with ECT. It then offers a historical review of the moral and ethical difficulties encountered in the treatment of addictive disorders. It proposes a dynamic understanding as to why clinicians might deploy such brutal actions in the face of hopeless and emotionally intense encounters.

Results: We found no scientific evidence or justification for ECT as a treatment of methamphetamine dependence or as the first line treatment for methamphetamine-induced psychiatric comorbidities

Conclusion: the current available evidence does not support using ECT for the treatment of addictive disorders, and hence is unethical, unacceptable and inhumane and warrants immediate social and political attention.

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In the last decade, methamphetamine dependence in Iran has become epidemic with major public health implications (1-4). Its associated morbidities are extensive and include societal, criminal, financial, vocational, medical, familial, behavioral and psychological (5-10). Therefore, developing an effective treatment is paramount. Clinical outcomes of psychosocial interventions, mainly based on cognitive-behavioral therapy and case management, have shown promising though mixed results (11-12). Unfortunately, clinical outcomes of pharmacotherapeutic interventions reducing methamphetamine use are similarly limited(13).

Several reasons as to why the treatment of methamphetamine dependence is very challenging include: (1) methamphetamine is highly fat-soluble and is generally either smoked or intravenously injected, all of which decrease the time from administration to the experienced euphoria and makes it highly addictive(14). In addition, methamphetamine can raise dopamine in Nucleus Accumbens up to 1100% above the baseline, as compared to cocaine which can result in a 350% rise above the baseline. This difference enhances its sensitization and reinforcing effects on the reward pathways of the brain and further contributes to its highly addictive nature (15). (2) Furthermore, its chronic use can cause neurochemical, physiological and cognitive impairments; hence, it potentially

negatively impacts treatment compliance and retention(5), and (3) in contrast to other substances (opiates, alcohol and nicotine) there is no known substitution treatment available, which makes achieving and maintaining abstinence more challenging.

The problem we are facing in the treatment of methamphetamine use disorders is not a new phenomenon. The effective treatment of substance use disorders has long posed a challenge to both the society and the clinicians. In the last 150 years, we have observed various methods used to treat addictions (mainly alcoholism) from miracle cures, religious conversion, and more benign "Natural Therapeutics" such as specialized diets, exercise, leisure and natural elements (e.g., hydrotherapy) to more invasive and inhumane physical treatments such as sterilization and lobotomy(16). It is known that from 1933 to 1945, the Nazi's in Germany forcefully sterilized 20,000 to 30,000 "alcoholics" who were considered "hopeless" because of their vulnerability to alcoholism(17-18). Additionally, in the mid-twentieth century, many women with alcohol dependence were coerced into "deinstitutionalization contingent upon sterilization" at state psychiatric institutions in the United States (US)(16).

Despite the lack of scientific evidence, we are observing an increase in the use of ECT for the treatment of methamphetamine dependence in Iran. I

(BR) have personally seen several patients who have been treated with ECT for their methamphetamine dependence. Via personal communications with several of my colleagues who work in the field of addictions, I confirmed that the use of ECT for the treatment of methamphetamine dependence is not an isolated phenomenon. Based on the reports that the patients and their families have provided, it has become increasingly evident that the ECT was provided with the false promise that it will cure methamphetamine dependence or significantly reduce craving and hence increase the time to relapse. Even though the use of ECT can have accepted and scientifically-based rationale for the treatment of psychiatric comorbidities, there have been other reports from patients and providers who tend to use it as the first line of treatment for methamphetamine-induced psychiatric disorders such as psychosis or violence.

We will briefly describe a case that I (BR) know well in an effort to bring to life for the readers the personal impact of the current use of ECT for methamphetamine dependence. The information gathered is based on a thorough interview with the patient and his spouse carried out over multiple sessions.

Mr. A is a 38-year-old married, college-graduate, stably-housed, partially employed male with anti-social traits and long history of substance use disorders. He started using opium in his early twenties, which led to the development of opioid dependence in his thirties. His opium use created significant vocational and familial problems, which became his motivation to seek professional assistance. He was started on methadone maintenance treatment, which helped him remain abstinent for two years. He was then taken off of it in a few month period and maintained full remission for several months until he was introduced to methamphetamine, being "misinformed" that it was a dependence-free drug. He used methamphetamine intermittently for several years until his use pattern included greater amounts (up to a quarter of a gram per use) and more frequent administration (up to three days per week.) Again, marital discord and job-loss led him seek psychiatric help.

Both Mr. A and his family attested that while he manifested stereotypical behavior for several hours following use (disassembling electronic devices and spending hours trying to fix them), he was never psychotic or disorganized. He had never been suicidal or homicidal and had never caused or threatened damage to property. He also denied a history of depression or mania, including at the time of psychiatric admission, independent from the expected euphoria and occasional irritability/aggressiveness during the acute methamphetamine intoxication and mild to moderate depression/irritability during the withdrawal period. Plans were initiated by Mr. A's family and he voluntarily accepted a several-day psychiatric admission "to get away from drugs and help [his] brain cool off."

The morning after his admission he, alongside with 10-12 other patients, were summoned and taken to another part of the ward for their "treatment", which was later revealed as ECT. Mr. A, while lying on the ECT table, was informed about the scheduled intervention. Hospital personnel responded to his lack of consent with the threat of a restraining order. Remaining on the ECT table, his psychiatrist met with him and convinced him to go through the procedure for his own sake. The psychiatrist's stated argument for Mr. A's admission for ECT as Mr. A recalls was as follows: "we have been observing that ECT affects people with addictions in a particular way that they tend to develop transient amnesia and forget the pleasurable memories associated with drug use, which is a main reason for relapse." This psychiatrist is reported to have used this very same rationale to convince Mr. A's family to admit him for ECT.

Mr. A was discharged after six rounds of ECT over a three-week period. On the very same day, he resumed using methamphetamine. Given his ECT-related confusion and increased methamphetamine-sensitivity secondary to several weeks of abstinence, he overdosed on an unknown amount of methamphetamine, which resulted in a massive myocardial infarction and Cardiac Care Unit admission. This was followed by another month of psychiatric inpatient admission. Three months after being discharged from the hospital, he again relapsed on methamphetamine and his psychiatrist recommended a second round of ECT.

Upon searching the literature, only two articles were identified on the treatment of addictive disorders with ECT. The first is a non-randomized trial from 1966 that describes six patients with poly-substance addiction (only one had comorbid stimulant addiction) who were treated with ECT and chlorpromazine(19). Four out of the six patients were reported to remain abstinent after at least two years of follow-up. This study has a very small heterogeneous sample size, lacks a control group, is not randomized and lacks the necessary information to enable a reader to arrive at a sound scientific conclusion as to the utility of the intervention, particularly for stimulant based addictions.

The second is a case report that detailed the effective use of ECT for the treatment of a patient with methamphetamine-induced protracted psychosis(20). His psychosis persisted despite five months of abstaining from methamphetamine and two weeks of pharmacologic treatment (20mg olanzapine). For this particular patient, ECT was recommended given the clinical picture of an agitated psychotic depression secondary to remote methamphetamine use. This is in stark contrast to the current application of ECT in Iran to treat either the addiction phenomenon per se or as the first line treatment of psychiatric comorbidities such as psychosis, depression or aggressive behavior.

Despite the strong protest of the psychiatric field to the whimsical use of ECT as portrayed in *One Flew Over the Cuckoo's Nest*, there are reports of such abuses in

patients with alcohol dependence in the state psychiatric facilities in the US dating back to mid-last century(16). On a more tragic note, being sanctioned by the medical field and viewed as the best available treatment, frontal lobotomy ruined the lives of more than 100,000 mentally ill patients, a percentage of which were also suffering from addictive disorders(16, 21). Reflecting on our own past insane behaviors to treat the “insane,” we wonder if in our identification with our patients’ overwhelming helplessness and hopelessness, we ourselves become overwhelmingly helpless and hopeless. And, in a need to defend against these emotional states two inter-related measures are taken. The first is that of counter-identifying with the suffering “other” by stripping them of their humanness. The second is our stimulating our magical thinking, leading us to take dramatic measures, movingly and sophisticatedly rationalized by our pseudoscientific clinical discussions. We fear the history of rationalized abuse in the guise of treatment might be repeating itself again. What does our turning a blind eye on what we have done and are doing to our most vulnerable patients say about our attitude towards patients who are struggling with the most severe forms of addiction? Is it possible that we are enacting what could be the very same fear that these patients frequently project onto us: the fear of being dehumanized and treated unfairly?

In this paper, we have seen that the use of ECT for the treatment of addictive disorders at large and in methamphetamine dependence in particular not only lacks scientific evidence, but also is exploitative and dehumanizing. We have reviewed the literature to see whether such practices can be justified by any scientific rationale and/or evidence and found none. We have proposed a dynamic understanding as to why clinicians might deploy such brutal actions in the face of hopeless and emotionally intense encounters. Regardless of whether you agree with such formulations, the current available evidence does not support using ECT for the treatment of addictive disorders and hence is unethical, unacceptable and inhumane, and warrants immediate attention.

We invite the motivated and interested readers to engage in an introspection of the psychological factors of clinicians that lead to such practices; to confront the physicians who have engaged themselves in such wild treatments and to ask the policy-makers both in the government and at our professional associations to seriously investigate and address such unfortunate occurrences and in the end implement policies that lead to the cessation of such inhumane practices.

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