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MANAGEMENT OF MISUSE OF ANTICHOLINERGIC MEDICATION THROUGH AYURVEDA-A CASE STUDY

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ABSTRACT

Spasmolytic are medications commonly used to relieve muscle spasms and cramps. While generally not considered highly addictive, misuse and dependence can occur, leading to significant health concerns. This manuscript explores the mechanisms of spasmolytic action, potential for addiction, symptoms of misuse, and strategies for prevention and treatment. This is a case study of 30 year old male patient who presented with anxiety, loss of sleep and body ache. Over a course of 15 days, the patient experienced significant improvement in symptoms. Anxiety showed measurable improvement, as assessed by the Hamilton Anxiety Rating Scale. Regular follow-ups confirmed continued well-being without recurrence of symptoms. *Shamana* including some psychotropic drugs, *shodana*, *panchakarma* therapies, *rasayana*, behavioral therapy, diet and life style modification has been implemented in the Ayurvedic management. This case highlights the efficacy of Ayurvedic therapies in managing the adverse effects of anticholinergic medication misuse. A holistic approach targeting detoxification, rejuvenation, and systemic balance can provide sustainable recovery while minimizing dependency on pharmaceuticals.

KEYWORDS: Anticholinergic misuse, Ayurveda, detoxification, *Rasayana*, cognitive dysfunction, holistic management.

INTRODUCTION

Drug addiction is a complex and pervasive public health issue that affects millions of individuals worldwide. It is characterized by the compulsive use of substances despite harmful consequences, leading to significant physical, psychological, and social impairments.

Addiction is not merely a result of a lack of willpower or moral failing; rather, it is a chronic, relapsing disorder of the brain that involves intricate interactions between genetic, environmental, and behavioral factors.

A drug is any substance (other than food) that, when consumed, causes changes in our mood or thinking processes. Spasmolytics are medications commonly used to relieve muscle spasms and cramps. While generally not considered highly addictive, misuse and dependence can occur, leading to significant health concerns. This manuscript explores the mechanisms of spasmolytic action, potential for addiction, symptoms of misuse, and strategies for prevention and treatment.

Illicit drug use on society is the negative health consequences experienced by its members. Drug use also puts a heavy financial burden on individuals, families and society. According to WHO, The evolution of the complex global illicit drug problem is clearly driven by a range of factors. Sociodemographic trends are influential such as the population's gender, age and the rate of urbanization. Recent estimates are that in 2008, 155 to 250 million people, or 3.5% to 5.7% of the world's population aged 15-64, used other psychoactive substances, such as cannabis, amphetamines, cocaine, opioids, and non-prescribed psychoactive prescription medication. Globally, cannabis is the most commonly used (129-190 million people), followed by amphetamine type stimulants, then cocaine and opioids.[1]

The use of psychoactive substances causes significant health and social problems for the people who use them, and also for others in their families and communities. WHO estimated that 0.7% of the global burden of disease in 2004 was due to cocaine and opioid use, with the social cost of illicit substance use being in the region of 2% of gross domestic product in those countries which have measured it.[2]

The pathophysiology of addiction involves alterations in the brain's reward circuitry, particularly within areas associated with motivation, memory, and self-control. Substances such as opioids, stimulants, depressants, and hallucinogens can hijack the brain's natural reward system by overstimulating the release of neurotransmitters like dopamine. This overstimulation creates intense feelings of pleasure and reinforces the behavior of drug use, leading to a cycle of cravings, compulsive behavior, and loss of control.[3]

Risk factors for addiction are multifaceted and include genetic predisposition, exposure to trauma or stress, early substance use, and co-occurring mental health disorders. Environmental factors, such as peer pressure, socioeconomic status, and availability of drugs, also play a significant role in the development of addiction. Additionally, certain personality traits, such as impulsivity and risk-taking, may increase an individual's susceptibility to substance abuse.

Despite the growing understanding of addiction as a medical condition, stigma remains a significant barrier to treatment and recovery. Misconceptions about addiction often prevent individuals from seeking help, while inadequate access to effective treatment further exacerbates the problem. Evidence-based treatments, including behavioral therapies, medication-assisted treatment, and support systems, have been shown to improve outcomes, but they remain underutilized in many communities.

The societal impact of drug addiction is profound, contributing to increased healthcare costs, loss of productivity, and a rise in criminal activity. The opioid epidemic, in particular, has highlighted the urgent need for comprehensive strategies that address prevention, treatment, and recovery support. Public health initiatives, policy changes, and community-based interventions are essential components in combating the widespread effects of addiction.

Patient information

A 30 year old married male, belonging to lower middle socioeconomic status presented in the OPD department with a complaint of excessive use of dicyclomine and paracetamol for the last 6 years. (Tablet Spasmol containing Dicyclomine (20 mg), Dextro propoxyphene (500 mg) and Paracetamol). He has been taking this tablet since 2018 for abdominal cramps. He got relieved the complaints and also he felt relief of symptoms after using the medication. Then he continued to take it 2 tablet per day. He got married later and had marital distress .Gradually he increased the dose suggesting tolerance. He reported intense craving to take the tablet. He would have apprehension, restlessness, and sleeplessness after stopping it suggesting withdrawal symptoms. Patients was admitted in another deaddiction center but was not able to stop the craving. The patient had been experiencing sporadic euphoria, hallucinations, exhaustion, short-term memory loss, and some brief episodes of altered behaviors, such as decreased anxiety, mannerisms, and agitation, for the past year, according to repeated inquiries to the family members. The dose varied from 20 to 40 mg once to thrice

daily 3–5 times per week throughout this entire period but of late, the frequency increased. There was no history of any other concomitant medications during the entire period.

During mental status examination, he subjectively reported low mood and had anxious affect. He was diagnosed with abuse of non dependence-producing substances with adjustment disorder (International Statistical Classification of Diseases-10). fulfilled the criteria of craving, withdrawal, and tolerance for substance use disorder. This suggests that non dependence-producing substance like dicyclomine may also cause dependence if not used judiciously. Hence, further study on abuse of anticholinergic drug, particularly dicyclomine, is needed. We also suggest that therapeutic use of anticholinergic drug, particularly dicyclomine, should be combined with strict vigilance and effective counseling of patients and family members to prevent abuse of such drugs.

Physical examination revealed a confused state with altered higher functions manifesting as disorientation, confusion, dysarthria and ataxia. Vitals showed within normal limit. Respiratory rate. 20/minute, Blood pressure 130/80mmhg, Pulse rate 72 per minute. Pupils moderately dilated to light. Cage aid questionnaire has been used for screening. The score was 4. The lab investigations were with in the normal limit. Strict abstinence from dicyclomine was followed.

Hamilton Anxiety Rating Scale (HAM-A)

Sl no.	Parameter	Before	After
1	Anxious mood	4	1
2	Tension	4	2
3	Fears	4	1
4	Insomnia	4	1
5	Intellectual	3	2
6	Depressed mood	3	2
7	Somatic (muscular)	1	1
8	Somatic (sensory)	2	1
9	Cardiovascular symptoms	3	2
10	Respiratory symptoms	1	1
11	Gastrointestinal symptoms	4	2
12	Genitourinary symptoms	2	2
13	Autonomic symptoms	3	1
14	Behavior at interview	3	1

Timeline and therapeutic intervention

Parameters	Detected value	Normal range
Hb	15 g/dL	13-17 g/dL

Total WBC Count	7.61 ×10ˆ3/µl	4.0-10.0 ×10ˆ3/µl
LFT Total bilirubin Direct bilirubin Indirect bilirubin SGOT SGPT Alkaline phosphatase Albumin Globulin	 0.822 mg/dL 0.351 mg/dL 0.47 mg/dL 52 g/Dl 40 g/Dl 114 U/L 4.68 g/dL 3.77 g/dL	 Up to 1.2 ≤0.30 0.3-0.7 upto 40 upto 41 40-129 3.97-4.94 2.2-3.5

Timeline

Timeline	Clinical events & Intervention
June 2018	Patient had abdominal cramps and took spasmol for the first time
September 2023	Took allopathic consultation .Could not able to stop the intake of medicine
7.9.2024	The patient came for Ayurvedic treatment, Patient stopped the intake of spasmol. Internal medicines like *ashwagandha choorna, Vidarikanda choorna* and *mukta shukti, vishathinthuka vati* were started
11.9.2024	Patient complaints of the withdrawal symptoms anxiety, body pain, head ache and sleeplessness. The medicines continued. *Ksheerabala abhyanga* and *Swedana* started. *Shirodhara* also started with *ksheerabala taila*. Patient was refered to Yoga Unit for calm down the anxiety.
13.9.2024	Patient got much relief from the symptoms. Sleeping time increased to 4 hrs. All the medicines and procedures were continued
15.9.2024	The medicines continued. *Shirodhara* and *abhyanga swedana* also continued. *Nasya* with *anutaila* was started
21.9.2024	Patient sleep pattern improvised. He got 8 hrs of contious sleep. Body pain also got relieved completely. Patient took discharge .*Vishathinthuka vati* was stopped. *Ashwagandha choorna, vidarikanda choorn and mukta shuti* were continued and *chyavanaprasha* was also given as *rasayana*. Counselling was given. Family member was also advised for observing him.
5.10.2024	Patient came to OPD. He did not consumed the tablet after discharge.
30.11.2024	On phone enquiry has been made regarding his mental condition. Feed back was also taken from family members. The patient was completely symptom free.

DISCUSSION

Spasmol addiction, particularly related to overuse of antispasmodic drugs (often containing compounds like dicyclomine and paracetamol), is increasingly concerning in certain regions. These medications, while effective for short-term relief of abdominal pain or spasms, can lead to dependence and abuse, particularly when used without a clear medical need. Ayurveda offers a holistic approach to managing such dependencies, focusing on both the physiological and psychological aspects of addiction. Considering the psychological and physical symptoms *Shamana* and *sodana* therapies were planned. *Visha thinthuka vati* was

given along with combination of *aswaganda chorna, vidarianda choorna* and *mukta shukti bhasma* internally. *Shirodhara* with *Ksheera bala taila*, *Sarvanga abyanga* (~synchronized whole body massage with medicated oil) with *ksheerabala taila* and *sweda* (~sudation) with *dasamoola kwatha* and *Nasya* (~medications through nasal route) with *anutaila* were the other *panchakarma* procedures.

Vishathinthuka vati[4] has been mentioned in *Rasathatnra sara sngraha*.*Vishtinduka vati* has four important constituents, viz. *Vishathinthuka* (Strychnos nux vomica L.), *Pugaphala* (*Areca catechu* L.), *Maricha* (*Piper nigrum* Linn.) and *Chincha* (*Tamarindus indica* L.). *Kupilu* is the key ingredient of *Vishathintukavati* and which is having *vatashamak, chitta avasadakar* (anti depressant) activities and it is a cardiac tonic also. *Chittaavasadaka* property can counteract the anxiety and which is helpful for the body pain. 93 metabolites of areca nut analyzed with UPLC-MS/MS system were capable of targeting 141 depression related gene including L-phenylalanine, nicotinic acid, L-tyrosine, protocatechuic acid, okanin, benzocaine, phloretic acid, syringic acid, cynaroside, and 3,4-dihydroxybenzaldehyde. These findings suggested that there are several bioactive antidepressant chemicals in Areca nut. Arecoline activates postsynaptic muscarinic M1 receptors, which improves cognition, memory, and certain behavioral abnormalities in individuals.[5] All these drugs are having mainly *katu-tikta rasa, ruksha, ushna, tikshna guna, ushna virya* and *vata kaphagnadoshaghnata*. *Vishatinduka vati* can be used for various diseased conditions such as diarrhea, running nose, indigestion, loss of appetite, chronic pain conditions such as body ache and joint pain. Since all the above conditions are found in the form of withdrawal symptoms. It is preferred in the present case.[6]

Sarvanga abhyanga and *Svedana* are mainly used in *Vataroga*, *Kampa* (~tremors), and *Angmarda* (~body ache) and sleeplessness are used as *Vata shamaka.* The characteristics of *Abhyanga* are *Shramahara*, *Nidrakara,* and *Vatanashaka,* which also help to address the withdrawal symptoms such as bone and joint ache, tremors, sweating, and restlessness anxiety. After regular administration of *Pratimarsha nasya* (~low-dose medication through nasal route) of *anutaila*, the patient started sleeping peacefully.

Shirodhara with *ksheerabala*and *Tila taila* was also performed for the duration of 45 min from 1st to 14th day. His sleep pattern improved after 2 days of *Shirodhara*. The *Snigdha guna* (~unctuousness property) of oil and *Ushna guna* (~hotness property) of *Ashwagandha* help in pacifying *Ruksha* (~dryness) and *Ushna guna* of aggravated *Vata*.[7]

Counseling according to Ayurveda comes under *Satvavjaya chikista* or the holistic approach which is a nonpharmacological approach that aims at controlling the mind and its straining, Acharya charaka defines it as a mind-controlling therapy where he emphasizes the restraining of the mind from unwholesome objects or thoughts which includes *Mano nigraha* and *Ashtanga yoga*. The calming effect of *Shirodhara* may be due to the continuous flow of oil over the forehead providing afferent impulses to the cerebral cortex leading to an altered state of awareness and anxiolysis (Uebaba et al., 2005; Meenraj et al., 2018).[8]

Ashwagandha contains sitoindosides and new acylsterylglucosides, which are stress relievers. The adaptogen Ashwagandha, which is made up of vitamins and amino acids, helps the body adjust to stressful conditions while also boosting energy, stamina, and endurance.[9]

Mukta shukti(Pearl oyster shell) which has been mentioned in sudha varga. It is indicated for pitta aggravated conditions, it was given along with ashwaganda an vidarikanda choorna. Since in this condition anxiousness is the main symptom Presence of Calcium (Ca), Magnesium (Mg), Manganese (Mn), Iron (Fe), Potassium (K), Aluminum (Al), Copper (Cu), Sodium (Na) and Zinc (Zn).[10]

CONCLUSION

While spasmolytics are effective in managing muscle spasms, the potential for misuse and psychological dependence should not be overlooked. By understanding the risks, recognizing the signs of misuse, and implementing strategies for prevention and treatment, healthcare providers can better support patients in using these medications safely.

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