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METHAMPHETAMINE ABUSE AND DENTISTRY

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Abstract

Methamphetamine is a highly addictive powerful stimulant that increases wakefulness and physical activity and produces other effects including cardiac dysrhythmias, hypertension, hallucinations, and violent behaviour. The prevalence of methamphetamine use is estimated at 35 million people worldwide and 10.4 million people in the United States. In the United States, the prevalence of methamphetamine use is beginning to decline but methamphetamine trafficking and use are still significant problems. Dental patients who abuse methamphetamine can present with poor oral hygiene, xerostomia, rampant caries ('Meth mouth'), and excessive tooth wear. Dental management of methamphetamine users requires obtaining a thorough medical history and performing a careful oral examination. The most important factor in treating the oral effects of methamphetamine is for the patient to stop using the drug. Continued abuse will make it difficult to increase salivary flow and hinder the patient's ability to improve nutrition and oral hygiene. Local anaesthetics with vasoconstrictors should be used with care in patients taking methamphetamine because they may result in cardiac dysrhythmias, myocardial infarction, and cerebrovascular accidents. Thus, dental management of patients who use methamphetamine can be challenging. Dentists need to be aware of the clinical presentation and medical risks presented by these patients.

Keywords- Methamphetamine, cardiac dysrhythmias, hallucinations, myocardial infarction

Introduction-

Amphetamines are a class of stimulant drugs that affect the central nervous system. Amphetamines have been prescribed to promote weight loss, treat attention deficit disorder and narcolepsy, and for treatment resistant depression.

METHAMPHETAMINE- Methamphetamine is a highly addictive powerful stimulant that increases wakefulness and physical activity.

The prevalence of methamphetamine use is estimated at 35 million people worldwide. Methamphetamine abuse is a Problem in the U.S, Mexico, South America, Middle east, Arabian peninsula, Asia and Australia. Methamphetamine is the most widely illegally manufactured, distributed and abused type of amphetamine. Methamphetamine is a synthetic n-methyl homologue of amphetamine. It is a highly addictive substance that can be inhaled, snorted, smoked, taken orally or injected. The medical history of amphetamine compounds extend back to 100 years.

A Japanese Pharmacologist AKIRA OGATA first synthesised methamphetamine in 1919.

- The stimulant, euphoric, and anorectic effects of amphetamine were recognized quickly leading to its abuse.
- In 1937, a report stating that amphetamine could enhance intellectual performance through enhanced wakefulness further contributed to popularity and early abuse of amphetamine.
- Amphetamine was used extensively by ALLIED AND AXIS armed forces during world war 2 and during 1991 operation desert storm, allegedly to increase wakefulness and attention. It is also called recreational designer drug called “ECTASY”.

Ecstasy is (3,4,MethyleneDioxymethamphetamine) or MDMA. Methamphetamine is a white odorless, bitter tasting crystalline powder that easily dissolves in water or alcohol. It has several street terms called Meth, crystal, ice, chalk, speed, crawford, crank, fire, glass, beannies, brown, chickenfeed, Crypto, Tick-tick, wash, fast, rock, mexican crack, getgo, cinnamon, crink, yellow powder¹.



Various signs symptoms of toxicity of amphetamine-

- Seizures
- Vomiting
- Diarrhoea
- Dyspnea
- wheezing
- Confusion
- Hallucinations
- Anxiety
- Paranoia
- Hyperpyrexia
- Renal failure associated with rhabdomyolysis
- Tachycardia
- Hypertension
- Myocardial infarction
- Skin lesions can be seen on face, arms, and legs known as formication. There is a feeling of "ants crawling" on the arms and legs and "biting" them so they pick at the area sometimes breaking the skin and leaving numerous scabs.

Treatment- Currently, there are no specific medications that counteract the effects of methamphetamine. Acute mental disturbances or seizures are treated with a benzodiazepine, or diazepam 5 mg I.V with repeated doses were given to achieve needed sedation. Cardiovascular complications such as tachycardia, and hypertension treated with intravenous benzodiazepines, with refractory cases of hypertension treated with sodium nitroprusside. If methamphetamine was taken orally, treatment is focused on gastrointestinal decontamination, once the patient is stabilized. Gastric lavage may be indicated followed by oral administration of activated charcoal. The most effective treatments for methamphetamine addiction are behavioral therapies, including cognitive behavioral and contingency management interventions.

Methamphetamine abuse and dentistry- Patients who abuse methamphetamine may present to the dental office with specific clinical problems. If a patient reports abuse of methamphetamine, the dentist should carefully interview and examine the Patient for associated dental problems. However, dental patients may not reveal that they abuse drugs for fear of being ostracized or legally prosecuted. Additionally, methamphetamine users commonly use other illicit drugs such as marijuana, cocaine, heroin.

Therefore, dentists should be on the alert for signs and symptoms that may include substance abuse. A thorough medical and dental history and, a complete oral examination must be performed.

- Oral manifestations- METH has been identified as one the MOST destructive substances to affect oral health in recent years. Chronic methamphetamine abuse results in Xerostomia, Rampant caries, Bruxism, Bad taste and Muscle trismus. Xerostomia significantly increases the risk for dental caries, erosion of enamel and periodontal disease. The term “METH MOUTH” has been used to describe the rampant caries often found in methamphetamine users.
- The dry mouth and general hyperthermia experienced at dance circuit or “Raves” are usually relieved by drinking soft drinks.
- Methamphetamine users describe their teeth as ‘blackened stained, rotting, crumbling or falling apart’



Bruxism:

Bruxism and excessive tooth wear may occur more frequently in chronic methamphetamine users. They have high energy and neuromuscular activity which results in parafunctional jaw activity. Bruxism and muscle trismus can compound the effects of periodontal disease and

produce symptoms of temporomandibular disorders, such as tenderness in the temporomandibular joint and masseter muscles.

Dental management- The most important factor in treating the oral effects of methamphetamine is for the patient to stop using the drug methamphetamine.

- If the Patient continues to use, it will be difficult to reduce consumption of high calorie carbonated beverages, improve nutrition and oral hygiene, and participate in dental treatment. Thus the oral health care team must determine how well is the Patient is able to participate in his/her own dental care. If the patient is able to participate, there are treatments it can improve salivary flow and reduce development and progression of caries².
- Meticulous oral hygiene with minimally abrasive flouridated dentrifices and irrigation devices is important. Frequent oral hygiene and prophylaxis may be needed.
- Treatment for xerostomia- Patients with methamphetamine induced xerostomia should be counseled to drink 8-10 glasses of water per day to avoid caffiene, tobacco, and alcoholic beverages due to their diuretic effect. Salivary substitutes, oral moisturizers and artificial salivas may provide some relief eg-oral moisturizers such as optimoist is given to increase the salivary flow rates.The U.S FDA has recently approved the use of Pilocarpine and Civimeline for the treatment of hyposalivation³.

Pain Control- Methamphetamine users may present to the dental office due to dental pain as their oral health is generally poor. In this case the dentist must thoroughly evaluate the patient including determining when was the last time that the patient used any methamphetamine or drugs. If Patient has used methamphetamine within last 24 hrs, the vasoconstrictor in the local anesthetic could result in further sympathetic drive to CVS putting the patient to increased risk for cardiac dysrhythmias, hypertension and myocardial infarction. So, in such cases local anesthetic without vasoconstrictor should be used. A thorough dental examination is necessary to diagnose the source of pain⁴. Consultation with the patient's physician may be required to balance the need for pain relief with the risk of drug interactions.

CONCLUSION

METH abuse in the United States has grown due to its appeal, ease of manufacture, and low cost. Users develop tolerance that then requires a larger dose to achieve the same "high." The result of METH abuse on Patients oral health involves the triad of Xerostomia, Rampant caries, and Bruxism and we may be the front –line oral physicians recognizing the oral signs and symptoms of methamphetamine^{5, 6} Additionally, special attention is necessary to monitor for and treat oral manifestations.

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