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Synthetic cathinones: any relevancy to dental practice?

Synthetic cathinones are derivatives of the naturally occurring amphetamine-like compound cathinone, which is found in the stimulant shrub khat. In US, synthetic cathinones are abused as stimulant recreational drugs and are commonly called "bath salts." They are synthesized in illicit labs and are listed as Schedule I drugs. There are more than forty different bath salts, some of the common ones being mephedrone, methylone, methcathinone and 3,4- methylenedioxypyrovalerone.

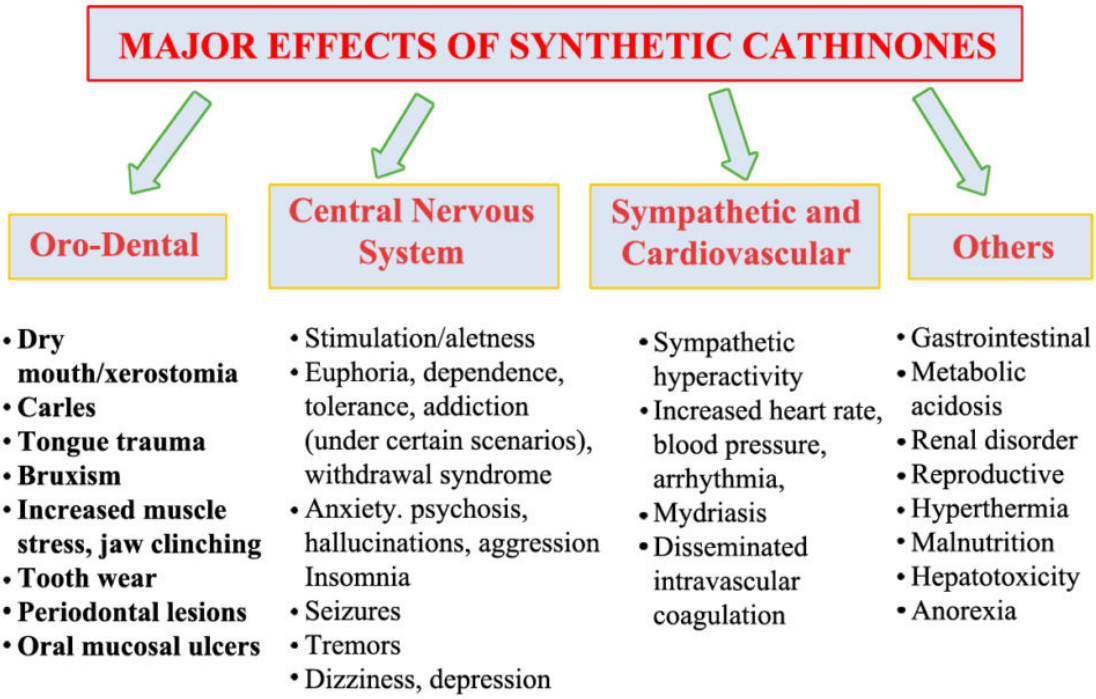

Fig. 1. Oro-dental and systemic effects of synthetic cathinones.

As shown in Figure 1, besides causing CNS effects related to stimulation, euphoria, tolerance, dependence, withdrawal, anxiety and tremor, synthetic cathinones produce multiple other effects including sympathomimetic, cardiovascular, gastrointestinal, hepatic and oro-dental effects. Given their abuse potential and multiple other adverse effects, the escalating availability of these drugs in recent years has become a growing concern. The oro-dental effects produced by synthetic cathinones are the subject of the present summary.

It is reported that synthetic cathinones induce a wide range of oro-dental adverse effects. While some of these effects are caused directly on target tissues, the rest are mediated via CNS and peripheral sympathetic pathways. The oro-dental effects include dry mouth/xerostomia, caries, bruxism, tooth/occlusal wear, periodontal diseases, among others. Bruxism and facial tics contribute to incidences of traumatized tongue and worn teeth, which usually follow prolonged abuse of the drugs. The role of synthetic cathinones in periodontal

disease is partly explained by the impairment of circulation in the periodontium. The intensity of the different effects manifested may vary with the types and amounts of drugs used and the durations of use. Associated with intravenous administered of synthetic cathinones by abusers, greater risks for contracting HIV, hepatitis and other infectious diseases have also been reported.

The oro-dental effects of synthetic cathinones noted above have important implications for dental practice. Dentists should be familiar with these drugs in order to educate and provide a safer health care to patients who may abuse the drugs. For treatment of the dental conditions mentioned, the ADA recommends the application of topical fluorides, management of xerostomia, use of occlusal guards and provision of periodontal therapy, where appropriate. Apart from oro-dental considerations, systemic effects of the stimulant drugs may also require modifications of dental treatments.

Since most abusers of synthetic cathinones concomitantly consume other potentially harmful substances, such as extra amounts of sugary carbonated/acidic beverages and tobacco smoking, clinicians should have a strategy for addressing this problem too. Nutritional deficiencies caused by synthetic cathinones may lead to immune suppression, requiring caution to be exercised in prescribing immune suppressant medications, such as opioid analgesics and antiinflammatory steroids.

Among the various systemic effects caused by synthetic cathinones are found variable cardiovascular disorders, particularly in susceptible individuals. Practitioners should be cognizant of these effects when dealing with patients engaged in drug abuse, and take appropriate treatment and consultative measures, including stress management and precaution in administering vasoconstrictors.

The hepatic adverse effect of synthetic cathinones can impair the metabolism/utilization of certain drugs and nutrients, with consequent harms, an aspect that should also be given consideration.

Excessive use of synthetic cathinones may cause reduced responsiveness to anxiolytics, sedative-hypnotics, and anesthetics, among others, and this may require use of increased doses of these medications or rescheduling of treatment. Enhanced sensory and motor activity induced by the stimulant drugs can also cause nervousness, hyperreactivity, restlessness, tremor and muscle twitches, which may interfere with dental management. In some cases, severe stimulation by synthetic cathinones may be followed by depression, and this may also impact dental treatment. Tolerance and dependence that may be produced by synthetic cathinones can interfere with proper utilization of stimulant medications, with the likelihood of requiring higher doses of the medications or use of alternative approaches. Self-neglect and poor oral hygiene that could be associated with the abuse of synthetic cathinones are also relevant issues for dentists to be vigilant.

In summary, synthetic cathinones are emerging drugs of abuse that cause multiple central, peripheral and oro-dental adverse effects with considerable dental implications of which oral health care professionals need to be aware.

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