

CASE REPORT

NO LAUGHING MATTER: 'LAUGHING GAS' ADDICTION IN SINGAPORE

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Abstract

Objective: Recreational use of nitrous oxide (N₂O) or 'laughing gas' inhalation is a common phenomenon in countries like UK and US where it is associated with music festivals and parties. However, as far as we know, recreational N₂O use in Singapore has hitherto not been reported in the press or scientific journals. We report the first case of N₂O use and addiction in a young Singaporean male who was introduced to it by a friend from a Western country where its use is prevalent. **Methods:** A 20-year-old Singaporean male with an existing psychiatric diagnosis of Major Depression presented with a 3-year history of solitary regular N₂O inhalation that escalated from infrequent low dose use to the daily high-dose use which he was unable to control. He exhibited symptoms of dependence, which included preoccupation, tolerance, withdrawal, craving and difficulty in cutting down. No major adverse medical complications were noted. **Results:** The patient was assessed to have Nitrous Oxide Dependence and was given regular individual counselling sessions with a trained addictions counsellor to motivate him to cut down his use in the short-term and to stop completely in the longer term. **Conclusion:** This case highlights not only the first reported case of N₂O use and dependence in Singapore but also the first case seen in a Singapore national addictions treatment facility. Doctors, families, schools, and the community in general need to be aware of, and be prepared for, this practice that has come to Singapore and the region. While extant literature suggests that dependence is uncommon, we report the first case that clearly demonstrated psychological dependence. *ASEAN Journal of Psychiatry, Vol. 18 (1): January – June 2017: XX XX.*

Keywords: Nitrous Oxide, Laughing Gas, Inhalant Abuse, Whippet

Introduction

Nitrous oxide (N₂O) or better known colloquially as 'laughing gas', is used commercially in the food industry as a mixing and foaming agent in whipped cream, in the motor industry as a fuel booster and in medical practice as an anaesthetic and analgesic [1]. It is readily available for sale in large quantities in bakery equipment outlets in the form of "whippets" or chargers, which are used in propelling whipped cream in cans. Students with modest allowances would be able to

afford these whippets which sell for only SGD 0.70 each. While N₂O is a common inhalant abused recreationally for its euphoric effects in the West where it is particularly popular in clubs and music festivals [1], its use in Singapore is unknown and hitherto unreported. In Thailand, it was reported that tourists in Thai resorts were abusing N₂O filled balloons sold in bars and thereby presenting a big concern to the authorities [2]. We discuss a young male with a heavy chronic use of N₂O, resulting in dependence.

Case Report

A 20-year-old Singaporean male was brought to the local tertiary addiction's management clinic by his family for help in stopping his N₂O inhalation use, which had spun out of control. His family persuaded him to reveal his use to his attending psychiatrist who had been treating him for Major Depressive Disorder. His N₂O use was discovered by his family when they discovered large numbers of whippets in his room. There was no family history of addictions or mental disorders. He had no significant past medical history but had been receiving an SSRI for MDD for 3 out of the past 4 years. An occasional drinker and non-smoker, he did not abuse any other drugs. Pre-morbidly he was an introverted, intelligent and ambitious young man who did well academically and had set for himself high expectations and goals. He hailed from a stable, achievement-oriented nuclear family to which the idea of N₂O use was both foreign and totally unexpected.

Although he was a capable person who planned ahead for his future, including his relationships, he tended to get stressed and depressed if his expectations were not met, which led to his being treated for Major Depressive Disorder (MDD) 4 years earlier. He was compliant with his antidepressant except for one year of default, which was occurred a year and a half before his first contact with the addiction's clinic, because he had felt well.

The idea of using N₂O came from a friend schooling overseas who told him about the common N₂O recreational use in that western country to get "high". He experimented with it out of curiosity 3 years earlier and enjoyed the short-lived euphoria of 2-3minutes, which was followed by a refreshing nap of 20minutes. While in the euphoric state, he felt relaxed, perceived music to sound better and experienced visions at times. With the continued use, he no longer laughed as he used to in his initial use. In his 3 years of use, he had started off with 1 to 2 whippets a day for fun, but it escalated to an average of 30 to 40 a day, and N₂O eventually became a means of aiding sleep. There were times when he used 100 or more a day. He bought the whippets in bulk from the local bakery equipment store

easily. He denied using the N₂O to regulate his mood and asserted that he used it irrespective of his mood. His use continued throughout the year when he was well and not taking any antidepressant. Significantly, he used the gas alone and not at parties with friends; he mostly used it within the confines of his locked room. As his use escalated he began to lose control, develop cravings and irritability if he did not use it. Throughout the 3 years of use, he only managed to achieve 1 episode of 8-day abstinence before succumbing. Nonetheless, he could focus on his studies and achieve good grades that qualified him for tertiary studies.

Having read up on the medical ills of N₂O use, he denied the presence of any untoward physical symptoms apart from frostbites in his oropharynx from the repeated inhalations of the pressurized nitrous oxide gas. Specifically, he denied having any respiratory or neurological symptoms. Nonetheless, he was referred to and cleared by the neurologist, while an assessment by the respiratory physician was pending. His Full Blood Count and Vitamin B12 levels were both normal.

His goal was to reduce his usage of N₂O gradually, and in that respect, he complied with initial sessions of individual counselling with the addiction's counsellor. During the treatment period, he managed to reduce his usage to around 30-40 whippets a day, but admitted to bingeing on more than 100 whippets on occasional days when under stress. He also managed to attain a second episode of 8-day abstinence but fell to bingeing when his cravings got the better of him.

Discussion

Nitrous oxide has had long established roots of recreational use since the late 18th to the early 19th century. The colourless gas was a regular fixture in gentlemen's parties in England where it came to being known as '*laughing gas*', for its tendency to cause a short-lived euphoria accompanied by initial bouts of laughter. Recreational use of N₂O predates its later commercial uses. In countries like United States, United Kingdom and Australia, its use has evolved into a popular 'legal high' at music festivals and clubs. The Global Drug

Survey 2016 reported N₂O to be the 7th the most popular drug throughout the world and the 4th most commonly used drug by UK clubbers [3]. To best of our knowledge, this is the first reported case of N₂O use in Singapore.

At parties, N₂O is commonly inhaled via balloons prefilled with N₂O gas from a whippet, which is a bullet-shaped cartridge of N₂O. Other methods include inhaling the gas directly from the nozzle of an aerosolized whipped cream can, or inhaling the gas from a mask connected to a N₂O tank such as that used in hospitals. Our patient chose to inhale the N₂O by spraying the whippet onto his face. It has been reported that when inhaled, the N₂O commonly gives rise to a rush of euphoria, which typically lasts 1-5 minutes, accompanied by bouts of laughter/giggling. It can also give rise to physical symptoms such as dizziness, nausea, analgesia and temporary loss of motor control as well as perceptual disturbances like auditory or visual hallucinations, auditory distortions (eg: echo effect or flanging of sound) and dissociative experiences. It has also been reported to have mild aphrodisiac properties in some people [4]. Our patient reported having mainly euphoria without any physical or perceptual symptoms.

N₂O is an inert gas at room temperature, but its inhalation, especially via pressurised canisters, carries both acute and chronic risks. Acute adverse effect includes pneumothorax, obstruction of closed air spaces (such as the bowel and middle ear cavity), frostbites, and most significantly, death from acute asphyxiation (hypoxia) or a sudden cardiac death [4]. Deaths typically involve inhalation from a mask or plastic bag connected to a nitrous oxide tank [4]. Chronic adverse effects include Vitamin B₁₂ deficiency, which can lead to a myriad of conditions, including peripheral neuropathy, megaloblastic anemia, homocystinemia and psychosis. [4] Possible contaminants in the whippets, such as oily residues, can also cause respiratory symptoms in the users. Our patient was fortunate in having a normal B₁₂ level and reporting only an oropharyngeal frostbite despite his daily heavy use.

This case bears reporting for at least 2 reasons. Most importantly, it highlights that the

harmful use of N₂O has surfaced in Singapore. The wide reach of social media, increasing use in the west, easy affordability and accessibility, and the fact that it is not an illegal substance in Singapore, suggest that more youths will experiment with it, of which some, like our patient, will get dependent. It behooves medical practitioners to be educated on the phenomenon and its consequences. Secondly, our patient is not the typical N₂O user who uses it sporadically at parties and music festivals together with friends, but is a solitary user who progressively became dependent. Current literature indicates that dependence is uncommon whereas our first reported case in Singapore is quite clearly dependent. Factors leading to his dependence include the interplay of his pre-existing depression, inadequate stress coping ability, the easy availability of N₂O whippets, and the fact that N₂O is not an illegal substance in Singapore. While some jurisdictions are presently studying the problem, the UK has set up the Psychoactive Substances Act 2016 which mandates that nitrous oxide (when used as a propellant for whipped cream) should not be sold for recreational use [5].

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