

**NICOTINE GUM DEPENDENCE****Navneet Kaur Bhatia<sup>1</sup>, Navleen Kaur Bhatia<sup>2</sup> and M. S. Bhatia<sup>3\*</sup>**

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**ABSTRACT**

Nicotine chewing-gum is available in India as an aid to stop smoking. It is believed that it produces no pleasure, it is unlikely to be abused. It is less addictive than cigarette smoking. But its use on long term basis and in unmotivated patients can lead to dependence. We report a case of nicotine chewing-gum dependence with psychiatric and physical comorbidity who was successfully treated.

**KEYWORDS:** Nicotine substitution therapy, Lozenges, Dependence, Comorbidity, Treatment.

**INTRODUCTION**

Nicotine chewing-gum is available in India as an aid to stop smoking.

It produces blood nicotine concentration similar to tobacco smoking and relieves the symptoms of withdrawal.<sup>[1,2]</sup> Its use is easy and absorption through oral mucosa is slow (30 minutes against 5-10 minutes for a cigarette).<sup>[2]</sup> It does not reproduce the pleasure of cigarette smoking. Its use requires practice and careful instruction. Long term success rate is around 40%. In nicotine gum, nicotine is bound to an ion exchange resin which allows it to be released slowly as the gum is chewed. About 90% of the nicotine is released after 30 minutes of chewing. The rate of release depends on vigour and rate of chewing.<sup>[3]</sup> Its use has two purposes firstly, it provides substitute oral activity and secondly, to control the withdrawal of cigarette smoking. In early phase, it is usually aversive and dislike of taste, irritation of tongue, mouth and throat and nausea are common side effects. Less common side-effects are

pain in jaw, ulceration of tongue, epigastric discomfort, hiccups, flatulence and dizziness. The pharmacological effects are same as of nicotine.<sup>[1,2,4]</sup>

It is estimated that about 10% of heavy smokers develop some degree of dependence on the gum.<sup>[5,6]</sup> We report a case of nicotine chewing-gum dependence with psychiatric and physical comorbidity who was successfully treated.

## CASE REPORT

A 36-year young married adult male, graduate, businessman of upper socio-economic status was brought by his wife with history suggestive of nicotine chewing gum dependence of three months duration. There were also symptoms suggestive of comorbid generalized anxiety disorder (tremors, palpitations, heaviness in head and chest, sweating, epigastric discomfort, sleeplessness, decreased appetite, occasional nausea, restlessness and irritability) and erectile dysfunction of four months duration. In past, he had history of consuming nearly 10-12 cigarettes per day for last one year. He had consulted a private psychiatrist about six months back for complaints of severe anxiety with frequent panic attacks and insomnia. He was started him on tablet lorazepam 4-6 mg in divided doses and tablet zolpidem 10 mg at bed time and also, nicotine chewing gum 4 mg three to four times a day. He was also given counselling to enhance motivation to leave smoking. He attended the psychiatrist only once and started using prescription to procure the medicines. When brought in outpatient department, he was consuming 12 to 15 nicotine chewing-gum of 4 mg strength. The consumption of cigarettes was only occasionally. He reported that he could not reduce nicotine gums as he started having decreased concentration, low mood, constipation and weight gain. He had motivation for treatment of anxiety but not for nicotine chewing-gums. There was no history of any other substance use or high risk behaviour. There was no history of fever, head injury, seizure or comorbid medical illness. Past and family history was not suggestive of any psychiatric disorder.

## Examination

On examination, he was well oriented to time, place, and person with, pulse rate of 110/minute and blood pressure 150/100 Hg. Systemic examination revealed discomfort in epigastric area, tremors and sweating. On mental state examination, the patient was well kempt and anxious.

**Laboratory investigations**

Complete haemogram, liver function tests, kidney function tests, serum electrolytes, lipid profile, blood glucose, urine microscopy, chest X-ray and ultrasound abdomen were within normal limits. ECG showed sinus tachycardia.

**Management**

Patient was diagnosed as suffering from nicotine dependence and started on tablet bupropion 150 mg per day after breakfast, tablet propranolol 40 mg daily and tablet clonazepam 0.5 mg in morning and 1 mg at night and tablet rabeprazole 20 mg before breakfast. On following him up, he reported reduction in craving for nicotine chewing gum and it was reduced to 6 to 8 of 4 mg strength per day. Patient was also given counselling to discontinue nicotine chewing gums as they were attributing to his physical and psychiatric symptoms. After six weeks, the patient was taking nicotine chewing gum only occasionally, leading to improvement of anxiety, insomnia and erectile dysfunction. Patient has been maintaining well and abstinent for nicotine for the past 4 months in follow up, with no residual symptoms.

**DISCUSSION**

It is believed that nicotine gum produces no pleasure and is unlikely to be abused.<sup>[1,5]</sup> It is less addictive than cigarette smoking. But in our case, there were symptoms suggestive of nicotine chewing gum dependence.

It thus requires a caution for the using physicians and also negate the availability of nicotine gums over-the-counter. Mulry called it as a positive addiction<sup>[7]</sup> but in our case, there were nicotine chewing gum induced psychiatric and physical complications and thus support the conception that addiction is always negative.

Nicotine chewing gum is likely to help heavy smokers more than light smokers and it should not be used in smokers who do not want to stop.<sup>[8]</sup> The recommended dose is about 8 to 12 pieces of 2-mg gum a day.<sup>[1,5,9]</sup> Only those requiring more than 15 pieces are offered 4- mg gum.<sup>[1]</sup> The recommended duration for use is 3 to 4 months after which it should be gradually reduced. But in our case, the patient was unable to stop nicotine chewing gum due to withdrawal symptoms. If smokers do not stop smoking within 2 weeks are unlikely to succeed and those who have not stopped smoking after 4 weeks, there is hardly any gain by using gum.<sup>[1]</sup> In the present case, the patient stopped smoking but was unable to discontinue nicotine chewing gum.

Bupropion, varenicline and off label-drugs (nortriptyline, clonidine) are available to treat smoking.<sup>[10]</sup> The present case was successfully treated with bupropion. The precise mechanisms of action of bupropion remain unclear. Bupropion is a weak inhibitor of dopamine and noradrenaline reuptake and has also been shown to antagonize nicotinic acetylcholine receptor function. The principal mode of bupropion action is upon the withdrawal symptoms following smoking cessation.<sup>[11]</sup>

## CONCLUSION

Nicotine chewing-gums carries the risk of causing dependence and other psychiatric and physical complications. The using physicians should be careful in prescribing it on a long term basis and also in those not motivated for quitting nicotine dependence.

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