Print ISSN: 2319-2003 | Online ISSN: 2279-0780

IJBCP International Journal of Basic & Clinical Pharmacology

DOI: http://dx.doi.org/10.18203/2319-2003.ijbcp20192674

Case Report

Anxious medico with nicotine patch: a case report

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Received: 26 April 2019
Accepted: 30 May 2019

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ABSTRACT

We often suffer more in our imaginations than in reality. Anxiety is a terrible experience, you could even have an attack and no one would even know most of the times because it is an inward thing. People do get anxious and experience this feeling most of the times in life. Up to an extent its normal as much as it can be controlled if not this unpleasant feeling overrules. We learn to combat this feeling as the age passes but it also depends on different environmental, social occupational factors and the level of stress to overcome can be difficult. Many non-pharmacological and pharmacological methods are available to combat anxiety disorder. Self-medications can be occupational hazard and is strongly entrenched within the culture of both physicians and medical students as an accepted way to buffer their work performance. We are reporting a case of an anxious medico self-medicated to combat anxiety.

Keywords: Anxiety, Nicotine, Transdermal patch

INTRODUCTION

Anxiety doesn't come from thinking about the future but from wanting to control it- Kahlil Gibran. Anxiety is an emotion characterized by feelings of tension, worried thoughts and physical changes. It is normal to get anxious and about 25% of people experience anxiety disorder at some point of time in their entire life. They say medical profession is a noble one and also should be noted that it is one of the stressful degree to pursue. Doctors have a high prevalence of mental health problems compared to the general population.[1]

In day to day life and changing lifestyles people are undergoing lot of physical and mental stress. To overcome people, deal with various means of habits, one of them being smoking which gives rise to tobacco addiction. And various non-pharmacological and pharmacological methods are available for both anxiety and tobacco addiction such as counselling, hypnosis, acupuncture, mind-body practices and anxiolytic drugs have been discovered and available so far but nicotine is one of its kind which meet both the effects.

Newer drug delivery system- Nicotinic patches that are available which serve as step-down therapy to provide controlled nicotine delivery in smokers. We are reporting a case of an anxious medico self-medicated to combat anxiety.

CASE REPORT

A 27 year old, female, unmarried, thin built, resident of mysuru, from highly educated family, pursuing her final year post-graduation in our institution came voluntarily to the medicine department along with her father that she noted of sleep disturbances, nausea, fine tremors, palpitations, sweating, light headedness and increased frequency of passing stools since 3 days. But tends to be more active with her daily routine and was able to concentrate more in her studies and her cognitive function was better compared to before.

However from the past few years she was able to sleep 7 hours a day from 12am to 7am without any sleep disturbances and carry out her regular routine like workout for 1 hour in the morning, attending her college lectures and was active in the departments with enthusiasm, studying well in mean time but with less concentration and post college hours she was able carry out her daily chores well at home. Further history revealed of any sleep disturbances, palpitations or fine tremors in her recent memory and no history of alcohol and smoking, no family history of any mental-health disorders.

She underwent general evaluation which revealed normal except for tachycardia. Further history revealed that the medico was anxious about her upcoming exams in 3 months and feels that she is in need to study more and she feels that she sleeps for a long time and unable to concentrate. Further history revealed and made a confession of using nicotine patch (2baconil step 1) a single dose of 21mg 4 days back following from which she developed all these symptoms and still persisting, which had to wear off in 16 to 24 hours after a single nicotine transdermal patch.[2]

She further history revealed that patch was applied in the morning 8am and the action was started after about 1 hours later she felt some trance state and euphoric, followed by enhanced alertness by noon associated with nausea and palpitations which continued till evening and later in the night more focused, oriented in her studies, she stayed awake still late night till 2am and she forced herself to sleep but she had vivid dreams which woke her up early in the morning around 4.45 am and started studying again. She could able to study and remember well the topics she had studied the previous day. Even on the second day she was focused on her routine and she hardly slept for 4 hours, with palpitations, nausea and increased bowel movements. On the fourth day she was more anxious that the symptoms persisted so discussed her problem with her father and was taken to the hospital.

DISCUSSION

The incidence of anxiety is on a rise with urbanization and changing lifestyle patterns. Some degree of anxiety is normal in all individuals, but treatment is needed when it is disproportionate to the situation and excessive. Some psychotics and depressed patients also exhibit pathological anxiety. Till date so many anxiolytic drugs and cognitive enhancers has been come into existence but still it being in a medical profession and drugs available over the counter it all says about the P-drug to overcome the anxiety level.

Nicotine is the main substance responsible for dependence on tobacco-containing products.[3] Henry dale proposed that the various esters of the choline elicited responses that were similar to nicotine or muscarine and also stated the dual nicotinic action and a muscarine action.[4]

The brain substrate corresponding to this “highway of pleasure” reaches from the nucleus accumbens where dopamine is secreted to the hippocampus, contextual information is stored to the cerebral cortex, and signals enter the awareness of the individual. Nicotine activates this circuit. Nicotine not only stimulates dopamine secretion but also inhibits an enzyme monoamine oxidase B, which is important for the catabolism of dopamine, leading to average dopamine concentrations in smokers well above those of non-smokers.[5]

Nicotine binds in the brain to nicotinic cholinergic receptors. These are ion channels, which allow cations to enter the cell when an agonist docks to the gate on the outer side of the channel. The nicotinic cholinergic receptor complex itself is composed of five subunits. The most abundant subunits are the b2 and a4 subunit. Stimulation of the b2 subunit leads to dopamine release; the a4 subunit is closely linked with an individual’s sensitivity to nicotine, the a3 and b4 subtypes mediate cardiovascular effects of nicotine. An activation of the cholinergic receptors by nicotine leads, besides a secretion of dopamine, to a stimulation by other neurotransmitters such as norepinephrine (appetite reduction, arousal), glutamate (memory and sensory enhancement), acetylcholine (enhanced alertness), b-endorphin and gamma aminobutyric acid, lowering of anxiety.[6]

Nicotine is the most reliable cognitive enhancer that we currently have, bizarrely. The cognitive-enhancing effects of nicotine in a normal population are more robust than you get with any other agent. The evidence for cognitive benefits is strong when it comes for nicotine.[7]

Nicotinic receptors in the brain appear to work by regulating other receptor systems. If person is sleepy, nicotine tends to make more alert. If anxious, it tends to calm. A study involving sixty-seven people with mild cognitive impairment, in which memory is slightly impaired but decision-making and other cognitive abilities remain within normal levels, found “significant nicotine-associated improvements in attention, memory, and psychomotor speed,” with excellent safety and tolerability.[7] Also it improves covert orienting of spatial attention and increases alertness in non-smokers.[8]

Many factors have been correlated with persistent symptoms presented by the medico such as

pharmacokinetic factors, gender, age, weight, occupation, personal habits. Due to lack of professional experiences and availability of incomplete information from the social media, people tend to overcome their stress level in their own selected ways. These nicotine transdermal systems, which serve as step-down therapy to provide controlled nicotine delivery in smokers and also being a cognitive enhancers, people tend to misuse the available resources. Even though the tolerability is good, few mild undesirable effects are common depending the individuals and associated factors.

CONCLUSION

Anxiety disorder is an affliction considered as a lifetime, chronic and relapsing mental disorder with social stigma. Nicotine used for tobacco addiction reportedly improves covert orienting of spatial attention, but enhanced alertness may also play a role and used for many other means by individuals. Being available over the counters and lack of knowledge and also for personal pleasure this kind of drugs can be misused commonly. And also people from medical profession, students are more prone for these kind of acts and also one should be well aware that self-medications can be occupational hazard and is strongly entrenched within the culture of both physicians and medical students as an accepted way to buffer their work performance which should be eschewed.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Jayanthi MK, Satish AM, Raj R, Priyanka CA. Anxious medico with nicotine patch: a case report. Int J Basic Clin Pharmacol 2019;8:1700-2.