



Case report

Kratom use for depression/anxiety self-management: challenges during the COVID-19 pandemic – A case report

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ABSTRACT

Background: Kratom is a psychoactive plant preparation originating from Southeast Asia. It has been used as a recreational and performance drug in Southeast Asia, and is now increasingly used in Europe and the U.S.

Case report: We describe the case of a 63-year-old man who presented for treatment after his long-term Kratom use failed as a self-management for persistent major depression (ICD 10: F33.2) and a generalized anxiety disorder (ICD-10: F41.1). The failure coincided with emerging stress at the beginning of the COVID-19 pandemic. The patient suffered from childhood on from ruminative thinking and depressive mood, which was treated in several settings during his life. He started to use alcohol to control his depression, but developed an alcohol addiction. This was successfully treated and the patient remained abstinent for more than 25 years afterwards. About 7 years ago, he started to use Kratom 3–4 times daily on a regular, but constant rate. Kratom use worked efficiently as a self-management of his depression with no escalation of dosing. It was also very effective in reducing Morbus Menière symptoms of tinnitus and sudden hearing loss, which eventually allowed regular performance as a caregiver in a demanding job on shift-work. During recently increased stress load in the work environment and the COVID-19 pandemic, the established Kratom doses failed to control hyperarousal and mental nervousness. The patient was treatment seeking and subsequently detoxified from Kratom. Anxiety- and depression management was shifted to treatment attempts with Lorazepam, Venlafaxine, Opipramol, Mirtazapine and psychotherapy.

Conclusion: Kratom instrumentalization for self-management of depression and anxiety may effectively work without causing escalation of drug use and addiction, but may be limited by a temporary increase in psychological stress load and a relapse into major depression and generalized anxiety disorder.

1. Introduction

Depression is a major psychiatric disorder. Depressive symptoms may emerge spontaneously already at a young age and are often sensitive to chronic and acute stress load of an individual (Caspi et al., 2003; Huston et al., 2016; Kalinichenko et al., 2019). Many people with major depression and generalized anxiety disorder develop coping strategies to self-control symptoms and assure independent living and job engagement (Houle et al., 2013; Stelzer et al., 2019). Self-management strategies may also include the use of nutritional and pharmacological means (Sacharczuk et al., 2009; Schneider et al., 2017). Thereby, psychoactive substances are consumed on demand to deal with depressive mood, hyper-arousal, or loss of motivation (Gruber et al., 1997). This kind of drug consumption was classified as drug instrumentalization and is

distinct from drug consumption for primarily hedonistic motives (Müller and Schumann, 2011a, 2011b; Ahmed et al., 2020; Müller, 2020). Nevertheless, also successful and long-term controlled drug instrumentalization may lead to drug addiction that requires treatment (Müller et al., 2020).

Kratom is a herbal preparation from the *Mitragyna speciosa* Korth plant native in Southeast Asia. Kratom is considered a natural product, which is widely used in this region. Several instrumentalization goals served by Kratom have been documented (Hassan et al., 2013, 2017). Those include stress coping, enhanced work performance, and better socializing (Singh et al., 2019a). Mitragynine is the main psychoactive alkaloid in Kratom, which has only weak euphoric and reinforcing effects in the dose range humans voluntarily consume (Singh et al., 2019b). Even regular Kratom use did not appear to produce significant

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neurological or psychiatric side effects. In addition, there is little evidence for addiction development in regular users who instrumentalize Kratom (Singh et al., 2015, 2018a, 2018b; Leong Bin Abdullah et al., 2019). Numerous preclinical studies in rodent models, however, have shown that mitragynine at higher doses has an addiction potential and may impair cognitive performance (Yusoff et al., 2016; Ismail et al., 2017; Hassan et al., 2019; Singh et al., 2019c). On the other hand, mitragynine may also be used to manage opiate addiction (Hemby et al., 2019; Saref et al., 2019; Hassan et al., 2020). Here we present the case of a treatment-seeking patient with a major depression and generalized anxiety disorder who reported chronic Kratom use and analyzed his instrumentalization pattern in relation to depression and anxiety self-management.

2. Case report

Written informed consent was obtained from the patient for publication of this case report. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

2.1. Patient description

The patient was a 63 year old male German (height: 1.81 m, weight: 80 kg) who was suffering from major depression (ICD-10: F33.2) and generalized anxiety disorder (ICD-10: F41.1) with suicidal ideation. Anxiety increased after well-established and maintained Kratom use all of a sudden failed to yield its acute antidepressant effects, which left the patient without any self-control of the highly aversive condition. The primary goal was to treat his anxiety and depression, and rule out a Kratom addiction. He was single and living on his own for 10 years, which caused increasingly stress, in particular since the COVID-19 pandemic has commenced five months ago.

2.2. Case history

The patient had a 10-year school education and, thereafter, successfully completed a job training as curative educator. He worked in this job as a caregiver in a dormitory for mentally disabled adults in a partially reduced shift-system (no nightshift; 21 h/week). He reported depressive thoughts and being a generally pessimistic personality since his childhood. Major depression manifested at an age of ca. 33 years. The depressive disorder was treated several times as inpatient and outpatient in psychiatric rehabilitation. The patient has received antidepressant pharmacotherapy, but with limited therapeutic success. At an age of 48, Morbus Menière was diagnosed in the patient, which presented with vertigo, tinnitus, and sudden hearing loss at times with high stress load and low social support. This also led to acknowledgement of partial disability and reduced weekly working hours. The patient had a myocardial infarct at an age of 54 and a diagnosed hypertonia.

2.2.1. Drug history

At the age of ca 18 years, he started alcohol consumption, which provided relieve from depressive symptoms and served as a first pharmacological self-control of depressive symptoms. Those included mainly sleeping disorder with intensive hyperarousal, intense rumination, and negative thoughts. Continued alcohol consumption resulted in an alcohol use disorder (AUD). After 20 years of alcohol use and AUD, the patient submitted to clinical detoxification. He reported to be sober thereafter for ca. 25 years. After alcohol consumption was abandoned, he managed his sleeping-problems in context of major depression with occasional and on-demand medication with 1 mg Lorazepam (every 1–2 weeks) for the last 2 years. The patient used nicotine for 51 years, recently on an increasingly high rate (plus ca. 20–40% during COVID-19 pandemic, e-cigarette smoking for 5 years).

2.2.2. Kratom instrumentalization

About seven years ago, he searched for natural products for depression self-management and learned about Kratom herbal preparations from the plant *Mitragyna speciosa* Korth from internet forums. A close friend who uses it in a non-addictive way for pain self-management provided further information on drug status, availability, and effects. Noticing the low side-effect profile, he started Kratom use on a daily base. An ordinary Kratom dosing regimen started early in the morning with a teaspoon of Kratom powder (ca. 3.8 g) which was ingested orally. This was repeated 2–3 more times over the day. Antidepressive drug effects emerged usually after only a few minutes and lasted ca. 4–8 h. The main effect of Kratom was to calm down hyperarousal, to stop rumination, reduce anxiety of the job, and to enhance sociability. Together with the suppression of depressive mood, also a small euphoria was reported. All these effects allowed him to pursue his job on regular base. With the exception of skin abnormalities (small reddish pimples), the patient did not report major side effects of the consumption. Interestingly, Kratom effectively reduced also vertigo attacks, tinnitus, and sudden hearing loss. After initiating Kratom consumption, no more episodes of tinnitus and sudden hearing loss were reported. At the late stage of consumption, Kratom acquisition required a financial effort of ca. 200 €/month.

Altogether, the patient perceived his Kratom consumption as a highly functional self-management of his major depression, generalized anxiety disorder and of Morbus Menière symptoms. The co-consumption of nicotine did not contribute to anti-depressive effects, but helped to control mental alertness and bring himself up to the demands of his job. The patient did not present physical dependence and withdrawal symptoms, however, a functional dependence on Kratom was observed.

2.3. Current condition/acute crisis

The patient presented himself for treatment in the hospital during an acute crisis characterized by massive increase of anxiety with hyperarousal, extreme nervousness, hypermobility, intense rumination and suicidal ideation. Preceding the crisis were several events: There was a long-term increase of stress load at the work place coinciding with COVID-19 pandemic, which the patient perceived as mobbing, and for which no social compensation was available. Furthermore, there was a general increase of stress load in private life due to direct COVID-19 pandemic restrictions. One day before crisis emerged, the patient woke up early with usual hyperarousal and pressing negative thinking, which prevented him from further sleeping. Ingesting the first Kratom dose of the day, however, did not provide any relieve. Then he decided to take a second dose of Kratom after only 2 h, which had a short effect before depression reoccurred. This led to a third and fourth dose run after 2–3 h, respectively. As none of the Kratom doses provided the desired relief, he took a dose of Lorazepam (1 mg), which finally calmed him down and allowed for some sleep. On the next morning, he woke again up with intense hyperarousal, and started his Kratom dosing routine with the high frequency and increased amount consumption. As this dosing again failed his expectations, and hyperarousal, hyperlocomotion, and hyperrumination intensified up to suicidal thoughts and preparatory action. He developed an intense anxiety, that, now that the well-established Kratom routine had failed, he would lose all control over self-management of his depression. He informed his friend asking for help and emergency psychiatric treatment.

2.3.1. Clinical chemistry

A urine test 2 days after admission was positive for Lorazepam and Kratom alkaloids, which confirmed the patient's self-report. It was negative for any other routinely assessed psychoactive drugs and alcohol. Clinical chemistry of blood did not show major abnormalities.

2.4. Treatment plan and outcomes

Kratom was completely abandoned. The patient was first treated with Lorazepam (up to 2 mg per day), which significantly reduced

hyperarousal and anxiety. Already two days after treatment and psychotherapy with social confirmation anxiety and depressive symptoms were markedly reduced and allowed for regular sleeping. Tapering off the fixed dose of lorazepam turned out to be very difficult for fear of increasing anxiety and had to take place over several weeks. The necessity of antidepressant medication was discussed several times when the course was difficult and protracted, and the patient found it difficult to get involved with it. Finally, an antidepressant therapy with mirtazapine was started, especially with regard to the existing unrest in the evening with sleep disorders and dosed up to 45 mg over the course of the day. Drive remained reduced and, especially in the morning, recurrent panic attacks, severe restlessness and hopelessness were evident. The patient was very ambivalent, especially because he had suffered from stressful side effects of antidepressant therapy in the past. However, after the depressive symptoms continued to worsen and participation in therapies became increasingly difficult because of the fears, a therapy attempt with venlafaxine could begin. Even at 37.5 mg, the patient noticed an increase in fear that he could not tolerate. In order to offer an alternative approach, an augmentation with aripiprazole 5 mg was finally initiated, but there was no improvement. The patient wanted to switch to opipramol, which was initially well tolerated and increased to 150 mg per day. In the course of time, he reported other side effects, such as the feeling of “being locked up inside” and “being restricted in thinking”. Thereafter, the dose was reduced again to 100 mg per day. As an additional sleep-inducing medication, we initially used Melperon 25–50 mg, which had no effect. Ultimately, the patient benefited from quetiapine 25–50 mg, which made him calmer and did not cause any drowsiness without an additional intake of lorazepam. At the time of discharge from the ward, the patient reported that he had started regular Kratom consumption again about 2–3 weeks ago.

3. Discussion

Here we present a patient who developed a functional dependence on Kratom in order to successfully manage his major depression and generalized anxiety disorder. Physical dependence and withdrawal symptoms, however, were not observed. Several preclinical and clinical observations had indicated a potential therapeutic use of Kratom for the treatment of depression and anxiety disorders (Swogger and Walsh, 2018; Johnson et al., 2020). A functional dependence on Kratom emerged in the present case only after chronic well-controlled Kratom consumption failed to yield its effects. The failure was perceived as a sudden loss of self-control and culminated in intense anxiety with vegetative symptoms that needed treatment. In this case, Kratom was not consumed for any hedonistic purpose, but rather for drug instrumentalization. This is defined as a drug use to achieve a drug-independent goal, which would not or only with much more effort be achievable without the drug. The self-control of psychological or psychiatric problems is one of the major instrumentalization goals for which neurobiological mechanisms started to emerge (Ahmed et al., 2020; Müller, 2020). In that respect, the current case provides an example for regular Kratom instrumentalization also in other cultures than those, which have cultivated this drug for hundreds of years and established a well-known instrumentalization range (Singh et al., 2019a). However, it should be noted that drug instrumentalization cannot be observed directly, but has to be concluded from consumption patterns and reported benefits for other, non-addiction related behaviors. Drug instrumentalization can be assumed for many psychoactive drugs when used in a non-addictive way. Importantly, certain benefits of the drug may still apply even after a drug instrumentalization progressed to a drug use disorder (Müller, 2020; Müller et al., 2021).

It is important to note that also in the present case, there was little evidence for physical addiction, withdrawal symptoms and major side effects, as recently reported in Kratom users from Malaysia (Singh et al., 2014, 2019b). Noteworthy may be the observation of self-management of Morbus Menière symptoms with Kratom. This may warrant further

studies on a potential medical application of Kratom. Several studies provided evidence for a successful, i.e. little problematic instrumentalization of Kratom for pain self-treatment in the U.S. (Grundmann, 2017; Garcia-Romeu et al., 2020) and in a randomized, placebo-controlled study in Malaysia (Vicknasingam et al., 2020). A case of Kratom use for controlling COVID-19 related symptoms and pain was recently reported (Metastasio et al., 2020).

An important question that arises from the current case is the potential sudden loss of efficacy of Kratom in self-management of major depression and generalized anxiety disorder. The loss of functionality may have its origin in non-pharmacological factors (Ahmed et al., 2020) as well as in non-Kratom related pharmacological factors (Müller et al., 2020). The patient reported a massive increase in stress level short before long-term effective Kratom started to fail. Stress is well known to aggravate depression and anxiety and to cause relapse. As such, the current stress level at work and environmental stress caused by the COVID-19 situation may have overwritten Kratom effects. In parallel, the patient reported a strong increase of his nicotine consumption to help coping with the stress. This may have also interacted with acute Kratom effects and limited Kratom's beneficial effects.

While the self-management of depression is generally an acquired and positive behavior, it may bear another risk when it involves psychoactive substances, may they be prescriptive drugs or folk medicine based preparations (Hassan et al., 2013). A particular risk of any Kratom instrumentalization is the establishment of a Kratom addiction and emerging cognitive deficits, as it was shown for Kratom and its main psychoactive alkaloids (Yusoff et al., 2016; Ismail et al., 2017; Hassan et al., 2019; Swogger and Walsh, 2018). Other case studies have also brought up cases of problematic Kratom use in Europe and the U.S., in particular in the self-management of severe pain (Müller et al., 2020; Metastasio et al., 2020) or in the context of opiate (Boyer et al., 2007; Singh et al., 2020) or alcohol self-withdrawal (Havemann-Reinecke, 2011).

During Kratom use, the patient reported also a stronger desire for nicotine. It was previously reported that Kratom might enhance the desire to smoke nicotine (Müller et al., 2020). Stress experienced in the COVID-19 pandemic may contribute to enhanced consumption of other psychoactive drugs (Metastasio et al., 2020).

Altogether, the present report may add evidence for long-term instrumentalization of Kratom for self-management of major depression and general anxiety disorder and Morbus Menière. It also evidences the boundaries of drug instrumentalization when environmental conditions change, such as during increased psychological stress in the COVID-19 pandemic.

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Author contribution statement

All authors listed have significantly contributed to the investigation, development and writing of this article.

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The authors declare no conflict of interest.

Additional information

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