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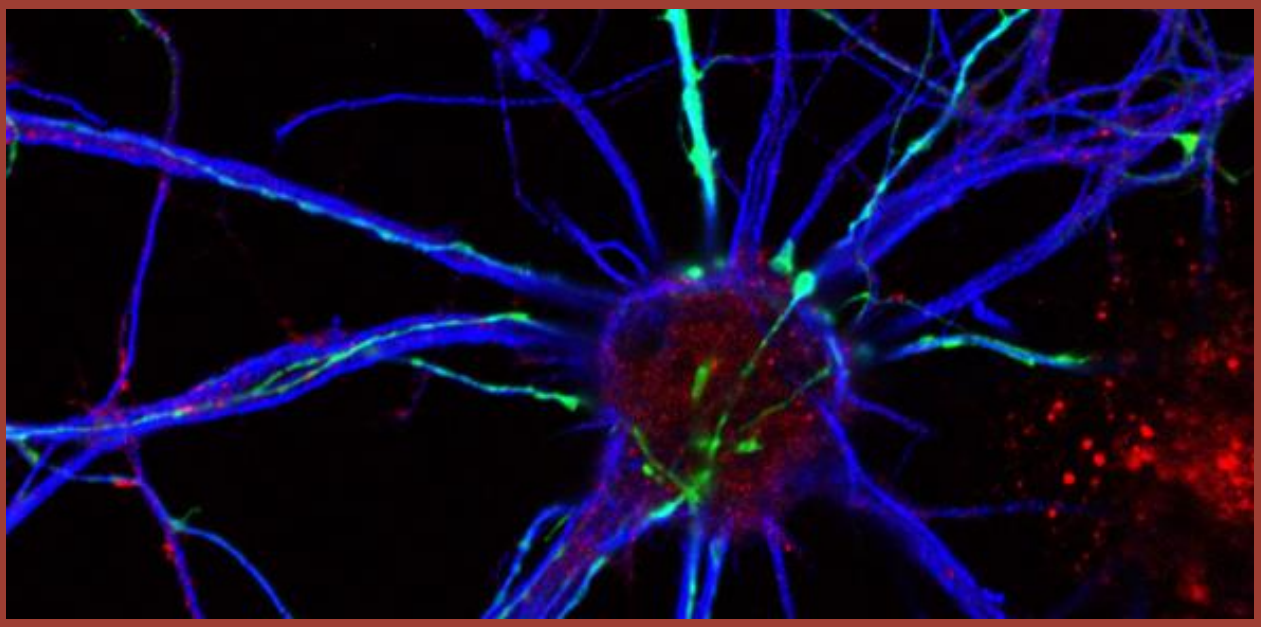

- A Critical Review Investigating whether there are similarities in EEG band waves between Schizophrenic patients and participants given DMT or Ayahuasca Tea
- A Ketamine-Induced Episode of Insight: A Case Report
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- Ketamine-Hypnosis Package (KHP): A Clinical Case Study for the treatment of depression and addiction administering Ketamine with Hypnotherapy.

Ketamine-Hypnosis Package (KHP): A Clinical Case Study for the treatment of depression and addiction administering Ketamine with Hypnotherapy

Sophie-Charlotte Adler, M.Sc., Mario Schieb, MD

Background. There are few studies on ketamine and its properties to work with addiction (alcohol, opioid, cannabis, and cocaine use disorder). The studies show that ketamine treatment can help reduce craving and support abstinence [14]. Hypnotherapy is an evidence-based treatment gaining popularity for treating addiction, but not everybody can be hypnotized due to different levels of suggestibility. Our clinical practice has observed that people who are not highly hypnotizable, such as patients with obsessive-compulsive disorders, become more suggestible accompanied by our newly developed method called "Ketamine-Hypnosis package" (KHP). In this case report and study, we want to explore and evaluate the potential of KHP in working with addiction. Diagnostic and a qualitative content analysis should give profound insights into the treatment process and method.

Case Report. The subject is a 48-year-old male German Social Worker with treatment-resistant depression, suicidal thoughts, obsessive behavior, and several forms of addiction. The patient received a 10-day treatment at Instituto Dr. Scheib, with Diagnostic, rTMS, neurofeedback, and four sessions of KHP. Every Ketamine infusion remained with a standard dose of 0.5 mg/kg *R*-Ketamine for about 45 minutes.

Results. Primary outcome measures included change in depression as measured by the BDI-II with a reduction from 44, highly depressed, to a score of 3, no depression, and change of symptoms measured by the SCL-90 R that showed a clear reduction in almost every factor vs. baseline. The qualitative content analysis of the KHP sessions identified nine categories; Setting, Intervention, Body, Control, Feelings, Insights/Realizations, Addiction, Depression and Imagery. QEEG measurements before and after treatment showed a pattern of over-representation of slow brain activity with closed eyes, which can be observed in fluctuating concentration and volatile impulse control. Follow-Up Data with BDI-II one week after treatment showed factor 3 and 5 weeks after treatment factor 15.

Conclusions. The 10-day-treatment program improved numerous important treatment outcomes in one substance-dependent adult engaged in hypnotherapeutic modification, including promoting less substance abuse, diminishing craving, and reducing the risk of relapse. Further research is needed to replicate these promising results in a larger sample.

INTRODUCTION

There is much research related to psychedelic substances and their ability to treat alcoholism and addiction [1]. Almost every psychedelic was studied for treating substance abuse: LSD, Ayahuasca, Peyote, Ibogaine, and Psilocybin [2]. These treatments involving mind-altering substances show promising results in reducing cravings and withdrawal syndromes [3, 4, 5, 6]. As Ketamine (off-label usage) is the only legally available psychedelic medicine at the moment [7], we can hereby gain important information for the therapeutic work with psychedelics in an emerging field.

The study "Ketamine reduces alcohol consumption in hazardous drinkers by interfering with the reconsolidation of drinking memories: preliminary findings [8]" shows a new way of treating alcohol addiction with ketamine as the scientists cue-alcohol memories and used ketamine as a blockade for reconsolidation of memories. Blood concentrations of ketamine and its metabolites during the critical 'reconsolidation window' predicted beneficial changes only following MRM reactivation. Results show that this treatment reduced

hedonic and motivational properties in the participants' drinking behavior (N=90) [8].

The side effects of ketamine that have been discovered since 1970 include hallucinations, psychotic experiences, changes in sensory perception, and body image. Often people feel detached from their body and surroundings [9]. Perception of time and space changes completely. Many people describe the experience of ketamine as weird, fascinating, scary, strange, frightening, disorienting, and very different from anything they have experienced before. The effects of ketamine are strongly dependent on the dosage. Krupitsky developed the KPP, a ketamine-treatment for alcohol and heroin dependence, almost 30 years ago and demonstrated very effective outcomes [10].

One can observe that more and more therapists in the world are beginning to work therapeutically with ketamine [11]. For example, in the USA, there are no common or ethical rules related to this work.

We combine ketamine infusions (0.5 mg/kg) with hypnotherapeutic guidance, influenced by a psychoanalytic and Ericksonian approach, to work with the material coming up during a ketamine infusion. The study *Ketamine as a possible moderator of hypnotizability: a feasibility study* [12] shows promising results for ketamine as an augmenting agent for hypnotizability and supports our predictions for this case study. This study shows that on the day ketamine was administered to the participants (N=11), they were significantly more able to be hypnotized as measured with the Clinician-Administered Dissociative Scale (CADSS) [12].

We wanted to explore our Ketamine-Hypnosis Package (KHP) as a new treatment for reducing addiction. The "Alcoholic Anonymous" fellowship dedicated to the 12-step program is still one of the lowest costs and most successful programs. Here the primary goals are sobriety and abstinence [13]. Our goal was not to reach as Ms. Adler has been guiding the ketamine journeys for almost three years, she has gained significant experience, and we decided to try working with addiction as a pilot project for interlacing clinical work and science at Instituto Dr. Scheib.

CASE CONTEXT

The Clinic

The Instituto Dr. Schieb is an international therapy and training center specialized in mental and psychosomatic illnesses, with its headquarters in Palma de Mallorca at Clinica Luz and in Berlin. We are an international, multi-professional team of specialists in psychiatry, psychosomatic medicine, psychotherapy, psychologists, and therapists. At the Clinica Luz in Palma, we treat patients with burnout, depression, anxiety disorders, OCD, addictions, and eating disorders in particular. Our therapy concept consists of intensive individual psychotherapy, hypnotherapy, relaxation, individualized sports therapy, as well as modern neuromodulation and training procedures, supplemented by advanced pharmacotherapy, if necessary. Due to the intensity and multimodality of the therapeutic approaches, we have an average treatment time of only two to a maximum of three weeks. Patients can be accommodated in our spacious single rooms and suites at the clinic, as well as in a hotel opposite the hospital.

Ketamine-Hypnosis Package (KHP)

We have a comfortable, safe setting for our ketamine infusions. Our Institute is located inside "Clinica Luz," which secures clinical safety and the presence of physicians at all times. The lounge stands underneath a window giving a wonderful view into nature. There are pillows and blankets provided for a

cozy feeling. Indirect light compliments the setting.

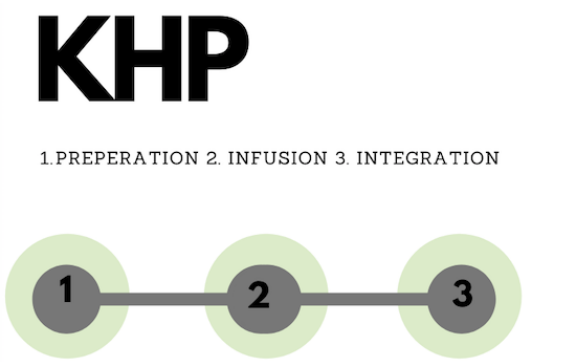

Figure 1

Our KHP creates a therapeutic experience around the ketamine infusion. KHP includes psychological preparation, hypnotherapeutic guidance during the ketamine-journey, and an integration session after the experience. The effectiveness of KHP is likely to be caused by different factors, which will be examined in the following.

Indirect hypnosis is a subtle, respectful method utilizing metaphors, stories, body language, and a feeling of relaxation and safety to improve treatment effectiveness. Direct hypnosis would explicitly order a person to enter the trance state, which could be comparable to the ketamine effect. The mind-altering substance Ketamine changes everyday consciousness and brings one into a dream-like state comparable to a trance state [10]. We can see that depending on dose and set, these internal journeys have a large variety and can lead to significant shifts in overall well-being.

In our combination of hypnotic therapy during the ketamine infusion, we form a contract with the patient to support their goals and secure their safety. With KHP, patients can explore their minds in a new way; open up more easily as defense mechanisms are relaxed - memories, feelings, old patterns and beliefs, history, trauma, anxieties, and sadness can appear vividly and intensely. Also, the beauty of life, lightness, wonder, and a feeling of ego loss can be experienced in this space. With hypno-therapeutic guidance, ketamine can be understood as an effective medical tool to help patients overcoming dysfunctional thoughts, beliefs, and emotions. So, the mindset and body set can be experienced in a new frame of reference. Some describe it as a reset. In our clinic, the patient receives ketamine intravenously and will be on a ketamine journey for about 50 minutes. Every session is different; patients never know what will happen on the journey into the unknown. So, this needs a lot of trust, safety, and therapeutic background. Depending on the effect, the patient may require repeated administrations over their treatment.

Repetitive Transcranial Magnetic Stimulation (rTMS)

With this procedure, strong magnetic impulses are given to certain parts of the brain. This enables the activity of these areas to be activated or reduced. This procedure is particularly effective for depressive disorders, sleep disorders, post-traumatic stress disorders, obsessive-compulsive disorders, addiction disorders, eating disorders, and after brain damage. The procedure is largely free of side effects and is increasingly used in large clinics to treat depression. The latest generation of devices is used, enabling even more precise localization of the stimulation area by synchronous measurement of physiological parameters.

Brain Mapping and Neurofeedback

The electrical waves derived from the brain provide information on the function and cooperation of some regions of the brain (EEG). Brain mapping shows brain activity in the form of a "map" of the brain, from which conclusions can be drawn about certain disorders. Many of these disorders

can be treated through neurofeedback. The EEG signals are correlated with an animation on a screen. The patient learns to reduce or increase the activity of certain areas of the brain. This procedure is ideal for treating ADHD and convulsions, and for anxiety, depression, sleep, and concentration disorders.

Heart Rate Variability

The heart rate variability shows the influence of the vagus nerve on the control of the heart. It is significantly reduced in depression. Our patient shows an increased stress index in HRV; the other parameters are mainly within the normal range.

The patient got all treatments for free in our private clinic as he confirmed to be a study patient. We were also allowed to record and film the whole treatment for the purpose of this study. Furthermore, he signed a letter of acceptance for publishing the video records. On this base, our sources of data are case notes, audio- and videotaped sessions, patient self-report measures (BDI-II, SCL), patient notes, therapist notes, and reflections, as well as qEEG screenings at the beginning and the end of treatment.

CASE REPORT

The patient is a 48-year-old educator who has completed various training courses in order to be able to work with young people who have a tendency to resort to violence. He has been on sick leave for 18 months. He sought evaluation due to depression, in which he had treated himself with the aid of various substances.

Even in his primary school days, he was probably depressed and had no desire for life. He also had suicidal thoughts with concrete ideas for implementation but would finally decide against it, as he had a 12-year-old daughter and his knowledge about the dramatic emotional consequences it can have when relatives commit suicide.

At the age of 13, he drank his first beer, and then he tried out just about everything in material and non-material, legal and illegal addictive substances: THC, codeine, cocaine, amphetamines, and psilocybin. However, he kept changing substances, which is probably why he never really became addicted. He had also engaged in extreme sports and had finally run away from depression.

In 2013 and 2014 he failed at a project in his profession and suffered burnout. He was no longer able to cope with the world and compensated with drugs. Depression was diagnosed for the first time in his life during this period.

After his burnout, he had not taken any drugs for six weeks, and he was getting worse and worse. He had turned to a psychiatric-psychosomatic acute consultation to get help for his depression. They refused to offer him treatment because he first would have had to undergo detoxification.

A drug counseling center then placed him in a six-month long-term therapy program within a clinical setting. There he had one on one 30-minute individual therapy every two weeks. Additionally, he attended numerous group sessions, almost exclusively addressing alcohol addiction, which did not feel beneficial to him. He felt as if he was under a glass bell and restricted in his independence. After two months, he was discharged with the consent of the clinic. His depression persisted.

After another excessive demand in his job, he was put on sick leave again. After a year, he repeatedly sought admission to a clinic, where he reported he sometimes smoked cannabis to get to sleep. Because of this self-disclosure, he was refused admission. The clinic's preconditions re-

quired him to stay clean for at least six months before being admitted.

In the meantime, his health insurance company had referred him to a day clinic, the same clinic he visited to treat his addiction - but this time, he was directed to a different ward. There he managed to get involved in the groups caused in some part by the proximity of the groups to his former department. However, after this six-week clinic stay, he had a complete breakdown.

He was prescribed various antidepressants, e.g., doxepin, mirtazapine, and duloxetine, which increased his suicidal thoughts. Pregabalin reportedly helped him, but he had underestimated its addictive potential. He subsequently weaned himself of all medications.

CASE FORMULATION

The patient shows impressively how the differentiation between addiction therapy and psychotherapy or psychosomatic-psychiatric treatment prevented the patient from receiving adequate help in time. Most patients with harmful or dependent substance abuse, or addictive behavior, have an underlying psychiatric disease that must be treated in parallel to the addiction. In most cases, these are depressive disorders or anxiety disorders.

TREATMENT

Treatment Plan and Goals

Therapy is multimodal and uses psychotherapeutic, pharmacological, and technical procedures in the treatment.

After a detailed anamnesis and examination, a psychological examination is performed, and a quantitative EEG and measurement of heart rate variability are obtained.

The quantitative EEG shows which areas of the cerebral cortex are active at which wavelength. This can provide important information for the neurofeedback training program. Our patient shows increased alpha activity in the frontal brain area, particularly in depression with brooding compulsion and difficulty falling asleep.

The heart rate variability shows the influence of the vagus nerve on the control of the heart. It is significantly reduced in depression. Our patient showed an increased stress index in HRV; the other parameters are largely within the normal range.

The following is the course of the first week of therapy for the patient at the clinic.

Week plan		
Day	Time	Treatment
22.02.2020	18:00-19:00	First assessment with Dr. Mario Scheib
24.02.2020	11:00-12:00	Diagnostic
	12:00-13:00	rTMS
	14:00-15:00	Anamnesis interview
	15:00-16:00	QEEG
	17:00-17:30	rTMS
	18:00-19:00	Planned Ketamine Infusion but not possible because of blood pressure
25.02.2020	11:00-11:30	rTMS
	14:00-15:00	Relaxation
	16:00-16:30	rTMS
	17:30-19:30	KHP: 1st Ketamine-Infusion
26.02.2020	11:00-11:30	rTMS
	12:00-12:45	KHP: Integration and preparation
	17:00-18:00	rTMS
	18:00-19:30	KHP: 2nd Ketamine-Infusion
27.02.2020	10:00-10:30	rTMS
	12:00-13:00	KHP: Integration
	13:00-13:30	Yoga / Meditation
	13:30-14:00	rTMS
	15:00-16:00	Neurofeedback
28.02.2020	10:30-11:00	rTMS
	14:00-14:50	KHP: preparation
	15:00-15:30	rTMS
	15:30-16:30	Neurofeedback
	18:00-19:00	KHP: 3. Infusion
02.03.2020	10:30-11:00	rTMS
	13:00-14:00	Neurofeedback
	14:00-14:30	rTMS
	14:30-16:00	KHP: preparation, 4. Infusion, Integration
03.03.2020	10:30-11:00	rTMS
	12:00-13:00	Final Integration and last therapy session with Mrs. Adler
	14:00	Neurofeedback
	16:00	2nd Diagnostic

Table 1

The aim is not primarily abstinence, but rather a higher self-efficacy and satisfaction of the patient, leading to a change in substance use and addictive behavior. It is, therefore, a matter of regaining autonomy. Autonomy in the sense of self-determination, not to be dominated by drugs but to make conscious decisions with a clear conscience, without having to criticize oneself, which would trigger a downward spiral in thoughts.

Regarding drugs, the following substances were identified due to their effect on the patient's mood. Table 2 summarizes the importance and the experienced effect of the drugs reported by the patient.

Alcohol -> main companion	Availability as a gap filler. Dangerous because of its availability, regularity, acceptance.
Amphetamine -> main companion	To stimulate, good effects. In lower doses rather calming.
Crystal	Concentration
Heroine	One can take a rest. Feeling good.
Codeine / Tramadol	Island. Don't have to think anything. Finally turn off your head.
Cannabis (THC)	To fall asleep. Shy of people. Prefers taking it alone.
Hallucinogens	Time Out and Joy

Table 2

Therapist and Relational Factors

Sophie-Charlotte Adler is a psychologist and trained hypnotherapist. In her masters thesis, she examined the potential of the mind-altering substance psilocybin considering its usage in modern psychotherapy in research and practice [1]. She is an active researcher in the field of the actual worldwide happening "psychedelic renaissance." Her research about "substance assisted therapy" and the interdisciplinary "drug-science" form the basis for her work today as a "Ketamine assisted Hypnotherapist." Since she completed her bachelor's degree at a psychoanalytic university, psychoanalysis forms the background of her work. After her studies in Germany and Austria, Sophie Adler discovered not psilocybin but another mind-altering substance, ketamine, is offered as a psychotherapeutic treatment in Mallorca, and she started working as a psychologist for Dr. Scheib.

Since June 2018, Sophie has been in charge of ketamine infusions at Instituto Dr. Scheib. Over time and with the support of her direct supervisor Dr. Scheib she developed her own method, the Ketamine Hypnosis Package (KHP). This package consists of preparing the ketamine journey, hypnotherapeutic support during the infusion, and subsequent integration. Relaxation, suggestions, and posthypnotic orders are used a lot. The three units of KHP can also be extended over several days, depending on the patient's treatment plan. Single hypnosis sessions between the KHP sessions support the long-term effects and enhance the therapy process.

One of the key elements of KHP is to work with the feelings of controlling and learning how to let go of control. The experience of letting go and feeling well simultaneously can bring profound changes. Hypnosis and Ketamine both have to do with a change of everyday consciousness. This is often frightening for people with control issues. The KHP has proven to be very advantageous for depression, anxiety, PTSD, and pain. In 2019, four patients suffering from treatment-resistant obsessive-compulsive disorders were successfully treated with the help of this program.

Due to her psychological and neuroscientific research on psilocybin, Ms. Adler is very familiar with numerous substances and their mechanisms. As a result, she could approach the patient's addictive experience with an open and value-free attitude. At the same time, her background enables her to provide a profound basis for discussion in the patient's process of finding a healthier relationship to drugs. In order to lead an addicted patient under ketamine, essential factors have to be clearly considered. It is important that the patient does not add the pleasant ketamine experience to

his collection as a new drug but clearly recognizes the treatment as a therapeutic method. For this reason, therapeutic guidance here has a novel role in comparison to common therapeutic methods. Especially the creation of the setting supports the professional treatment frame and should never be underestimated. The KHP approach considers the importance that the patient can feel safe and comfortable. To achieve this, the development of a sustainable relationship is the first priority.

In 2019 she attended the KRIYA Conference in California and was part of the first KRIYA Consultation Group, a ketamine-therapist group.

COURSE OF TREATMENT AND MONITORING

The patient arrived on the 21st of February 2020 in Mallorca. Saturday the 22nd, he had his first assessment with Dr. Mario Scheib.

On Monday the 24th of February, our clinic program started with Diagnostic and rTMS (1 HZ, right, 20 minutes). In repetitive transcranial magnetic stimulation, a pulsating magnetic field increases or decreases the activity of certain areas of the brain. This can be used to treat both depressive symptoms and the tendency to addictive behavior. We stimulate the dorsolateral prefrontal cortex on the right side with one hertz, then on the left side with 10 hertz.

Later he had his first interview with the psychologist and hypnotherapist Mrs. Adler summarized as follows. Even as a child, the patient experienced himself as thoughtful, sad, and felt the desire to live no longer necessary. “To have control” and “to be able to defend oneself” are very important for the patient. As a child, he was physically abused by his father. He had problems with hierarchies and power all his life; he does not take orders from anyone. The patient is continually struggling with his past and wants to put an end to his old story.

“There's hardly a situation that I don't associate with a substance.” At the beginning of the therapy, the patient states that he likes to live with drugs. His goal in dealing with substances is: “I want to control them and not be controlled by the drugs!”. He reports about early experiences of smoking cannabis, "it is not my thing, because I don't control the situation anymore, I don't like to give up control!”. Working with the topic of control is vital for the patient's therapy on many levels and will run through every session. Especially within ketamine-hypnosis the handling and working with control and substance in one psychotherapy session can be exceedingly multifaceted. The sensual perceptions are altered on various levels. The typical way of thinking and receiving is not comparable to the ketamine state. It is essential to understand that ketamine can be a catalyst for bringing up unconscious psychological material, presenting new psychotherapy opportunities.

The patient wished to be able to switch off his head and certain sorts of thoughts. A loud inner critic resided inside himself “that stands at the edge of the stage and comes over every now and then.” He describes this critical voice as *the* problem. “I can't get out – that's the problem. Thoughts spiral.” These thought patterns and a loud inner critic voice is prevalent in depression. One of the patient’s goals is “dealing with feelings.” It became clear that the patient uses substances to control and navigate his mood, feelings, thoughts and behavior. He has no real connection to his inner world anymore. Mind and body are not in touch. So, it becomes one goal to find back to what he lost one day – his inner safety.

The patient’s ambivalent situation becomes apparent through his political statement: “Drugs for work contradicts my political views! Destroying yourself for

capitalism…". This patient showed a strong resentment toward the state and capitalism. The drugs are ruining his life. During the therapy process, it became clear that the relationship to the drugs was not the same as he dreamed it to be. He found himself lost and inactive. He was very depressed and lost any sense of living a happy life.

That evening he should have received his first ketamine infusion, but his blood pressure was too high. He received medication to lower the blood pressure from Dr. Scheib.

Tuesday the 25th, he started with rTMS (twice daily for 20 min per session) in the morning and late afternoon for the entire duration of the treatment.

KHP

Then he had a preparation talk (50 min) for his first ketamine infusion, which took place at 6 pm. The first ketamine hypnosis session turned out to circled around the past of the patient. It looks as though the camera became a trigger for memories from challenging experiences in his former political activist days. This camera setting influenced the first session (and all the others) mainly because the patient struggled with being filmed. Feelings of rage, aggression, wonder, and memories of lost persons came to the surface. Under these circumstances, the creation of a genuine, safe setting becomes even more important. The patient described problems regarding sharing emotions and especially doing this with an unknown person. The camera led to feelings of fear and suspicion that the material could be used against him. The first session consisted of vivid arguments and discussing confusing thoughts. It became clear to the patient that the way he was being perceived from the outside is more important to him than he would like it to be.

Here the therapeutic relationship is particularly challenging when accompanying a patient struggling with letting go of control, substance abuse and fighting with enemies during a ketamine infusion. The mind-altering substance Ketamine changes the everyday consciousness and brings one into a dream-like state comparable to a trance state. A trustful relationship supports patients to open up more easily as defense mechanisms are relaxed, memories, feelings, old patterns and beliefs, history, trauma, anxieties, and sadness can appear vividly and intensely. Imagine the therapist who always keeps the thread to guide the patient safely and help them to walk through the opening doors. In doing so, the therapist always weaves the emerging insights into the client's beliefs and dysfunctional thinking. The neuroplasticity introduced through ketamine allows the creation of new ways of thinking, realizing, and feelings -experiencing another way of being for around 45 minutes.

This session was a lot about the inner resistance fight. With hypnotherapeutic support, the patient can overcome dys-functional thoughts, beliefs, and emotions. So, the mindset and body set can be experienced in a new frame of reference. All this allows him to let go of the past and create space for new perspectives.

These insights will be integrated and practiced in everyday consciousness during the next days and influence the following process. Wednesday the 26th in the morning, the patient had an integration session to talk about the ketamine journey. It became clear that in the past he only acted, fended off, "zoned out," dissociated, took a passive attitude towards life, and refused to live by tripping out. He was radicalized. He was ticked off from the very beginning and felt part of the rebellious attitude. However, in the end, this also made him unfree because a rebel always has an opponent whom he fights, on whom he stares and holds responsible for his own actions. Who is in control here? To whom one is subordinated

to, control is fought, and constantly observed and through this one, becomes a controller. The patient carries an image of the enemy within himself, which was projected onto the camera, for example. He rationalizes incredibly.

Infusion

The second ketamine hypnosis treatment began with a focus on the treatment setting and the patients' uncertainties regarding the outer world. By shifting the patient's awareness and anxieties from the external to his internal state through calming and stabilizing interventions, emotions and bodily sensations came into the patient's focus. Again, the therapist applied a reinforcing and reassuring intervention allowing the patient to feel secure enough to fantasize and to create the image of a secure cave corresponding to increased feelings of unity and security. The image could then be reflected on by the patient as a desire that he was previously unaware of: "I'm familiar with it when it's presented to other people, but I've never found or seen or had one for myself."

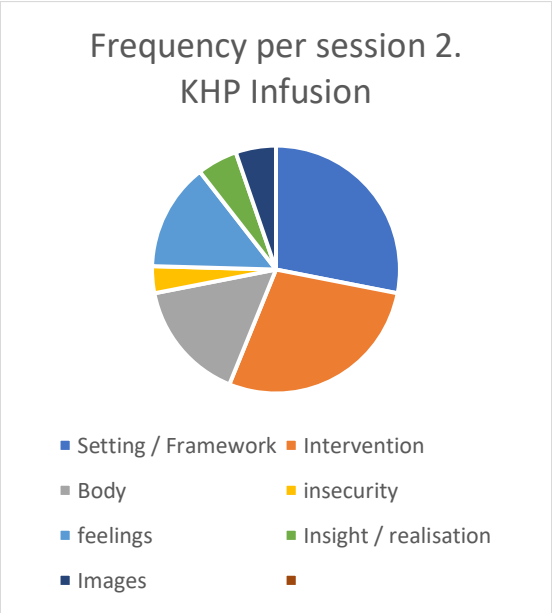

Table 3

KHP Integration Thursday the 27th

It could be speculated that the security established in the last session encouraged the patient to engage in further self-reflection. During the integration session, he noticed differences in his way of relating to himself and his compulsive and addictive behaviors, as well as noticing a decrease in ruminating thoughts: "without falling back into self-accusatory thinking."

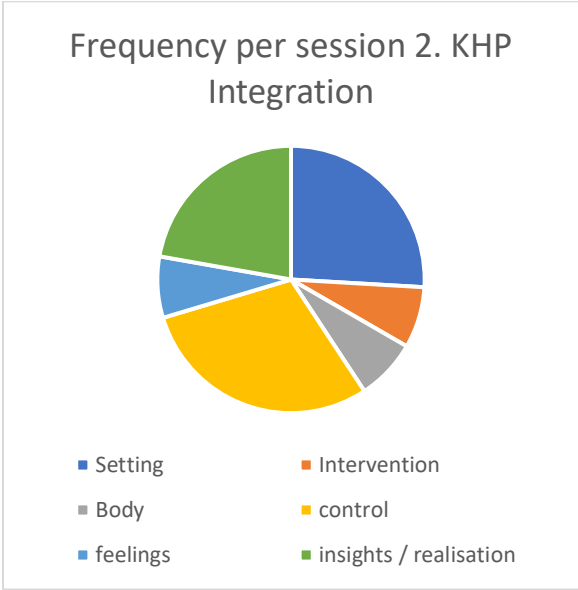

Table 4

Neurofeedback

In neurofeedback training, brain activity is linked to an animation. Through experiences of success, the brain learns to be more or less active in certain areas. This is called operant conditioning. In our patient, the increased alpha activity in the frontal brain was reduced, and the beta activity increased during training.

Yoga and Meditation

We complemented the treatment of the patient with an intervention combining meditation and the gentle practice of physical

yoga. It seemed apt to apply such an intervention since both meditation and physical yoga strengthen abilities that seemed particularly useful in this case.

Not only do these practices ease symptoms of stress and anxiety, which the patient was suffering from, but they are also especially powerful at strengthening the connection of mind and body and teaching the practitioner to be aware of his own physical state of being. Given that a feeling of disconnection between mind and body and a carelessness towards the body were recurring themes during therapy, the intervention was indicated, and it was received very well by the patient. In the following days, he reported a newly found sense of ease in times of little to no external stimulation - something the patient experienced as particularly stressful before the intervention.

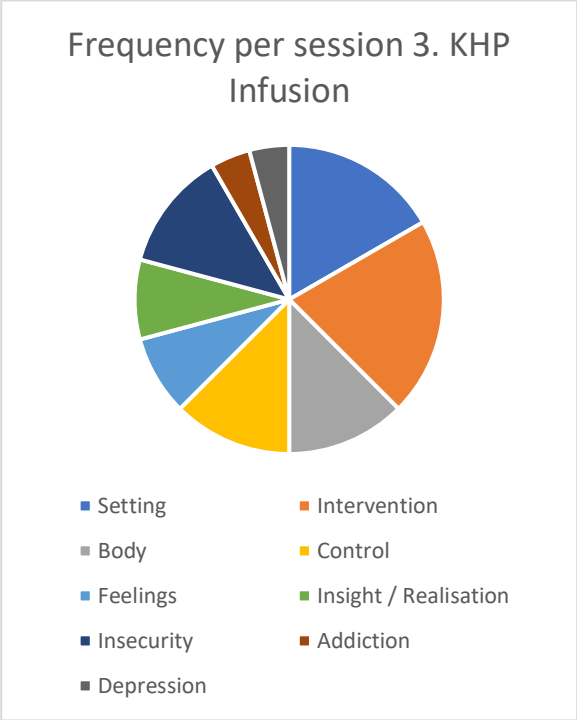

Table 5

KHP Preparation Friday the 28th

In this preparation session, plenty of time was devoted to establishing the patient's trust in the further progression of the treatment as well as to sketching out a plan for further treatment by discussing set and setting and addressing the patients insecurities in regard to his status as "research patient." The topic of a „simple life" that was established during the ketamine intervention was resumed, and it was reflected upon the "multi-problematic" nature of human beings.

KHP Infusion #3

The 3rd ketamine infusion dealt with various topics, perhaps hinting at the patient feeling more at ease during the intervention and, therefore, freer to let his mind wander. It was again commenced with a discussion of set and setting (a long discussion on whether or not to lie down during the infusion), followed by an episode focused on the bodily sensations. The patient's more open conduct led

Table 5

to him expressing a wish for music, which led to an emotional reaction. "sound triggers me incredibly." The patient was then able to reflect on his emotionally open and vulnerable state, expressing his wish to gain the therapist's approval: "really, what I am trying to do here is trying to convince you that my way of life is okay." This admission led to a focus on the therapeutic relationship and the patient's interest in the person of the therapist, as well as insight into some norm-oriented patterns of thought in the patient and that's why I can't get over that"

KHP Infusion #4 March 2nd

During the 4th infusion, strong bodily sensations overcame the patient. Feelings of pain related to current but also past injury and bodily trauma rose up and could, by careful intervention, be used to start a process of regression into childhood memories of vulnerability and feelings of inadequacy. Reflecting on his entire lifespan, the patient came to the conclusion that he disregarded his body

all his life, leading to the realization that he wants to pay more attention to his bodily needs in the future:" I can't ignore this (any longer), it's impossible."

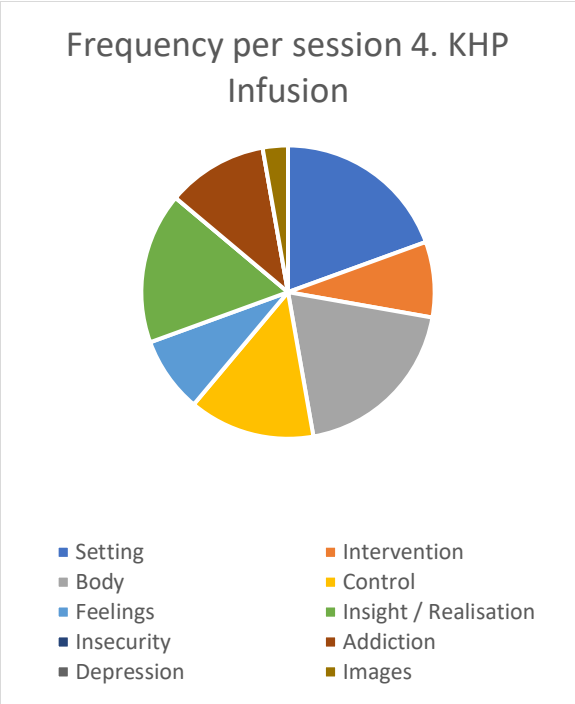

Table 6

KHP Final Session

The final discussion revolved around extensively, reflecting again on the impact of set and setting on treatment outcomes. The patient characterized the treatment as enabling him to access both his emotions and his sense of self-worth. He experienced a new will to tackle life, as opposed to the "hole of depression" that he felt trapped inside before. Reflections on the question of how to stabilize the experienced improvements in mood and motivation were followed by reflecting the key issues of the treatment: the patient's insecurities and the relationship between the patient and the therapist, while also acknowledging the patient's intuition that there are still multiple problems remaining. He then reiterated the insight gained during the final ketamine intervention, that urged him to pay more attention to his bodily needs.

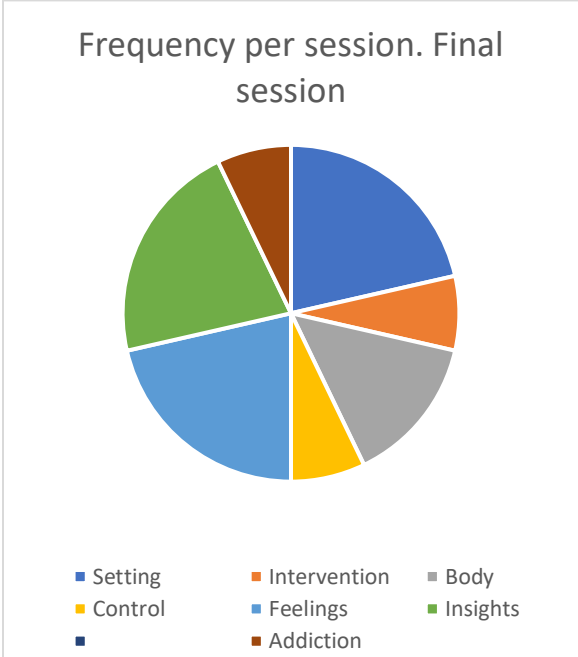

Table 7

In summary, the patient noticed a blatant difference concerning the time span before and after the 10-days treatment. "This change and rotation in 10 days is no comparison to previous therapies". How long these changes will persist must still be determined. The patient felt as if he was gaining access to himself again. "I will deal with my own history and the difference is that I want to do so!". The patient said that the effect comes from the combination of Ketamine and Hypnotherapy. "Ketamine alone does not work." The KHP opens doors, and the patient has to walk through. The patient recognizes self-worth as the linchpin and develops strategies to work with that in conjunction with the therapist. Acceptance gains more and more value. The patient's evaluation of his problems was changing. They were no longer all-encompassing. He felt more relaxed and more serene. A new quality of safety was experienced by the patient, who felt safer by himself now. The session ended with the patient stating: "If this is the key, I

find it disgusting not to make it available to a wider audience."

Treatment Outcome

In the following, the diagnostic results from before and after treatment are presented. The Beck Depression Inventory (BDI-II) is a self-report inventory with 21 multiple choice questions to measure the severity of depression. The data shows a reduction from 44, highly depressed, to a score of 3, no depression after 10 days of treatment compared to baseline.

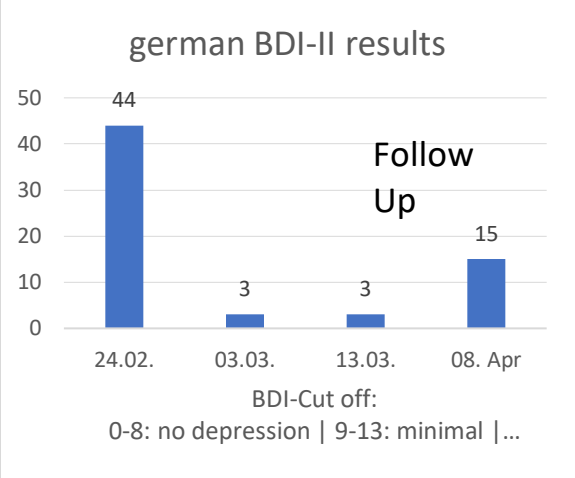

Figure 2

The "Symptom Checklist 90-R" (SCL-90-R) consists of 90 items and evaluates symptoms of psychopathology and a range of psychological problems through self-report. It is often used to measure the progress and outcome of treatments for research. As shown in Figure 3, the patient shows reductions in all symptoms except somatization. In the following, it can be seen how the symptom dimensions changed in the amount of reduction in numbers. The higher score ofsomatizations (from 5 to 8) might be explained by the back pain of the patient that occurred some days before the end of treatment. Obsessive-compulsive (from 24 to 3), interpersonal sensitivity (from 24 to 5), depression (from 41 to 2), anxiety (from 19 to 4), hostility (from 11 to 2), phobic anxiety (from 7 to 1), paranoid ideation (from 18 to 4), psychoticism (from 11 to 2), additional items (from 23 to 13).

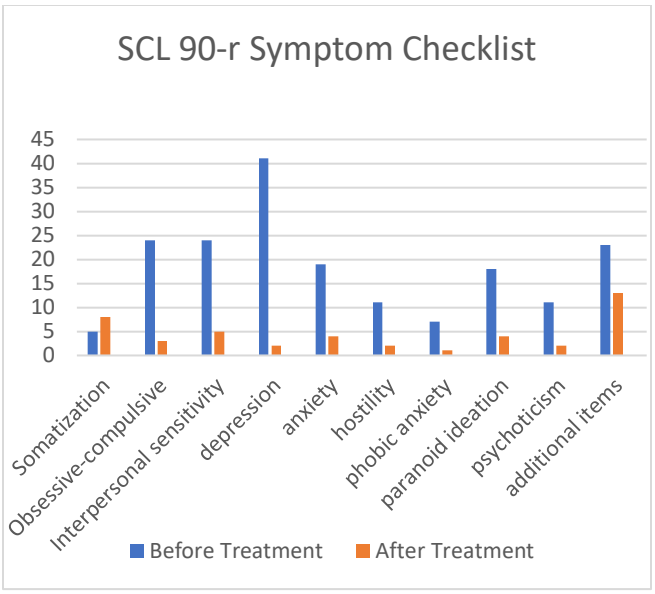

Figure 3

QUALITATIVE RESULTS

First EEG Measurement

There is a clear increase in the slow frequency range when the eyes are closed. This is particularly evident in the increased prominence of alpha activity (8-12 Hz) in the frontal region. With open eyes, the picture is largely inconspicuous. The present pattern of over-representation of slow brain activity with closed eyes can be seen in fluctuating concentration and volatile impulse control. It can be seen that there is a substantial slowdown due to too much alpha activity in the frontal area. This is often associated with compulsive brooding, thought circles, and depressive episodes. This pattern can also lead to agitating thoughts during relaxation and falling asleep and can be characterized by worry or self-doubt. It is difficult to stop the train of thought or direct it to other topics. This "thought carousel" can be caused by slowing down the frontal area and can be

improved by various mental exercises, such as neurofeedback.

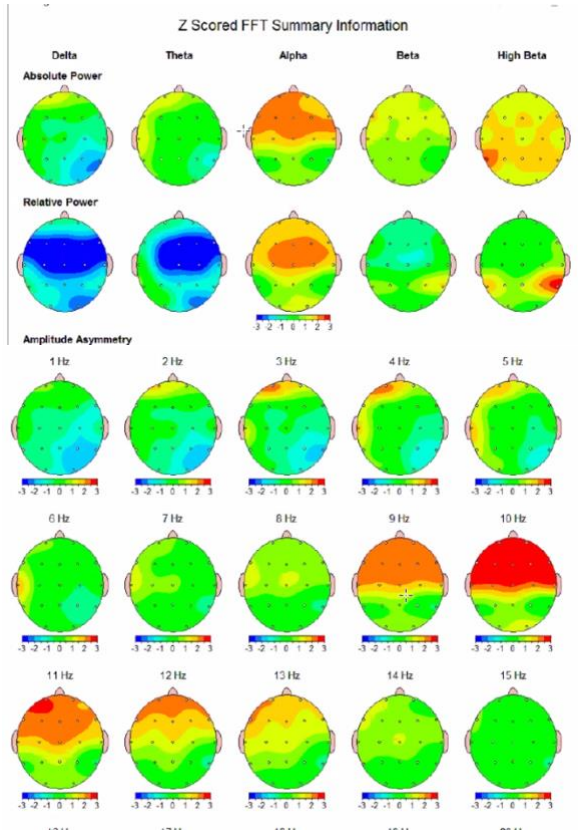

Figure 4

Second EEG Measurement

The second measurement did not show prominent differences from the first measurement. This could have different reasons. First, a qEEG measurement depends on the quality of the recording and the current condition of the patient. Therefore, the exact comparability is subject to interfering variables. Possibly our patient would have needed more training, or it was not trained properly.

Interpretation

By means of qualitative content analysis and an inductive approach, different categories could be developed, including all except the first KHP, the entire material and demonstrate both clear similarities and systematic differences between the KHP sessions. These are the categories we defined: Setting, Intervention, Body, Control, Feelings, Insights/Realization, Addiction, Depression, Imagery. The exact distribution can be seen in the graphs above. On the basis of the qualitative content analysis, it can be seen that the topics and the frequency of these vary with each session. It becomes clear that there are more topics per session. One could assume that the patient gains more confidence from session to session, can allow more, and thus becomes more honest.

The following table 8 illustrates the individual ketamine infusions with a normal dose and summarizes the topics from the sessions, which have been evaluated with qualitative content analysis.

KHP Summary

Date	Session number	Dose	Theme
25.02.2020	1	0.5	Anger, Political Past, Activism, Control, vicious, blame, fault, "Into the Lion Mouth", "Warrior"
26.02.2020	2	0.5	Inwards, Feelings, Trust, cave, safe place, Island, calming
28.02.2020	3	0.5	Music, Control, memories
02.03.2020	4	0.5	Body, Childhood memories, Drugs, Addiction, Control, letting go, happiness
10.03.2020	5	0.5	Addiction, Control, letting go, happiness

Table 8

Follow Up

Because of his exceptional progress within the 10-day study period, it was decided together with the patient to expand his stay by 10 more days to continue the neurofeedback training and the rTMS treatment. Furthermore, Eye Movement Desensitization and Reprocessing psychotherapy (EMDR) was conducted for five hours to consolidate the success and secure the safety of the patient. Especially traumatic experiences can be processed through EMDR. In this case, there were traumatic experiences in the patient's life, which promoted depression and drug abuse. Here, as in hypnosis, a lot of work was also done with the inner safe place.

Furthermore, new resources were installed to find new ways of regulation. By the end of the study, the patient felt he now had enough resources to cope with his life.

The patient filled out the BDI-II scale one month after treatment. Because of the "corona crisis," the situation to come back home, integrating and adjusting his therapeutic fruits into daily life was challenged highly. The score of the follow-up achieved was 15, which correlates to mild depression.

In addition to psychological testing, a follow up telephone interview was conducted to see how the patient was doing five weeks after completing the treatment. The patient came back from Mallorca to the big city and was confronted with the worldwide "Corona Crisis." Accordingly, the validation of the therapy process was a particular challenge. "Actually, the state prescribes depressive behavior. To stay at home, not to meet anyone, not to do anything big and not to be able to talk to anyone". It is precisely these circumstances that are a major risk factor for a relapse into uncontrolled consumption. The patient was stable, confident, and committed to helping people who cannot shop for themselves. The patient openly reported that he drank alcohol (up to 1 bottle of wine), but not every day. It, therefore, remains to be seen how things will develop in these extraordinary times. We keep on staying in contact with the patient.

DISCUSSION

The present case study explores the use of ketamine combined with hypnotherapy within a unique therapeutic framework. Results from the preserve report provide preliminary evidence that ketamine combined with hypnotherapeutic preparation, guidance and integration effectively reduces depression, suicidal thoughts, obsessive behavior connected with the theme of control and addiction in 10 days. In this patient KHP improved mood and behavior compared to previous treatments in the patient's life.

Ketamine administration without psychological guidance can be problematic. Depending on the set, setting, and dose, a ketamine infusion can be overwhelming, frightening, and patients can experience bad trips. Adding hypnotherapy as a framework and guidance has excellent potential to reduce psychological symptoms with more insights and a feeling of safety. Hypnotherapy helps the patient to relax, and posthypnotic suggestions support the desired changes.

However, the study was not randomized and was limited by several factors. By introducing innovative techniques, case studies can be crucial to the research process. Nevertheless, they have some disadvantages which should be discussed in the following. As a clinical case study, the data and results cannot be replicated and are only valid for this patient. Therefore, generalizability cannot be applied.

This presentation cannot lead to causal conclusions but might offer inspiration for new treatment models.

Due to the filming and documentation of everything, and the patient knowing that he was a research patient this case report might also confront the "Hawthorne-effect."

This study aimed to explore new ways in the treatment of addiction and depression and to evaluate the KHP method for the first time. The author wanted to give insights into the work as she developed the KHP method one and a half years ago. Researcher bias must be expected, especially in data interpretation. To reduce this bias somewhat, Ms. Adler worked closely with her intern, who transcribed, commented, and evaluated each session, and afterward a discussion about opinions and observations occurred. This was an attempt to evaluate the subjective perception of the researcher. The intern came precisely at the beginning of the

research project and finished the internship at the end of the study. So little personal bias is to be expected here. The case was also discussed and critically debated with colleagues in team meetings.

To enable objectivity, specific measurement techniques, quantitative diagnostics, and qualitative content analysis were selected as research methods. The BDI-II is a validated and reliable measuring instrument for monitoring depressive disorders, and it is well suited to follow the pace of therapy even with only one week in between.

Qualitative content analysis is time-consuming, and the formation of appropriate categories can be complex, considering the claim of objectivity. It is possible that other categories or frequencies might appear if other researchers would conduct a content analysis for the same case.

One significant advantage is the transcription of each session, which enables anyone at any time to track the patient's progression through treatment. With this report, researchers can examine how subjective effects in perception and motion change in relation to the ketamine state, considering the time before, during and after receiving ketamine IV through a standard dose (0.5 mg/kg).

It should be mentioned that additional addiction diagnostics to compare before and after were not conducted. However, access to the patient's previous addiction diagnostic results were available for review. Thinking prospectively, measuring abstinence rates after 3 and 6 months could bring interesting results. More data would be desirable here.

From an ethical point of view, it should be noted that the complete treatment was provided at no expense to a person who no longer wanted to live. The patient got out of his depression and regained motivation and confidence to lead his life.

However, one must critically examine what it means to give ketamine to a person with a substance use disorder. It is mostly advised against treating people with ketamine who have a history of drug abuse. It can be argued that ketamine in anesthesia is administered to numerous people with a drug history. It is also necessary to weigh the risks of leading an unhappy life up that could possibly culminate in suicide which could be mitigated against with a change of consciousness using therapeutic guidance in a unique framework. Additional research on how to reduce excessive drug consumption is needed.

Another point of discussion is the use of different methods. It is difficult to clearly differentiate which method is responsible for which treatment effect. Whether from rTMS, neurofeedback, the ketamine alone, the KHP or everything together. This would have to be divided experimentally and statistically in future studies.

IMPLICATIONS AND RECOMMENDATIONS

The Ketamine-Hypnosis Package is an innovative method. The goal of this case study was to give an example of how to work with ketamine combined with hypnotherapy to treat depression and addiction.

Implications for Clinical Practice and Theory

The study has shown what can be achieved through our treatment program within just 10 days. Depression, suicidality, compulsion, and addiction can be clearly reduced within a short time.

The patient wished to be able to live a normal life. Through the program, he more and more learned to accept himself with his own history. One notable aspect of ketamine treatment is that patients can observe and meet themselves. Under the influence of ketamine, they encounter themselves and

their consciousness in a new way. The client experienced himself through himself, outside of his habitual thinking. With the help of appropriate guidance, the patient was able to meet his inner self in a very short time compared to other treatment methods. Psychedelic substances can be door openers to the unconscious. For practitioners who would like to try this method, it is strongly recommended that they prepare themselves thoroughly beforehand so that they feel as comfortable as possible. Their demeanor has a significant influence on the sessions and experiences of the patient. One should never use ketamine or hypnosis without having completed appropriate training.

Furthermore, Ms. Sophie Adler has a psychoanalytic background. Sigmund Freud described the dream as "via regia into the unconscious" and thus founded psychoanalysis. Now the ketamine state is a dream-like state. One could draw an analogy here; the therapeutic accompaniment of the ketamine experience offers the possibility of actively guiding, shaping, and interpreting a dream state. The patient often cannot remember the content of the journey and forgets what happened already during the infusion. At the same time, however, memories and feelings come to light from the unconscious. This work cannot be compared with ordinary psychotherapy, and it should be investigated which therapy methods are suitable and which are not. There exists an enormous potential in the combination of Psychoanalysis and Hypnotherapy and maybe influences of Systemic Therapy regarding the integration process. The combination of ketamine and hypnotherapeutic guidance allows a type of "meta-work" where the therapist holds the safe space where the patient can directly recognize himself and meet his real being outside of the normal context. It could be assumed as an emotional experience according to the principle of the dominant effect if this experience is so powerful that it virtually overwrites the past experiences, maybe like a positive trauma generation that leads to a change of character and behavior.

A lasting stabilization through intensive short-term therapy is the foundation for intensive psychotherapy, which should follow the treatment to fortify the results. This psychotherapy can be conducted at the place of origin of the patient, online or at the Instituto Dr. Scheib. Additionally, patients are encouraged to stay in contact with us after the treatment via the internet, phone, or in-person at the Instituto Dr. Scheib.

Implications for Future Research

The results from the case report should provide some insight as to whether KHP improves the therapy process for depressed and addicted patients in a short amount of time. What if it is possible to treat addiction much faster and safer? Future research is needed to give further information about hypnosis´ efficacy in ketamine treatments.

A hypnotic guided Ketamine experience tends to offer up the possibility for transformation of the self in a short amount of time. Could KHP be a more efficient treatment method with shorter treatment duration, subjectively better feeling and lower costs? Long-term results can maybe positively encourage.

It would be very interesting to include psychoanalytical research to investigate which methods of dream interpretation fit ketamine therapy. Typically, psychoanalysis is a very lengthy procedure, but the current trend goes more and more towards the shortest possible treatment duration. Ketamine is a catalyst for the therapy process - presenting the potential to conduct psychoanalysis in a shorter time. Following these thoughts, the teachings of C.G. Jung concerning the interpretation of symbols and the

work with archetypes could also provide promising starting points.

It would be beneficial if scientists could agree on questionnaires to measure the degree of consciousness change and its influence on the success of therapy [1]. For example, HSC, 5D-ASC and MEQ-30 are used fairly consistently across psychedelic studies and scores on the MEQ-30 questionnaires seem to correlate fairly well with outcomes.

The results indicate a wider field of research possibilities. Studies could compare brain areas and network connectivity under the influence of ketamine and hypnosis. It would be very interesting to evaluate metabolic similarities and differences between KHP, Ketamine without guidance, and hypnosis without ketamine. Especially the Default Mode Network might gain significant interest here.

The utility of hypnotherapeutic interventions as adjuvants to ketamine in depression and addiction treatment is understudied. However, additional research is needed to examine hypnotherapeutic interventions that may help integrate the ketamine experience and enhance long-term treatment outcomes.

Furthermore, collaborative efforts to develop ethical guidelines for working with psychedelic substances should be encouraged.

AUTHOR INFORMATION

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