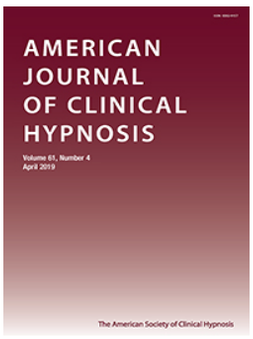

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Case Study: Cognitive Restructuring Hypnosis for Chronic Pain in a Quadriplegic Patient

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This case study reports on a 28-year-old male with spinal cord injury (SCI), quadriplegia, and chronic pain with neuropathic characteristics. The treatment had to be adapted to address the patient's needs, as he was on a respirator and paralyzed from the chin down. The intervention consisted of eight 90-minute sessions. The first four sessions were based on a standardized hypnotic cognitive therapy protocol developed for a randomized controlled trial (RCT). The sessions included training in cognitive restructuring skills and a hypnosis session with suggestions that was audio-recorded. Instructions to practice at home, both with the recording and by using self-hypnosis, were provided as well. Most of the outcome domains assessed (i.e., pain intensity, pain interference, sleep quality) showed clinically meaningful improvements that were maintained (or increased) at one-year follow-up. The patient reported that he was still using self-hypnosis at one-year follow-up. His subjective impression of change was positive and he did not report any negative side effects. Results show that the hypnotic cognitive therapy protocol used is a promising intervention that can benefit individuals with SCI presenting with complex symptomatology. Such therapy helps patients by teaching them effective coping strategies that they can use on their own to manage pain and its effects. In addition, it is important to note that this therapy provided benefits to someone who had not experienced any benefits from numerous medications he had tried before treatment. Therefore, the findings support continued efforts to make this treatment more accessible to patients who could benefit from this approach.

Keywords: hypnosis, cognitive therapy, pain management, chronic pain, spinal cord injury

Having a spinal cord injury (SCI) is frequently associated with also having a number of serious health conditions that develop as a result of the injury. Such associated conditions include pressure sores, cardiovascular disease, constipation, depression, neurogenic bladder, sleep problems, and spasticity (Jensen et al., 2012). Because of improvements in the efficacy and availability of innovations in rehabilitation practices

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soon after the injury and technological innovations (e.g., flexible manufacturing and additive fabrication, such as 3-D printing, computer-operating systems that allow for ongoing monitoring of vital functions and improved independency; Cooper, 2013), both the general quality of life and life expectancy of individuals with SCI are increasing (Middleton et al., 2012). However, one common problem often experienced by individuals living with SCI remains extremely challenging and refractory to treatment (Miró, Gertz, Carter, & Jensen, 2014): moderate to severe chronic nociceptive and neuropathic pain (Ehde et al., 2003).

Clinical hypnosis has shown to be safe and effective for pain management for a variety of chronic pain conditions (Adachi, Fujino, Nakae, Mashimo, & Sasaki, 2014; Hawkins, 2001; Yeh, Schnur, & Montgomery, 2014; Zech, Hansen, Bernardy, & Häuser, 2017). The traditional target of hypnotic chronic pain interventions is usually the patient's experience of pain itself—for example, reducing its intensity and unpleasantness, and changing its sensory qualities so that patients experience less pain and more comfort on a daily basis (Jensen et al., 2009). However, given the evidence that negative thoughts about pain, including catastrophizing thoughts (i.e., magnified negative thoughts about pain), are associated with psychological distress and physical disability (Turner, Jensen, Warms, & Cardenas, 2002), current hypnotic treatment approaches also emphasize the importance of targeting pain-related cognitions (e.g., reducing catastrophizing cognitions) and behavior (e.g., increasing engagement in adaptive activities) in addition to targeting the pain itself (Jensen et al., 2011).

A hypnotic intervention designed to achieve these goals, hypnotic cognitive therapy, was recently developed, and its efficacy for impacting multiple outcome domains was evaluated in a pilot study (Jensen et al., 2011). The intervention incorporated a number of different approaches that have been used in hypnotic protocols for treating depression to target pain-related cognitions specifically. For example, the hypnotic suggestions offered in one session had a goal of increasing the patient's ability to tolerate ambiguity (Yapko, 2006). The suggestions offered in other sessions were designed to increase the patient's hope and positive expectancies for the future (Torem, 1992), to increase cognitive flexibility in general (Yapko, 2001) and the patient's ability to recall past positive experiences (Lankton, 2006), and to replace less helpful cognitions with more helpful ones (Jensen et al., 2011). In a subsequent randomized controlled trial (RCT) (Jensen et al., in preparation), this was one of the four interventions tested in a sample of individuals with mixed chronic pain conditions, including individuals with SCI and chronic pain.

One individual with SCI and chronic pain was referred for possible participation in the RCT but was deemed ineligible for the study due to his inability to participate in the electroencephalogram (EEG) assessment that was conducted as a part of the study (because his ventilator would have interfered with the EEG assessment). However, this individual expressed a strong interest in participation despite his ineligibility. We therefore obtained institutional review board (IRB) approval to treat this patient using

the protocol for hypnotic cognitive therapy as a way to study in more detail the potential benefits of this treatment in an individual who had a very unique set of challenges over and above those usually faced by individuals with SCI and chronic pain. Specifically, in addition to his high levels of pain (that did not respond to medication), he had to be accompanied by a nurse to ensure the proper functioning of his respirator system; his daily healthcare routines lasted about six hours, leaving him with limited time to engage in treatment activities; and the fact that he was on a respirator required making some adaptations to the treatment protocol.

Thus, the aim of this case study is to describe the effects of this intervention in reducing pain intensity and associated symptoms in a young man with quadriplegia and chronic pain with neuropathic characteristics that are SCI related. We also discuss how we adapted the treatment to address some of the challenges associated with his specific situation, including the fact that he was on a respirator and paralyzed from the chin down.

CASE STUDY

The patient is a Caucasian, single, 28-year-old man who was not eligible for participation in the primary RCT, as previously noted. His SCI is due to a sports injury, which resulted in a complete SCI at the C1, C2, T4, T5, and T6 levels, that occured seven years before the first session. He is paralyzed from C1 down and requires a respirator to breathe. He is currently unemployed but otherwise well adapted and relatively independent. (He lives in a private home, has home healthcare for assistance, and is able to use his chin to drive his chair, use a computer, and use a smartphone.) His cognitive function and memory were not affected by the injury. At the initial evaluation, he reported that he practices meditation and relaxation, and he was receiving cognitive therapy for stress and anxiety. He was not otherwise receiving any other treatments for pain. He had received three sessions of hypnosis treatment for pain two years prior to initiating the treatment described here and indicated that it was useful (with beneficial effects on pain lasting for up to one hour after the treatment sessions) but that the treatment was interrupted because of a change of therapist; he did not continue using hypnosis on his own.

At the initial evaluation before treatment, the patient reported he was experiencing severe widespread pain (average intensity = 7/10, worst intensity = 9/10) that was especially bothersome in his left hand, left quadriceps, buttocks, neck, and waist. The pain started within six months to one year after the injury and had neuropathic qualities described as “pins and needles, electric shocks, shooting, and burning” in the legs. Pain worsened with stress, lack of sleep, loud noises, or lying down for more than four hours. Pain improved with distraction, meditation, and relaxation but did not respond to any medications he had tried.

The participant also complained of significant sleep disturbance and a number of depressive symptoms, including a catastrophic vision of the future, low pleasure and

low interest in doing things, and negative mood. Both sleep problems (Widerström-Noga, Felipe-Cuervo, & Yezierski, 2001) and depression (Williams & Murray, 2015) are common in individuals with SCI. Although he did not meet the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (*DSM*-5), criteria for major depressive disorder, he was above the Patient Health Questionnaire (PHQ-8) (Kroenke, Spitzer, & Williams, 2001) cutoff score indicating high risk for depression (i.e., he had a PHQ-8 score of 14 at initial assessment). His goals for the treatment were to find a method to decrease pain, better cope with pain, or both.

METHODS

The Intervention

The intervention was based on the standardized hypnotic cognitive therapy intervention developed for a RCT (which was itself based on a pilot study; Jensen et al., 2011) but adapted as needed for this particular patient's needs. The standardized intervention for the RCT consisted of four 90-minute sessions. However, after the initial four sessions, the patient thought that additional treatment would be helpful, so an additional four sessions of treatment were provided. Sessions 1 through 4 took place once per week, and Sessions 5 through 8 took place approximately once per month.

Treatment was administered by one of the authors (RV), who is a clinical psychologist with experience in pain management. The study clinician was supervised by MEM, the primary clinician in the RCT, who is a clinical psychologist with expertise in the use of hypnosis for pain management. As the principal investigator of the primary RCT, MPJ oversaw the development of the intervention and provided consultation to RV and MEM when questions about treatment emerged. JC conducted the assessments. All the other investigators (MEM, MPJ, and RV) were blind to the results of the outcome assessments throughout treatment.

The goals of the intervention for this patient were as follows:

- To enhance tolerance for uncertainty about the meaning of pain (e.g., that no one, including the patient, his or her physician, or scientists in the field of pain, understands everything about the causes of his pain). A greater tolerance for ambiguity is thought to reduce the risk for "jumping to (negative) conclusions" about the pain, including catastrophizing (Yapko, 2001).
- To encourage the sense of gaining control over pain and its impact (i.e., self-efficacy beliefs) and that using cognitive coping and self-hypnosis strategies will help to achieve this.
- To automatize the processes of cognitive restructuring, that is, for his mind to "automatically evaluate thoughts as more or less helpful and change less helpful cognitions into more reassuring and realistic ones" and that "this can occur all the

time in an automatic way, before the less helpful cognitions can produce negative effects on mood, pain, or functioning" (Yapko, 2001).
- To increase hope, a sense of control over pain, and a sense of control over the effects of pain via imagining a better future and integrating the resulting hope and self-efficacy beliefs into the present (Torem, 1992).

Posthypnotic suggestions were provided at the end of each hypnosis session to make the improvements that occurred during the treatment sessions long-lasting (e.g., "And each time throughout the day you encounter a situation or a sensation where . . . or can even anticipate such an event before it happens, you can remind yourself that . . . and you can also, instantly and automatically, remind yourself . . ."). Posthypnotic suggestions were also provided to encourage the patient to use self-hypnosis whenever he would find it helpful (e.g., "Practicing more rather than less will likely provide more reinforcement for what we are teaching, you might find it useful to consider listening to the recordings at least once per day. . . . It is completely up to you to decide the frequency that works best for you").

The basic session format included (1) presession discussion of the patient's experiences since the prior treatment session; (2) pre- and postsession assessment of current pain intensity; (3) assessment of the frequency, length, and type (i.e., on his own or with practice recording) of home practice; (4) discussion of any questions concerning home practice and homework; (5) problem solving around any barriers to practice; (6) motivational interviewing strategies to encourage ongoing and continued use of home practice; (7) a 20- to 35-minute session of formal hypnosis that was audiorecorded, with the recording given to the patient for home practice; and (8) postsession discussion of the patient's experience during the hypnosis session addressing any questions or concerns.

Session 1

The first hypnotic session focused specifically on increasing the patient's tolerance of ambiguity about conclusions regarding the meaning of pain and its impact, as previously described (see also Yapko, 2001). Key suggestions for this session include the following:

1. Building a response set concerning ambiguity: "You don't know what pleasant images and ideas will come to you as I talk, . . . and you do not know yet in what ways you will continue to learn about how the thoughts and the images you carry with you impact how you feel about yourself and your health . . . or what thoughts and images you will discover and create for yourself, so that you can feel so much better."
2. Introducing concepts concerning inference: "I am sure that you have had the experience of calling someone, . . . getting his or her answering machine, and leaving a message, and when the person does not call back in a time frame you think reasonable . . . you might wonder what it means . . . whether the person is

busy . . . or any of the many possible reasons . . . and how do you know what the real reason is?"

3. Introducing concepts concerning the drive to "know" or draw conclusions: "And all of the speculation about why the person didn't call back . . . is normal and reflects our desire to make sense out of things that don't seem to make sense."
4. Introducing the value of "not knowing": "And the fact that you can generate so many different explanations . . . gives you the opportunity to realize you don't know why he or she didn't call back. . . . You can make lots of guesses . . . but you really don't know for sure. . . . It's a gift of honesty and clear thinking when someone says, 'I don't know' instead of making up an answer that might well be wrong . . . or not very helpful."
5. Reframing "not knowing" as potentially useful and desirable: "The human body is wonderfully complex and the brain, which is a part of the body, is a particularly complex part of a complex system. Everything works together to create your experience of your physical and emotional self. . . . And when we experience sensations that are not so pleasant, . . . when those sensations are new, it might be reasonable to try and find out the cause of those sensations . . . in a detached sort of way. . . . We want to know that we are safe. . . . But if they are old sensations . . . it might not make any sense to draw conclusions about what will happen to them . . . we cannot really predict the future. It might be wiser to simply accept the sensations for what they are, . . . sensations, and allow ourselves to leave it at that. . . . It might be the most honest thing to do . . . and also allow a kind of freedom from worry and concern."

Sessions 2 and 3

Sessions 2 and 3 used hypnotic suggestions as well as training in cognitive restructuring skills to encourage automatization of the process of altering pain-related negative thoughts (e.g., catastrophizing and other alarming or maladaptive cognitions) into more reassuring and realistic cognitions. Examples of the suggestions used in Sessions 2 and 3 follow.

1. Bringing previously identified reasonable thoughts into the patient's awareness: "These thoughts are there, in your mind. They can come forward when needed, like a trusted friend, to reassure you and bring you comfort, just when they are needed and most appropriate."
2. Making the alarming thoughts into reasonable ones automatic: "One of the most amazing gifts of our brain is for it to be able to detect and transform negative thoughts into positive ones and we can simply trust its ability to do that; when we are offered a thought or idea that is less than helpful, when we are in a good relationship with our brain, the brain can simply ignore them; they are of no benefit to anyone."

Session 4

Session 4 included an age progression strategy—adapted from Torem's (1992) Back from the Future strategy—with the goal of increasing the sense of control over pain and its effects on his life. Following is an example of text from that suggestion that describes its key elements.

> And now you can open up a new channel of concentration . . . whereby you focus on taking a special trip into the future. . . . Experience yourself in a special imaginary time machine . . . it might be a year from now . . . two years . . . five . . . or even ten. . . . You are moving forward in your time machine and stopping at some period of time when you have successfully learned the cognitive and hypnosis skills you are practicing right now. Your mind is able to note your thoughts and evaluate them quickly, easily, and automatically and adjust them for you as needed so you can feel more comfortable, physically and emotionally. . . . You are able, whenever you wish, to enter a state of total relaxation . . . and to calmly evaluate your symptoms . . . so that they do not bother you at all . . . you can see yourself feeling so good, actually see yourself . . . so relaxed . . . able to manage any symptoms comfortably and easily . . . any symptoms really do not bother you . . . the part of you that is *you* is able to focus on and enjoy the things that really matter. . . . And now . . . in this time in the future . . . you move into the body . . . and can feel, actually feel, what it is like to feel so good . . . so confident . . . before you saw yourself smiling . . . now you can feel yourself smiling . . . so relaxed and in control . . . you are feeling even better than you imagined you might . . . you have the abilities and the skills to manage . . . your thoughts . . . and your sensations. . . .

Sessions 5 Through 8

As indicated previously, Sessions 1 through 4 followed the general protocol for the primary RCT. However, four additional sessions were conducted to consolidate practice. They were mutually agreed upon by the patient and the clinician to help integrate hypnosis practice into his routine and to make the benefits more long-lasting after he practiced self-hypnosis. These sessions generally followed the same structure: At the beginning of every session, there was an interview to review progress since the prior session and to address any questions. If the patient noted any potential problems, strategies to troubleshoot them were discussed (described in the Results section). A brief, five-minute hypnosis session with the suggestion the patient found most useful was included in each session. After each of the sessions, the patient was instructed to practice at home both with the recordings and using self-hypnosis as often as he found this helpful.

A number of specific adaptations were made to the primary protocol to make it more appropriate for this patient. Specifically, all the references to moving or breathing were removed from the scripts (i.e., "walking down a path" was replaced with "driving the chair down a path"; breathing as an example of an automatic task was replaced with blinking). Instead of "taking a deep breath" as a cue for self-hypnosis, the suggestion

was made for the patient to "go to a quiet place, close your eyes, and focus on yourself, at the present moment."

Measures

A number of outcome domains—the same that were used in the primary RCT—were administered at pretreatment, posttreatment, and one-year follow-up.

Average pain intensity (primary outcome) and worst pain intensity were assessed using a 0 to 10 Numerical Rating Scale (NRS-11; Jensen, 2008). The average of four assessments conducted during a week at each assessment point was computed.

Pain interference was assessed with the seven-item Brief Pain Inventory (BPI) pain interference scale (Cleeland & Ryan, 1994). The BPI assesses the extent to which pain interferes with seven activities of daily living using a scale ranging from 0 (*Does not interfere*) to 10 (*Completely interferes*). A total score is computed by taking the mean of the seven items, with scores ranging from 0 to 10. The BPI pain interference scale is commonly used in pain research and has evidenced reliability and validity in the SCI population (Raichle, Osborne, Jensen, & Cardenas, 2006).

Pain catastrophizing was assessed with the 13-item Pain Catastrophizing Scale (PCS; Sullivan, Bishop, & Pivik, 1995). The PCS is the most commonly used measure of pain-related catastrophizing, and research has shown that it has high levels of reliability and validity (Osman et al., 1997). The PCS assesses the extent to which a person indicates having catastrophic thoughts or feelings when experiencing pain using a scale ranging from 0 (*Not at all*) to 4 (*All the time*). The PCS consists of three subscales—rumination, magnification, and helplessness—that can be scored separately or using a total score (scores range from 0 to 52). A cut point of 30 has been established for clinically relevant catastrophizing.

Pain acceptance was assessed with the 20-item Chronic Pain Acceptance Questionnaire (CPAQ; McCracken, Vowles, & Eccleston, 2004; Vowles, McCracken, McLeod, & Eccleston, 2008). The CPAQ measures acceptance of pain by asking respondents to rate the truth of each pain-related statement using a scale ranging from 0 (*Never true*) to 6 (*Always true*). The items are summed to compute a total score representing pain acceptance (McCracken et al., 2004). Higher scores indicate more acceptance.

Sleep disturbance was assessed using the eight-item Patient-Reported Outcomes Measurement Information System (PROMIS) Sleep Disturbance Short Form, Version B (Northwestern University, n.d.). PROMIS measures have undergone extensive validation for use across many clinical populations, including individuals with physical disabilities such as spinal cord injury (Cook et al., 2016). Each of the eight items utilized a scale from 0 to 5 (anchors varied depending on the item), and a total raw score from 0 to 40 was computed. This raw score was then converted to a *T* score. A *T* score of 50 indicates average sleep quality, with higher scores indicating worse sleep quality.

Depressive symptoms were assessed using the PHQ-8, which includes eight of the nine PHQ-9 items (Kroenke et al., 2001), excluding the item regarding suicidal thoughts. The PHQ-8 has been validated for use in populations of primary care patients and patients with health conditions (Janevic et al., 2016; Pressler et al., 2011). An individual is asked to indicate how much he or she has been bothered by each of the eight problems over the past two weeks using a scale from 0 (*Not at all*) to 3 (*Nearly every day*). The items are then summed to create a total score ranging from 0 to 24. A cut point of 10 has been established for moderate clinical depression (Kroenke et al., 2001).

In addition, the patient was asked some open-ended questions about his perceived improvement and satisfaction with the treatment.

Results

Main Challenges During the Intervention

In addition to adapting the intervention for an individual who is paralyzed and unable to breathe on his own, three main issues emerged and were addressed during the intervention:

1. Pain intensity decreased during the hypnosis sessions but started to increase again right after the sessions ended. A suggestion for obtaining longer-lasting effects was added: "All the benefits my mind created can stay with me and linger for minutes, hours, days, and even years. The more I practice, the longer they will last and the deeper they will be."
2. The patient often fell asleep during the hypnosis sessions. This is not uncommon in individuals with chronic pain, because pain can interfere significantly with sleep. During hypnosis, when they may experience a sense of deep relaxation perhaps for the first time in years, and given their sleep deprivation, they are prone to falling asleep. This is not necessarily a significant issue, as audio recordings were made of all the sessions, and the patient was invited to listen to the audio recordings at least once every day; therefore, the patient was ultimately always able to hear all of the treatment suggestions. To help increase the likelihood that the patient would not fall asleep when listening to the recordings at home, he was instructed to practice at different times of the day (i.e., when he might be less sleepy) or to take a nap before practicing. In addition, shorter recordings of Sessions 5 to 8 were provided in case this would make it easier for him to hear all of the suggestions without falling asleep.
3. The patient found it difficult to integrate daily practice into his busy routine. A plan to fit hypnosis into his daily life was developed wherein he would incorporate self-hypnosis or the short version recording during his morning and night

healthcare routines, while waiting for a medical appointment, or while commuting. Setting reminders and scheduling practice in his agenda was also advised.

Practice

The patient was asked about his self-hypnosis practice and how often he listened to the audio recordings provided during treatment. During treatment, he usually listened to the recordings two or three days a week and practiced self-hypnosis five to seven days per week. At the one-year follow-up he was no longer using the recordings but was still practicing self-hypnosis twice per week.

Changes in the Study Outcome Variables

Pain Intensity

Pre- to posttreatment, average pain intensity decreased 2.5 points (out of 10), representing a clinically meaningful difference (Dworkin et al., 2008), and worst pain intensity decreased 0.7 points. At one-year follow-up, this was maintained. See Table 1 for details.

Pain Interference

The BPI total pain interference score decreased 2 points (out of 10) from pre- to posttreatment and slightly decreased at one-year follow-up. This is consistent with the minimal clinically important difference (Mease et al., 2011) established for other pain samples.

Pain Catastrophizing

The total PCS score decreased 25 points from pre- to posttreatment; it worsened slightly from posttreatment to one-year follow-up. The scores went from above the

TABLE 1
Baseline, Posttreatment, and Follow-Up Scores Reported for the Study Variables

Variable Name	*Pretreatment*	*Posttreatment*	*Follow-Up*
Average pain intensity (NRS-11)	6.8	4.3	4.8
Worst pain intensity (NRS-11)	9.0	8.3	7.8
Pain interference (BPI)	6.9	4.9	4.3
Pain catastrophizing (PCS)	34.0	9.0	13.0
Pain acceptance (CPAQ)	53.0	82.0	61.0
Sleep disturbance (PROMIS)	66.1	62.6	56.3
Depression (PHQ-8)	14.0	12.0	12.0

Note. Pain intensity ratings were the average of four ratings provided during a week.

clinically relevant level (a score of 30; Sullivan et al., 1995) to considerably below it (i.e., 34 at baseline, 9 at posttreatment, and 13 at one-year follow-up).

Pain Acceptance

The total CPAQ score increased almost 30 points from pre- to posttreatment (i.e., about 1.5 standard deviation units; McCracken et al., 2004). However, at one-year follow-up, the score decreased and was only 10 points higher than baseline (i.e., about .50 standard deviation units; McCracken et al., 2004).

Sleep Disturbance

The PROMIS Sleep Disturbance *T* score improved (i.e., decreased) from 66 (i.e., 1.6 standard deviations above the mean of the normative sample) to 63 (i.e., 1.3 standard deviations above the mean of the normative sample) from pre- to posttreatment. The one-year follow-up, the PROMIS Sleep Disturbance *T* score was 56 (i.e., 0.6 standard deviations above the normative sample). A difference of more than 0.5 standard deviation is considered clinically meaningful (Dworkin et al., 2008), so the pretreatment to follow-up change (1 standard deviation) can be considered a clinically meaningful improvement.

Depressive symptoms decreased 2 points from pre- to posttreatment, from 14 to 12 points. The posttreatment score was still above 10, however, which is the standard cutoff point for clinical depression (Kroenke et al., 2001). That score was maintained at the one-year follow-up assessment.

Subjective Perception of Change and Treatment Satisfaction

In addition to the consistent (and mostly clinically meaningful) improvements in all outcome variables, the patient described additional treatment benefits. Specifically, he described the following as the main benefits: (1) "learning coping strategies to reduce the level of pain I feel"; (2) "learning a method for feeling calm and relaxed when stressed out or in pain"; and (3) "it's easier to do things when you have less pain, so I'm able to do more things and feel better overall because I can." No negative effects were reported.

Despite these benefits across multiple domains, the patient rated his overall treatment satisfaction as only "slightly satisfied." The "satisfied" part of this rating was due to the fact that "I have changed the way I think about pain and the treatment gave me coping strategies. It also helped me to reduce anxiety and stress overall." The reason given for not being more than "slightly" satisfied was "I hoped the pain would decrease more."

It is noteworthy that the patient was still practicing self-hypnosis a year after treatment. He stated at follow-up: "It is easier to access the pain relief the more you

practice the techniques. I have noticed it is easier now to access relief compared to when I started or right after finishing treatment. The clinician was right when she said it gets easier the more you practice."

Discussion

This case study shows promising results on the use of a novel hypnotic approach (hypnotic cognitive therapy) for an individual with SCI and chronic pain with neuropathic qualities. Some adaptations from a protocol originally designed for participants with less severe health issues were needed, but they were minor and feasible. A more robust design with a large sample of SCI quadriplegic individuals would be needed to ensure generalizability of the findings to this population.

Most of the outcome domains assessed (i.e., pain intensity, pain interference, sleep quality) showed clinically meaningful improvements that were maintained (or increased) at follow-up. The only exception was depression, which, despite improving, remained above the clinical cutoff. This might be due to the fact that the patient's original depression levels were high, and the intervention was not designed to directly target depression. Catastrophizing, however, which was directly targeted by some of the suggestions, evidenced a considerable decrease at posttreatment that was maintained one year later.

Regarding the maintenance of the treatment effects, at one-year posttreatment many of the treatment benefits were maintained, and all remained below baseline levels. It is also noteworthy that the patient was still practicing self-hypnosis at one-year posttreatment, so the changes in his routines were also long-lasting. This continued use of self-hypnosis is also evidence for its usefulness to the patient. In addition, the subjective impression of change was also positive.

Finally, it is important to note that this intervention had no negative side effects for the patient. In addition, it provided benefits to someone who had not experienced any benefits from numerous medications he had tried before treatment. His busy daily routine and inability to use other approaches for pain management (e.g., inability to exercise due to his paralysis) limit the pain management options that he could use; thus, this hypnotic intervention seemed to be a good fit for his needs.

In summary, this case study demonstrates that hypnotic cognitive therapy is a promising intervention that could be of benefit to individuals with SCI presenting with complex symptomatology. It empowers patients by teaching them effective coping strategies that they can use themselves to manage pain and its effects without putting them at risk of experiencing negative side effects. The findings support continued efforts to make this treatment more accessible to patients who could benefit from this approach.

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