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An exploration of the utility of hypnosis in pain management among rural pain patients

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ABSTRACT

Objective: Hypnosis is an adjunctive, noninvasive treatment with few side effects that can be useful in the management of chronic pain. However, it has fallen into disfavor in recent years and is often perceived by physicians as simple charlatanism. We evaluated the efficacy of this treatment as used clinically in a large, mostly rural, pain management center.

Methods: We conducted a chart review of 300 pain patients from the Pain Treatment Center of the Bluegrass who had undergone hypnosis for their pain concerns. A chart audit tool was developed consisting of basic demographics, pre- and posthypnosis pain ratings, a rating of relaxation achieved posthypnosis, and scores on the Beck Depression Inventory, Perceived Disability Scale, and the Pain Anxiety Symptom Scale.

Results: The sample consisted of 79 men (26.3%) and 221 women (73.7%) with a mean age of 46.3 years (SD = 9.9, range = 19–78). Pain levels recorded pre- and posthypnosis revealed significant improvement as a result of the intervention (mean difference = 2.5, $t(1,298) = 25.9$, $p < .001$). Patients reported an average of 49.8% improvement in relaxation level posthypnosis (SD = 24.2%) and had a mean score of 19.0 on the Beck Depression Inventory (SD = 9.9), indicating moderate levels of depression. Also, patients saw themselves as severely disabled regarding their ability to engage in physical (8.3/10) or job-related (7.7/10) activities. Attempts to identify predictors of hypnosis success were not fruitful with one exception. "Poor" responders to hypnosis reported greater levels of perceived dysfunction in their sexual functioning compared to the "good" responders, $F(1,187) = 7.2$, $p < .01$.

Significance of results: Hypnosis appears to be a viable adjunct for pain management patients, including those from rural and relatively disadvantaged backgrounds. Prospective trials are needed to examine the utility of this modality in end-of-life and palliative care patients.

KEYWORDS: Hypnosis, Pain management, Relaxation training, Rural

INTRODUCTION

"Hypnosis" is a term that is often associated with nightclub acts wherein an entertainer helps people loosen their inhibitions and act in exaggerated and amusing ways. Other times, it conjures up pictures of evil manipulators with magical powers as made famous in media portrayals (Barrett, 2006). Despite these popular cultural stereotypes, however, the reality is that hypnosis has the potential for use in the medical setting. Studies have demonstrated some utility in a wide variety of situations, including efficacy for patients with irritable bowel syndrome, burns, and asthma; it has even been recommended for the removal of warts (Anderson et al., 1988; Ewin, 1992*a*, 1992*b*; Patterson & Ptacek, 1997; Tan et al., 2005). This approach to hypnosis as a panacea for a variety of ailments may be, in

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part, why it is often viewed as charlatanism by the mainstream medical community. However, the use of hypnosis in medical interactions has a long and storied history (Upshaw, 2006) and was even thought to be efficacious enough to be approved as a treatment by the American Medical Association in the past (American Medical Association, 1958).

Of importance to this study is the utility of hypnosis as an adjunctive treatment for patients with chronic pain concerns. Freeman et al. (2000) utilized a cold pressor paradigm to model pain and found that participants with higher hypnotic suggestibility experienced less pain than matched controls. Although intriguing, the study was rather small and an experimental application of pain does not truly equate to the experience of living with chronic pain issues. Shenefeldt (2003) was able to show that hypnosis was beneficial in reducing pain, anxiety, and discomfort associated with medical procedures. Again, however, this reflects a more transient type of pain stimulus. In a classic case study, Siegel (1979) demonstrated the utility of hypnosis for the management of phantom limb pain over the course of a 10-session treatment. More recently, Lu et al. (2001) found that hypnosis was a useful treatment for patients with facial and head and neck pain. Similarly, Jensen et al. (2006) found high rates of satisfaction with hypnotic analgesia among a sample of 30 chronic pain patients.

With such a foundation, it is surprising to note the skeptical tone with which hypnosis is greeted today. Although there is promising data in this area, most of the studies to date have been on relatively small sample sizes. Therefore, we decided to undertake a chart review of chronic pain patients who had been treated with hypnosis as an adjunctive part of their treatment plan. We were interested in exploring whether the modality was efficacious, especially given the largely rural and largely impoverished and undereducated population from which our center draws patients. The empirical establishment of a significant outcome for these patients could start a revitalization of the use of hypnosis in pain management and might be the beginning of future, prospective trials in the area with varied pain populations, including those patients in palliative and end-of-life care.

METHOD

Participants and Overview

A total of 300 charts were selected from patients with chronic low back pain at The Pain Treatment Center of the Bluegrass who had undergone hypnosis for help with the treatment of chronic pain issues. Patients seen at the center are from a largely rural, Appalachian, and undereducated background. All patients seen at the center are potentially eligible to receive a variety of adjunctive services, including hypnosis. Patients are typically referred for hypnosis from one of the staff psychologists or any of the attending physicians or physician assistants. In addition, patients can self-refer if they have interest.

As this was a chart review study, no prospective data were collected. Charts were examined for the initial session of hypnosis therapy only. Therefore, it is unknown whether the patients returned for multiple sessions, although it is typically seen as a one-time training experiential and training session. All results are centered on outcomes from this initial session. The study was approved by the University of Kentucky Internal Review Board. All data analysis was completed using SPSS 15.0 statistical software.

Instruments

Beck Depression Inventory (BDI)

The Beck Depression Inventory is a 21-item face valid measure of depression (Beck et al., 1974; Beck & Steer, 1984). The BDI classifies patients according to the following scale: 0–9 = normal affect, 10–18 = mild to moderate depression, 19–29 = moderate to severe depression, and 30–63 = severe depression. It has been shown to be valid and reliable (Gallagher et al., 1982; Scogin et al., 1988). We used the total BDI score in the present study.

The Perceived Disability Scale (PDS)

The Perceived Disability Scale is a 10-item instrument that measures the extent to which patients see themselves as disabled by chronic pain, as compared to individuals with similar physical circumstances (Weber, 2002). Patients rank themselves from 1 (*no disability*) to 10 (*total disability*) in the broad domains of Home Activities, Passive Recreational Activity, Active Physical Activity, Occupation/Education, Self-Care, Basic Life Activities, Sleep, Sexual Behavior, Thinking, and Social Ability. We examined both the total score for the scale as well as the individual items.

The Pain Anxiety Symptom Scale (PASS)

The Pain Anxiety Symptom Scale is a face valid measure of anxiety in response to pain and how individuals may mold their own behavior in response to that anxiety (Osman et al., 1994; Strahl et al., 2000). It classifies individuals according

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to four areas of dysfunctional reaction: Cognitive Anxiety, Escape/Avoidance, Fearful Appraisal, and Physiological Anxiety. Scores are classified as percentiles and only extreme scores (percentiles >90) are deemed to be significant. We used the total scale as well as the four above-mentioned subscales for the study.

Numeric Rating Scale

Patients are also routinely asked their pain ratings on a 0–10 scale. Those undergoing hypnosis are requested to rate their pain levels both pre- and posthypnosis. Such verbal numeric rating scales have been shown to be valid indicators for rating pain (Paice & Cohen, 1997). Patients are also asked to report a 0%–100% rating for relaxation level achieved posthypnosis. This is typically conveyed as percent reduction in muscle tension.

Procedure

A chart audit tool was developed for purposes of this chart review study. Information was collected on basic demographics and the assessment tools described above. The actual practice of hypnosis as utilized in this pain clinic is described below.

Hypnosis Technique

Patients typically receive a brief explanation of how self-hypnosis is integrated into a medical setting. Due to the average educational level of a predominantly rural patient population, as well as media-related misinformation and general misconception, the term "hypnosis" is replaced with more neutral terms, such as "relaxation training" or "stress management exercise," which have several similarities in common but lack the inclusion of willpower, imagination, and suggestion employed with hypnosis. For particularly reticent patients, a simple diagram of the nervous system is sketched on a dry-erase board, illustrating to them a general layperson's understanding of the somatic and autonomic nervous system, as well as the further breakdown of the autonomic system into the sympathetic and parasympathetic systems. From such an elementary diagram, it is usually easier for patients to understand and give credence to the idea that they can influence their nervous system directly, with positive benefits for their chronic pain.

To further alleviate a patient's concerns about a process that is often very different from their previous experience of pain management, they are told that they will be in total control of their participation. To exemplify this, they are informed that at least one of the three incandescent office lamps will be turned off to facilitate comfort. They are given a choice as to which one they prefer to see deactivated. Once the patient selects one, they are asked if they would prefer to turn out another, or if the current arrangement is satisfactory. One light is always left on. The patient is then invited to lean back in the reclining chair and/or use the foot elevation lever if they wish.

A very simple eye-focus induction is usually the method of initiating the procedure. Embedded suggestions for stillness and quiet are included. Truisms, or validating statements about the experience, are vocalized to ratify the patient's experience of a beginning trance before they are invited to close their eyes. At that point, greater effort is placed on helping them focus more on their internal physiological states and less on the distractions of the office and the hallway outside. Progressive muscle relaxation is encouraged, but in a passive manner; the patient is invited to "let" their body change their breathing to a more controlled pattern and their muscles to slowly let go. The clench-and-release method is not utilized. Suggestions are given for release, tensionless, and comfort. Thirty seconds of silence are given to allow the patient's trance state to deepen even further and suggestions are given that the patient feels physically better and that their "discomfort" (as opposed to "pain") is more distant and less intrusive. Finally, suggestions are given for a stronger experience the next time the patient practices on her or his own, as this experience is meant to create a new skill set to be practiced and employed at home. A countdown from three to one is used to realert the patient.

At this point, the patients are asked to characterize their experience and to describe what happened to them both physically and mentally. They are then asked to rank the change in their pain on the 0–10 pain scale as well as give a subjective rating between 1%–100% on how much more relaxed they have become.

RESULTS

The patient sample selected consisted of 79 men (26.3%) and 221 women (73.7%) with a mean age of 46.3 years (SD = 9.9, range = 19–78). The women were slightly older than the men in the sample (mean = 47.0 vs. 44.5), but the difference was not significant, $t(1,298) = 1.9$, n.s. The sample was predominantly Caucasian (n = 286, 95%).

Pain levels (0–10 numeric rating scale) were recorded pre- and posthypnosis for each of the patients. Pain levels before the treatment averaged 6.9 (SD = 1.9); pain levels posthypnosis averaged 4.4 (SD = 2.1), for roughly a 36% reduction in pain

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levels. Results of a paired samples t test indicated a significant improvement as a result of the intervention (mean difference = 2.5, $t[1,298] = 25.9$, $p < .001$). Patients also reported an average of 49.8% improvement in their relaxation level posthypnosis ($SD = 24.2\%$).

To better describe the sample, we were also interested in their scores on various measures typically used in the clinical setting (see Table 1). Patients had a mean score of 19.0 on the BDI ($SD = 9.9$), indicating moderate levels of depression overall. Also, the patients saw themselves as moderately disabled overall (mean = 56.2, $SD = 20.1$) and closer to severely disabled in the arenas of engaging in physical activity (8.3/10) or job-related activities (7.7/10). Average scores on the PASS were in the expected range and not indicative of significant anxiety among the patients. Only 9/300 (4.4%) had PASS total scores greater than the 90th percentile, which indicates significant anxiety problems regarding how the patient views his or her pain problems.

Exploratory Analyses

It was of interest to explore what factors might predict successful outcomes with hypnosis in this sample of pain patients. To this end, a series of correlations, one-way analyses of variance, and chi-square tests were conducted. To determine whether a patient was rated as a "success" for the trial of hypnosis, the percent of pain relief on the 0–10 scales were compared for pre- to posthypnosis. As stated earlier, 36% pain relief was the average reduction (range = 0%–100%) in pain reporting. Thus, we chose to split the sample between those achieving less than the average (0%–33%, labeled as "poor" outcome) and those with greater than average (38%–100%, labeled as "good" outcome) pain relief. Those with poor outcome accounted for 57.7% of the sample whereas the remaining 42.4% were rated as having a good outcome with hypnosis.

Due to the exploratory nature of the analyses, we chose to restrict significance to only those relationships exhibiting significance greater than $p < .01$. In this way, we hoped to reduce the chance of random findings from the data. With this criterion, only sexual functioning from the PDS was found to be a significant predictor of outcome with hypnosis. Specifically, those deemed to be poor responders to hypnosis reported greater levels of perceived dysfunction in their sexual functioning (mean = 7.0/10) compared to the good responders (mean = 5.7/10), $F(1,187) = 7.2$, $p < .01$. No other variables, including depression, approached significance.

Table 1. *Mean and standard deviation data for measures in the study (n = 300)*

Measure	Mean	Standard deviation	Range
Pain 0–10 scale prehypnosis	6.9	1.9	0–10
Pain 0–10 scale posthypnosis	4.4	2.1	0–9
Relaxation improvement (%)	49.8	24.2	0–100
BDI	19.0	9.9	2–53
PDS total	56.2	20.1	6–95
PDS Home Activities	6.6	2.4	0–10
PDS Passive Recreational Activity	6.0	2.8	0–10
PDS Active Physical Activity	8.3	2.5	0–10
PDS Job-Related Activity	7.7	3.0	0–10
PDS Self-Care Functions	3.9	3.0	0–9
PDS Basic Life Functions	2.1	2.7	0–9
PDS Sleep	7.1	2.6	0–9
PDS Sexual Behavior	6.5	3.3	0–10
PDS Thinking	4.8	3.0	0–10
PDS Social Activity	4.3	3.2	0–10
PASS total (%)	50.8	24.8	5–95
PASS Cognitive-Anxiety (%)	57.0	24.7	5–95
PASS Escape-Avoidance (%)	49.1	27.0	5–95
PASS Fearful Appraisal (%)	43.3	24.2	5–90
PASS Physical-Anxiety (%)	55.1	25.3	5–95

DISCUSSION

We conducted a chart review of 300 chronic pain patients from a largely rural and undereducated background to determine if hypnosis was a viable adjunctive treatment for pain management. Hypnosis does seem to be a useful option, as patients reported an average of 36% reduction in pain scores after their session. This is a significant finding that represents a worthwhile benefit to patients. On the positive side, hypnosis is a relatively inexpensive option that has no side effects and is not associated with discomfort such as sometimes found with interventional techniques. In addition, it represents the creation of a new skill set within patients that can they can use at home or wherever they might need it. This offers a way to empower patients to take some control over their own pain management care. Whether hypnosis is ultimately determined to be a unique treatment entity or a specialized subset of relaxation training (i.e., focusing on aspects of willpower, imagination, and suggestion) remains to be determined and continues to be debated (Zarren & Eimer, 2002; Appel & Bleiberg, 2006). Either way, although it is not meant to be a substitution for medication or interventions, it should be viewed as a plausible adjunct and not a "dirty word" in medical circles, as discussed elsewhere (Upshaw, 2006).

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Another key finding concerns the patients involved. Although hypnosis may be seen with a skeptical eye, those who embrace it typically hold the view that it is most successful with those from advantaged and well-educated backgrounds (Barrett, 2001; Ernst, 2004). Our data show that patients from rural and less fortunate backgrounds can also learn the techniques and show benefit from them. This potentially opens the modality up for large pools of patients who might otherwise not be considered for such intervention.

It was of interest that we were unable to predict patients who were deemed to be good and poor responders. Although perception of sexual dysfunction was a significant predictor of outcome, it is difficult to rationalize this finding. It is unclear why sexual dysfunction would be a significant predictor, especially when depression did not play a role. Because this is a rating of perceived sexual dysfunction, we do not have data on whether the perceptions were accurate, a plea for attention, or part of an unrecognized depression not picked up by the BDI. It could be that the limitation of the assessment instruments used clinically at the center or a flaw in how we divided the sample into good and bad responders to the intervention is the culprit. One additional explanation can be found in the patient's ability to engage in altered states of consciousness, which is a key component in both sexual climax (Meston et al., 2004) and hypnosis (Zarren & Eimer, 2002). Those able to relax enough to achieve such altered states in one arena (i.e., sexual function) might also be more apt to respond to another such as required in hypnosis.

Future studies will be needed to concentrate on classifying those pain patients most likely to benefit from a hypnosis intervention. Interestingly, depression was not a predictor for poor outcomes associated with hypnosis. Thus, depression should not necessarily be used as a rule out when considering what patients might benefit from hypnosis.

The study does have a number of limitations. First, it was a retrospective chart review and important data may have been missing or never entered into the official record. Also, the population chosen for review was not a true palliative care sample. The study needs to be replicated and explored in a prospective fashion with multiple pain populations. This needs to include those patients with advanced cancer and those in palliative settings. Hypnosis has a large potential impact for these patients, as it can represent a potential for empowering patients by teaching techniques that can be applied even when they are dealing with end-of-life issues. Finally, the study only had one hypnotherapist, although he was certified by the American Society of Clinical Hypnosis. It would be useful to have more available to rule out practitioner effects and other potential confounds.

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