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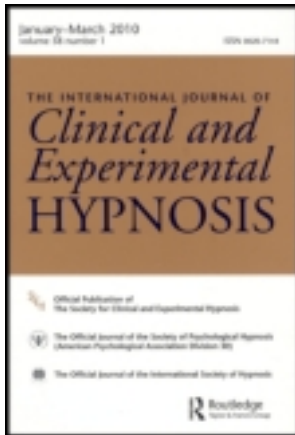
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Posthypnotic Use of Olfactory Stimulus for Pain Management

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POSTHYPNOTIC USE OF OLFACTORY STIMULUS FOR PAIN MANAGEMENT

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Abstract: Chronic pain due to disease or injury persists even after interventions to alleviate these conditions. Opiates are not always effective for the patient and have undesirable side effects. Hypnosis has been shown to be an effective treatment and may be enhanced by the use of olfactory stimulation as a posthypnotic cue. The article details 2 case reports that demonstrate the possible benefits of olfactory stimulus as an adjunct to hypnosis for pain relief.

Research has shown that hypnosis can produce hypnotic analgesia and have a measurable effect on all the physiologic processes involved in the experience of pain. Evidence shows that different hypnotic suggestions have different effects on brain areas (Jensen, 2011). Although there are many theories, exactly how hypnosis produces analgesia is not known (Yapko, 2003). However, studies have shown that hypnosis does produce analgesia or pain relief (Jensen et al., 2008). The use of olfactory stimulus or scent as an anchor or cue in hypnosis has not been widely reported; the aim of our two case reports is to demonstrate the possible benefits of olfactory stimulus as an adjunct to hypnosis for pain relief.

CASE STUDY 1

R.P. is a 58-year-old female with a history of obesity, thyroid cancer, and advanced degenerative disc disease. She has a history of three spinal surgeries in which the C6 and C7 discs were fused, Discs L2 and L3 were fused, along with insertion of titanium rods. She suffers from

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daily back pain, insomnia, and migraine headaches. She has sensitivity to smell and cannot tolerate perfumes, deodorizers, and other common odors. However, she is able to tolerate clove oil aroma, which she finds comforting, and is able to use it as a posthypnotic cue.

She rated her daily pain at a constant of around 4 out of 10, with 10 being the highest. She stated that her pain increased to 8 out of 10 when she moved around during the performance of household chores. When she felt her waistband touch her spine, she stated the pain was 10 out of 10. Her normal pain relief regimen was confined to nonsteroidal antiinflammatory drugs (NSAIDs) and an occasional tramadol (Ultram) because of her employment and her unwillingness to take opiates.

After a brief induction, R.P. was entered into a light trance by the first author (T.B.) who suggested to P.R. that she could relax her muscles and let her pain recede and could have more energy during the daytime and more restful sleep at night. While in the trance, she was given the posthypnotic suggestion that when she smelled cloves, she would immediately experience relaxation and that her pain would be replaced by a feeling of relaxation and well-being. After two 20-minute hypnosis sessions, 2 weeks apart, with the same posthypnotic suggestion, the patient reported that her pain decreased from a 10 to a 3, after one sniff of the clove oil. She reported using the clove oil four to five times a day and experienced instant pain relief for over 3 months. R.P. had a history of previous experience with hypnosis and was comfortable with the process, thus no attempt to teach her self-hypnosis and no recording of the session was made.

CASE STUDY 2

T.M. is a 62-year-old female with Stage IV ovarian cancer who had stopped an experimental chemotherapy due to side effects. She also had a urethral stent placed due to tumor growth that caused her so much pain that she was unable to move from the couch for most of the day. She used opiates for pain relief (hydrocodone and acetaminophen, approximately every 4 hours).

Since she was housebound, arrangements were made to have T.B. travel to the patient's home. After T.M. selected a scent to use as a posthypnotic cue, T.B. induced a light trance and the patient was able to visualize being able to "dial" her pain up or down, as well as increase her energy level and have a good, restful night's sleep. T.B. gave her the posthypnotic suggestion that by smelling "Joy" (the essential oil the patient had chosen), her pain would be relieved, and her energy level would be as high as she needed it to be.

T.M. experienced no ill effects from the hypnosis. She was able to recover enough the next day to attend a social event. She reported that

by sniffing her selected scent (which was soaked in a cotton ball inside a labeled medicine bottle), her pain was reduced from 10 to 2, and the effect lasted up to 2 hours.

After 5 months, T.B. repeated the hypnosis in the patient's home at her request and used the same essential oil used as a posthypnotic suggestion. The patient has continued to experience pain relief by using the scent. At 8 months after the last session, patient T.M. reported continued pain relief with this method.

DISCUSSION

According to the American Psychological Association Clinical Psychology Division, there is sufficient evidence to consider hypnosis efficacious and a specific treatment for pain ([Hammond, 2008](#)). Similar conclusions from reviews published about controlled trials for hypnosis for chronic pain support this statement ([Dillworth, 2010](#); [Jensen & Patterson, 2005](#); [Montgomery, DuHamel, & Redd, 2000](#); [Patterson & Jensen, 2003](#)). The beneficial effects have been reported to last up to a year ([Jensen et al., 2008](#)). Our cases illustrate the potential of using posthypnotic scent as an adjunct to hypnosis for pain management.

The 2 patients in this report were similar in that they were women suffering from chronic pain with expectations that hypnosis with scent as a posthypnotic trigger would work for pain management. These 2 patients differed in their physical condition, since patient T.M. was in a critical stage of an illness, that is, Stage IV ovarian cancer, and had stopped an experimental chemotherapy treatment due to side effects. Patient R.P. was working full time and learning to cope with pain as a daily reality.

It should be noted that the hypnotizability of the patients was not measured. Patient R.P. had a history of being hypnotized previously and had a high acceptance of its ability to relieve her pain. Patient T.M. had not undergone previous hypnosis and was not undergoing any alternative treatment for pain management, except her prescribed opiates. Although the overall hypnotizability of a patient may play a role in treatment outcomes, the role appears to be weak ([Jensen, 2011](#)). The use of the posthypnotic olfactory stimulus in these cases functioned to promote pain relief, relaxation, and better sleep.

Olfactory stimulus is defined for the purposes of this discussion as the use of scent as a posthypnotic cue. Expectations that the scent will provoke a pleasant memory may have played a part in the pain relief study patients experienced. There is some research that supports this supposition ([Lorig, Huffman, DeMartino, & DeMarco, 1991](#)).

Nearly all known neurotransmitters are present in the olfactory bulb. For example, dopamine has been measured with respect to

hypnotizability and levels of homovanillic acid, a dopamine metabolite in cerebrospinal fluid (Speigel, 2002). Scents can influence behavior by acting as alternative sensory stimuli. That is, odors may function to preferentially activate a nonolfactory sensory system that would then induce analgesia through reduction of attention to other nonpainful sensations (Hirsch, 2008).

The *lock and key theory* of odors or *systemic effect theory* suggests that smells act like a specific neurotransmitter, a drug, or an enzyme (Hirsch, 2008). This suggests that specific odors have specific effects. An alternative theory called the *general affective theory of odors* holds that smells experienced in a positive manner will induce a positive mood. According to this theory, a single odor could have a multitude of diverse effects, thus affecting any behavior (Hirsch, 2008). Dopamine also acts to influence how an odor is perceived and its intensity (Wei, Linster, & Cleland, 2006). The effect of expectation has been measured by Lorig and Roberts (1990), who showed variation in the EEG of 18 subjects presented with a mixed scent of lavender, jasmine, and galbanum. They found that EEGs varied depending on what the subjects had been told about it (Hirsch, 2008; Lorig et al., 1991).

Both study patients had an expectation that the hypnosis and scent would work. Dopamine has a role in motivation and reward (Bromberg-Martin, Matusumoto, & Hikosaka, 2010). Thus, it is possible that the scents stimulated the dopaminergic system, which acts as the reward center or “feel good” neurotransmitter.

In previous work by Abramowitz and Lichtenberg (2009), the use of scents to arouse pleasant associations with hypnosis to treat needle phobia, panic disorder, and posttraumatic stress disorder (PTSD) seems to support a distraction effect as the cause of hypnosis’s efficacy in anxiety cases. It is to be noted that in one of their case studies, glove anesthesia was induced in one of the patients, and their scent-induced trigger (hypnotherapeutic olfactory conditioning [HOC]) was able to produce a “significant anesthesia.” This phenomenon is consistent with what occurred in our two case studies, where a degree of pain relief was produced by the use of scent during hypnosis, with far less preparation than used by the case studies of Abramowitz and Lichtenberg. This would suggest that there is a more powerful mechanism associated with the pain relief experienced by our case study patients than is generally produced by hypnosis alone or scent alone and may be more than just a distraction effect associated with the preferential activation of a nonolfactory sensory system.

The question of a placebo response to both the scents and hypnosis should be considered. A literature review (Kirjanen, 2012) examined research articles published from 1997 onward regarding the neurophysiology of pain relief during hypnosis or placebo treatments using functional brain imagining (magnetic resonance imaging and positron emission tomography scans). The analgesic effect of hypnosis

is more than just a placebo effect in terms of brain functionality (Kirjanen, 2012).

There is some caution to be advised when using olfactory stimuli as an adjunct to hypnosis. Before using scents in hypnosis, consideration should be given to any adverse reactions that might occur. This was somewhat controlled for in the case studies by allowing the patients to choose the scent that was used as a cue. Patients with migraine headaches report odors such as cigarette smoke, perfume, and food to be potential triggers (Hirsch, 2008). Patients with asthma can have respiratory symptoms after exposure to common odors as well. It may be that the frequent use of scent by the 2 study patients has been reinforcing the stimulus of smell and thereby constantly reinforcing the hypnotic suggestion for pain relief. It is also possible that the olfactory stimulus activates the dopamine system, which plays a role in pain relief, as well as addiction.

A pilot study for further investigation and follow up for this method should include hypnotizability scores at baseline and measurement of pain levels using validated instruments at baseline and postinduction. There should also be a means of measuring the dopamine pre- and postinduction.

CONCLUSION

More studies are needed to examine the efficacy of posthypnotic use of olfactory stimulus for pain management.

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Anwendung posthypnotischer olfaktorischer Stimuli im Schmerzmanagement

Theresa Bubenzer und Hsiang Huang

Abstrakt: Chronischer Schmerz infolge Krankheit oder Verletzung besteht oft auch nach dem Versuch diesen zu behandeln, weiter fort. Opiate sind nicht immer nutzbringend und haben unerwünschte Nebenwirkungen. Hypnose ist als effektive Behandlungsmethode bekannt und könnte mittels einer olfaktorischen Stimulation als posthypnotische Suggestion angewendet werden. Der Artikel beschreibt zwei Fallbeispiele, die die möglichen Vorteile eines olfaktorischen Stimulus als Zusatz zur Hypnose in der Schmerzbehandlung, aufzeigen.

STEPHANIE REIGEL, MD

Usage post-hypnotique d'un stimulus olfactif dans la gestion de la douleur

Theresa Bubenzer et Hsiang Huang

Résumé: La douleur chronique causée par une maladie ou une blessure persiste même après des interventions effectuées dans le but de la soulager. Les opiacés ne sont pas toujours efficaces, et entraînent parfois des effets secondaires indésirables. L'hypnose s'est révélée un bon traitement, et peut même être rendue encore plus efficace par l'utilisation d'une stimulation olfactive par suggestion post-hypnotique. Cet article décrit deux études de cas

démontrant les avantages éventuels d'un stimulus olfactif comme thérapie complémentaire aux soins analgésiques.

JOHANNE REYNAULT
C. Tr. (STIBC)

Uso poshipnótico de un estímulo olfatorio para el manejo del dolor

Theresa Bubenzler y Hsiang Huang

Resumen: El dolor crónico ocasionado por alguna enfermedad o lesión persiste aún después de las intervenciones dirigidas a mejorar estas condiciones. Los opioides no siempre son efectivos para el paciente y tienen efectos secundarios indeseables. La hipnosis ha mostrado ser un tratamiento efectivo y pudiera mejorarse mediante el uso de estimulación olfatoria como una señal poshipnótica. El artículo detalla dos reportes de casos que demuestran beneficios posibles de un estímulo olfatorio como adjunto a la hipnosis para el alivio del dolor.

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