

Behavioral Considerations

Relaxation techniques, autogenic training, meditative techniques, and self-hypnosis have all proved effective in the management of chronic pain disorders. Breathing exercises are also adjuncts to relaxation. Biofeedback has been found to be useful in the treatment of MPD. Patients should be taught the value of cognitive stress management.

Mutual support groups, through which patients can share their progress, learn how behavioral factors affect their pain response, and how coping skills can help them, are effective; spouses or others close to the patient should be encouraged to attend. Placebo effects may contribute significantly to the success of treatment.

Occlusal Therapy

Use of a splint will reduce bruxing and clenching that often accompany TMJ/MPD disorders and will provide time for further investigation when the diagnosis is in doubt. Caution must be exercised before any type of occlusal therapy is begun, particularly if there is any doubt about

whether existing occlusal discrepancies are causing the problem.

Medications

Medications should always be prescribed on a time-contingent rather than on a pain-contingent basis to avoid establishment of an operant conditioning scenario, particularly if narcotic analgesics are involved. Narcotics and steroids both suppress endogenous opiate mechanisms, so their use is likely to render stimulation-produced analgesia less effective.

Nutritional Factors

A balanced multivitamin preparation is an important dietary supplement for patients because many have been shown to be deficient in one or more vitamins. Brain neurotransmitters such as serotonin also can be manipulated by diet. Other agents, including amino acids, are subjects at present of studies of therapy for depression and hypertension.

The Mathematics of Hypnosis and Pain

Linda Goldman,
University of London,
London, UK

Hypnosis is used as part of a psychological approach in dealing with phobic patients. The patient focuses on the stimuli of images offered by the therapist's voice. The critical faculty is bypassed, and selective thinking is established. The induction is the choice of the therapist, and imagery is introduced using numerical concepts associated with left-brain-related logic rather than right-brain-related nonverbal emotionality.^{1,2} There is an emotional component in the perception of pain, and this is a large factor in the development of dental phobia.³ Clinical skill and a sympathetic manner are not sufficient to ensure absence of pain perception in the

patient: there must be a lack of awareness of any of the stimuli of dentistry. The hypnotic diversion of attention from dental treatment, aiming at the elimination of the emotional perception of pain, is described in this article.

Hypnosis is an altered state of consciousness in which the patient's awareness of the surrounding world, including somatic sensations, is diverted to an awareness of a more comfortable world within his or her mind. A hypnotic technique is here described, one that can be very useful in overcoming the phobic cycle of anxiety and fear associated with the anticipated pain of dentistry.

Received March 1, 1989, accepted for publication July 21, 1989.

Address correspondence to Linda Goldman, BDS, Dip; Psych., University of London, London, England.

© 1989 by L. Goldman

Western society demands a pain-free world, and the medical hero or stoic is little praised: courage and endurance are no longer to be encouraged or expected. The medical profession is required to cure or offer palliative treatment. Above all, the patient expects analgesia. Patients all too often fail to seek dental treatment that must inevitably be provided. When this can no longer be avoided, the phobic patient must always have more work, more difficult work, and more expensive work than his or her active imagination could ever have conceived. This phobia is based on the fear of pain. The technique of hypnosis depends on the possibility that the fear can be given a size or shape, or be quantified. Shapes and numbers can be made smaller. Reducing the fear blocks the anticipation of impending pain.

THE DEVELOPMENT OF A PAIN PHOBIA

Phobic behavior can best be defined as an irrational response to a threatening stimulus. All phobias—of spiders, of needles, of flying—exist as extreme forms of avoidance behavior and, at base, are associated with the fear of death. Not many people develop a fear of dying at the sight of a snake, although they may fear being bitten or asphyxiated by one. What they dread is the physiological basis of fear: the shallow breathing, the increased heart rate, as well as digestive and other sympathetic disturbances. These are felt to be likely to be too powerful for the patient to live through, and, rather than take the risk of collapsing and dying by having an injection, or undergoing some associated experience—e.g., smelling some of the pungent medicaments still used by some dental practitioners—the patient protects him or herself by staying away.

The dental patient usually has to overcome this phobia at some time in his or her life, when his ability to cope with pain from and disfigurement of his or her dentition fails. He or she will then explain how the phobia developed. Any of the following are possible:

(1) A parent (usually the mother) was phobic. The behavior was learned by seeing how the parent reacted, by being told how dreadful it is to go to the dentist, or by being told patently insincere assurances that "it" is not going to hurt.

(2) Many phobic patients report learning their fear of pain through unpleasant experiences in school, hospital, or private dental services at an early age, usually in their preschool or early school years.

(3) The phobic response was exacerbated for many of these people by parental insistence on treatment by people not trained in methods that could have reduced or removed the problem. With adolescent rebellion comes

the refusal to have treatment, which may continue until work or university begins.

(4) At young adulthood, a course of treatment may be carried out that further reinforces the sense that it is safer to stay away from the dentist.

(5) At some time in adult life, depending on the severity of caries or periodontal disease, the phobic seeks treatment, either by referral to someone specializing in the psychological approach, or for some minimal, palliative treatment, in which case the dreadful cycle continues until the seventh age, sans teeth, sans everything.

ARITHMETIC OF THE PHOBIC UNITS: MULTIPLICATION

The physiological pathways of pain involve stimulation of receptors and the cortical interpretation of those stimuli resulting in the perception of pain and allowing for the possibility of pain-associated behavior. The symptoms of anxiety and fear associated with anticipated pain may be, for the patient, worse than the actual pain could ever be, causing the adoption of avoidance behavior as far as seeking routine dental treatment is concerned. The sum of the component units of the pain-threatening situation is far greater than the value of each individual item. As the avoidance behavior continues and the amount of dental treatment needed increases in complexity as well as in volume, the problems for both patient and operator tend to multiply.

ARITHMETIC OF THE PHOBIC UNITS: SUBTRACTION

Subtract Fear by Making a Safe Place

Phobics are special people. They did not ask to be this way: we, the profession, created them. We gave them and their forebears the diet that would bring them to us, we taught their parents and friends what pain meant, and we reinforced those lessons when they came to see us. We must now make a safe space for them to be fearful people who can express those fears and not be threatened by any of those things that engender the same reaction as the threat of a lingering, painful torture or death. They need, first of all, to be in a safe place at home or in the office to make the first telephone call, where they can speak to the person who will take care of them: it may only be by voice, but they need to meet the dentist/therapist on their own territory. The nature of hypnosis must be explained briefly, and they must explain as much of the problem as they need at that time. When they arrive for the first appointment, part of the fear of the unknown will then have been subtracted.

The second safe place must be a room that is not associated with the gadgetry and, sad to say, the smells of dentistry. The dentist must not be dressed in any form of the classic uniform: even the pastel matching surgeon's outfits will not pacify the phobic. The dentist must be in "plain clothes." It is so easy to let the patient identify any of his or her named fears with the white coat or dress or jacket, even if disguised in many colors. The anonymity of ordinary town clothes means that there is no direct focus for the phobic's attention: thus the phobic is minus a visual component of his or her fantasy.

The third safe place must be a really comfortable chair with arm and head rests, and preferably two other similar chairs, since the phobic will often bring a friend or spouse or relative not only for moral support, but also in fact—bearing in mind the severity of the phobic response—to save his or her life.

The fourth safe place must be created in the patient's mind by the use of hypnosis. The creative imagination that has been used to build a picture of life-threatening terror must be channelled, by the use of hypnosis, into a picture that will enable the patient to cope with his or her treatment to an acceptable degree. This place need not be very large: just big enough for a needle for intravenous anesthesia or sedation, big enough for a local anesthetic. It might have to be big enough to create room for instruments in the mouth, as where the phobia has become refined into a retching reflex. It might have to be big enough to accept the sounds of dental treatment. It has to be big enough for the new self-image of a confident patient.

ARITHMETIC OF THE PHOBIC UNITS: REDUCTION BY DIVISION

This is a numerically dependent technique of hypnotic induction. A full case history is taken, from the medical, dental, and psychological points of view. It is essential to hear all the patient's perceptions of the causes of his or her phobia. Where this particular technique is under consideration for use, the key question following the history is to ask the patient if he or she would feel more comfortable if he or she had less fear. If so, this means he or she is able to visualize a reduction in his or her sensory input. This must be followed by suggesting, while the patient is in hypnosis, a progressive diminution of the size of the fear.

When induction has been achieved by whatever appropriate method, either of two methods are followed, depending on the patient's individual ability to cope with imagery. If the patient is able to visualize a shape for the fear, he or she will usually be amenable to the suggestion that the fear has a texture, and this should be offered in

a leading form: is the fear smooth, rough, undulating, or billowing? Anything that implies softness or malleability will enable the patient to mould the fear into a new, more compact shape, and then into a spherical or cuboid form. Even if the patient produces irregularities or projections in the shape, these can be whittled off by suggestion. The shape itself is then reduced by dividing it in half, sometimes keeping both halves, sometimes discarding each half as the fear is cut down to the size of apprehension and allowed to remain, if the patient wishes, **as reasonable caution.**

Part of this technique is to avoid the use of words that might indicate that the fear is hard or impenetrable. The patient may nevertheless see his or her fear as being of some powerfully robust construction. He or she can then be asked to imagine the sort of mechanical crusher that reduces motor cars to the size of a small box, and then to use cutting equipment to diminish the solid core of fear. Each remaining fragment can be dissolved, using the same standards of judgment as for the amorphous fear that was coaxed into shape.

Where the patient is unable to give a form to the fear, he or she is usually susceptible to the suggestion that it can be measured. The technique suggested is that the patient be directed that the fear at its maximum is graded at ten on a scale that goes down to zero. The scale can be as huge as the patient wants: this eliminates the possibility of dealing with enormous numbers. When the numbers are reduced, usually as part of a hypnotic deepening process, if the scale is enormous, each slide down the scale creates a vast reduction. Either the numbers are decreased down the scale by progressive subtraction, in which a number at a time is taken away, or by division: the fear will become smaller by one-tenth when it is divided by ten, and so forth.

CONCLUSION

There have been countless reports of the phenomenon of reduction of pain sensation during high levels of excitement: in sport, battle, or religious ceremonies, for example, injuries occur without a concurrent perception of pain. There appears to be a need for directive attention to focus on the injury in order for the pain to be experienced at the time that it is inflicted. There is an endogenous modulation of pain that occurs when nociceptive information is prevented at the reticular system level from entering the spinal cord and its ascending sensory pathways.⁴ The basis of hypnosis in this context is the interference with the system of nociception. Hypnosis is an ancient art. It has long been known to influence the experience of anxiety and pain.^{5,6} A variable effectiveness has been reported,⁷ depending on the patients' degree of motivation,

expectation, and cooperation. In dental treatment, pain is enhanced by anticipation and fear, and a large part of the efficacy of hypnosis may be attributed to the nonspecific reduction of anxiety. Orne summarizes the position by stating that hypnosis "has been shown not to be an effective means of causing an individual to modify behavior that he is not ready or willing to modify."⁸ The effectiveness of hypnosis depends not only on the skill of the therapist but also on the patient's ability to acquire that skill for himself.

There are probably no new hypnotic techniques, only different forms of verbalization. This method has been proven useful in giving patients targets of fear-reduction leading to alteration in pain perception and treatment tolerance. As the fear decreases, the patient's confidence and coping ability increase. He or she may also quantify this progress as a natural corollary of the numerical processes involved.

REFERENCES

1. Sperry RW: Hemispheric disconnection and unity in conscious awareness. *Am Psychol* 1968;23:723.
2. Jaynes J: The origin of consciousness in the breakdown of the bicameral mind. Boston, Houghton & Mifflin, 1976.
3. Beecher HK: Measurement of subjective responses. OUP, 1959.
4. Nathan PW: Pain and nociception in the clinical context. *Phil Trans R Soc Lond B* 1985;308:219.
5. Hilgard ER: Hypnosis and Pain, in Sternbach RA (ed): *The Psychology of Pain*. New York, Raven Press, 1978, p 219.
6. Crasilneck HB, Hall JA: Clinical hypnosis in problems of pain. *Am J Clin Hypn* 1973;15:153.
7. Pilowsky I: Current views of the psychiatrist in the management of chronic pain, in Swedlow M (ed): *The Therapy of Pain*. Kluwers, 1986, p 31.
8. Oree MT, Dinges DF: Hypnosis, in Wall PD, Melzack R (eds): *Textbook of Pain*. Churchill Livingstone, 1984, p 806.

An Evaluation of the Analgesic Efficacy and Safety of Carprofen

James E. Lindenmuth, DDS, Morris S. Clark, DDS, and George E. Fryer, Jr., MA, MSW

University of Colorado Health Sciences Center, School of Dentistry, Denver, CO, USA

Nonsteroidal antiinflammatory drugs (NSAIDs) are among the most widely used therapeutic agents. They inhibit the biosynthesis of prostaglandins, preventing their interactions with pain receptors to other mediators of inflammation.

Carprofen is a new nonsteroidal antiinflammatory analgesic with antipyretic activity.^{1,2} Although its mechanisms of action and pharmacokinetics are well documented,³⁻⁶ carprofen has its own special properties.⁷⁻⁹ It has a half-life of 10 to 12 hours and has shown no fecal blood loss. It is effective for acute and chronic pain while being unique in causing no gastrointestinal effects.¹⁰⁻¹⁴

The purpose of this study was to evaluate the relative analgesic efficacy and safety of carprofen in comparison to other pain control medications used in oral surgery.

METHOD

The method used was a randomized, double-blind, parallel group clinical trial utilizing 248 outpatients randomly assigned to six treatment groups of almost equal size. They were ambulatory patients, between 15 and 63 years of age, and required the surgical removal of impacted molars. All experienced moderate to severe postoperative pain following the surgical removal of impacted molars.

We excluded patients on the following bases: (1) if they were pregnant or nursing women; (2) if they showed active GI ulceration or bleeding; (3) if they had active infections; (4) if they were intolerant of aspirin or NSAIDs; (5) if they had a history of drug/alcohol abuse; and (6) if they had a malignancy. Patients were not allowed to use tranquilizers or sedatives within a week of the study.

Each patient was given a questionnaire with an accompanying bottle of one dose of study medication and backup of standard analgesic medication. Test drug regimens for the six groups were: carprofen 75 mg; carprofen 100 mg; carprofen 150 mg; diflunisal 1000 mg; aspirin 650 mg; or placebo. The response to a single dose of one

Received March 1, 1989; accepted for publication August 17, 1989.

Address correspondence to Assoc. Prof. James Lindenmuth, University of Colorado, 4200 East 9th Avenue, Box C284, Denver, CO 80262, USA.