Applications of Cyberphysiologic Techniques in Pain Management

Candace J. Erickson, MD, MPH

There is evidence that hypnosis and related cyberphysiologic techniques were used for pain control in children as early as 1940 when John Elliotson reported on the use of hypnoanalgesia. However, there was little systematic research on hypnoanalgesia until the early 1960s. At that time, several controlled studies in adults demonstrated the effectiveness of preoperative hypnotic suggestion for postoperative pain control. There have also been a number of reports of the use of hypnosis as the sole anesthetic for major surgery in adults. These reports are rare, probably because of the relative safety and convenience of chemical anesthetics. There are no reports of using hypnosis as the sole anesthesia for major surgery in children.

In 1956, Goldie reported the results of a controlled study of the use of hypnoanesthesia for emergency room surgery in a population that ranged in age from 3 to 57 years. Goldie noted a significant reduction in the percentage of patients requiring chemical analgesia/anesthesia for suturing and for reduction of fractures when hypnosis was used. Over the intervening years, there have been a number of studies describing the use of hypnosis as an adjunct to pediatric anesthesia. The benefits described include: 1) preoperative medications may be reduced or eliminated altogether, 2) induction of anesthesia is easier, 3) it is often possible to reduce the amounts of chemical anesthetic necessary to maintain anesthesia, 4) the surgical and postoperative course may be smoother, and 5) there is an increase in postoperative comfort and a decrease in the requirements for postoperative analgesics.

Most research studies on hypnoanalgesia assess its...
A therapist who does not believe in the efficacy of hypnoanalgesia or who lacks faith in the child's ability to overcome pain is unlikely to succeed in helping the child.

effectiveness for procedural pain, especially the pain associated with bone marrow aspirations and lumbar punctures. There have been at least three case series and three controlled, randomized trials that address this question. The case studies report success rates ranging from 57% to 90% with the exception of 10 preschool children in one study. Among these 4 to 6 year olds, none demonstrated better than partial symptom relief. Two of the controlled studies evaluated hypnoanalgesia among school-aged children. Zeltzer and LeBaron found hypnosis to be consistently superior to the control intervention.

However, Katz and colleagues reported improvement from baseline on self-report pain measures for both the hypnosis and control groups, with no difference between groups. They also reported no improvement in either group on observer rated distress. In order to keep the observers blind to group assignment, in this study hypnosis was not induced during the actual procedures. The question thus arises whether the improvement noted among school-aged cancer patients using hypnosis for procedural pain in previous studies was the result of an observer bias caused by knowledge of treatment group assignment or whether the lack of improvement in observer-rated distress behaviors in this study was due to the lack of trance induction during the actual procedures.

The final randomized controlled trial involved only young children (aged 3 to 6 years, 11 months). In this study, the hypnotic technique of storytelling was found to be statistically more effective than behavioral distraction or standard medical care for decreasing distress, pain, and anxiety. The preponderance of the research evidence supports the effectiveness of hypnoanalgesia for procedural pain. It appears that with newer, more developmentally appropriate techniques, even very young children can benefit from the use of hypnotic analgesia.

There are case reports of effective use of hypnoanalgesia in numerous pediatric disorders with symptoms of chronic or recurrent pain, including recurrent abdominal pain, juvenile rheumatoid arthritis, reflex sympathetic dystrophy, hemophilia, terminal malignancies, sickle cell anemia, and migraine headaches. The use of hypnoanalgesia for migraine headaches has also been evaluated through a prospective, controlled, randomized trial comparing hypnoanalgesia with propranolol and placebo. Use of hypnosis was significantly more effective in reducing the frequency of headaches than either propranolol or placebo, which did not differ from each other. However, there were no significant differences in the subjective or objective intensity of the headaches between any treatment conditions.

MECHANISM OF ACTION

It seems clear from the research cited above that hypnoanalgesia is effective across a wide variety of clinical situations. There has been much speculation about how this analgesic effect occurs. Some researchers propose that the patients are pretending to be pain free in order to please the therapist. Such "pretending" might be possible with laboratory paradigms for pain. However, it is difficult to believe that patients, particularly children, would want to or be able to fake pain control with painful procedures or the severe pain that accompanies burns, malignancies, or sickle cell anemia. Others have postulated that hypnosis decreases anxiety rather than actually affecting pain itself. While it is undoubtedly true that hypnosis can diminish anxiety thus increasing pain tolerance, this does not appear to be the sole mechanism of action of hypnoanalgesia.

In a laboratory study using the tourniquet test with adult subjects rating both pain and anxiety, diazepam was administered to diminish anxiety. As self-reported anxiety decreased, self-reported pain increased. Meanwhile, patients are often able to control discomfort while still experiencing anxiety. This situation is exemplified by Erin, a 5-year-old cancer patient taught hypnosis skills to diminish the pain of lumbar punctures and bone marrow aspirations. After successfully learning to "turn off" the pain caused by her mother touching her with a needle, Erin faced a lumbar puncture. As the procedure began, Erin started crying with great force. Surprised by Erin's distress, the therapist inquired whether anything hurt. Erin stopped crying, looked at the therapist with a mixture of disbelief and disdain, and replied "Of course it doesn't hurt. I'm just scared."

At present, there are two lines of research—one physiological and the other psychological—that may provide some insight into the process through which hypnoanalgesia occurs. With the discovery of endorphins (endogenous, morphine-like peptides, which when released at various sites in the body produce an analgesic effect that lasts up to several hours), many felt that the key to hypnoanalgesia had been found. However, research in this area has been faced with technical problems of measurement and other methodological difficulties. Oleness et al conducted a pilot study of blood endorphin levels in four chronically ill children who were veterans in the use of hypnoanalgesia.

continued on page 148
Superior reduction for fevers over 102.5°F
Ibuprofen
Suspension 100 mg/5 ml

The following is a brief summary only. Before prescribing, see complete prescribing information in the Physicians' Desk Reference.

INDICATIONS AND USAGE: Ibuprofen is indicated for the reduction of fever in patients aged 6 months and older, and for the relief of mild-to-moderate pain in patients aged 12 years and older.

CLINICAL PHARMACOLOGY: Controlled clinical trials comparing doses of 5 to 10 mg/kg ibuprofen, and 10-15 mg/kg of acetaminophen have been conducted in children 6 months to 12 years of age with fever primarily due to viral illnesses. In these studies there were no differences between treatments in fever reduction for 1 hour and maximum fever reduction occurred between 1 and 6 hours. Response after 1 hour was dependent on both the level of temperature elevation as well as the treatment. In children with baseline temperatures at or below 102.5°F, both ibuprofen doses and acetaminophen were effective in their maximum effect, in that children with baseline temperatures above 102.5°F, the ibuprofen 10 mg/kg dose was more effective. By 6 hours children treated with ibuprofen had fever less than baseline temperature whereas children treated with acetaminophen 10 mg/kg still had significant fever reduction at 6 hours. In control groups treated with 10 mg/kg acetaminophen, fever reduction resembled that seen in children treated with 5 mg/kg of ibuprofen, with the exception that temperature elevation tended to return 1-2 hours earlier.

CONTRAINDICATIONS: Ibuprofen should not be used in patients who have previously exhibited hypersensitivity to ibuprofen, or in individuals with or part of the syndrome of nasal polyps, angioneurotic edema, or instances of bronchospastic, reactive arthritis, or other nonsteroidal anti-inflammatory agents. Anaphylactic reactions have occurred in such patients.

WARNINGS: Use in Pediatria: Bleeding and ulceration with NSAID Therapy. Serious gastrointestinal toxicity such as bleeding, ulceration, and perforation, can occur at any time, with or without warning symptoms. In patients treated chronically with NSAID therapy. Although minor upper gastrointestinal problems, such as dyspepsia, usually developing early in therapy, physicians should remain alert for ulceration and bleeding in patients treated chronically with NSAIDs even in the absence of previous GI tract symptoms. In patients observed in clinical trials of several months to two years duration, symptomatic upper GI ulcers, gross bleeding or perforation appear to occur in approximately 1% of patients treated for 3-6 months, and in about 2-4% of patients treated for one year. Physicians should ask about the signs and/or symptoms of serious GI toxicity and what steps to take if they occur.

Studies to date have not identified any subset of patients not at risk of developing peptic ulceration and bleeding, except for a prior history of serious GI events and other risk factors such as being associated with peptic ulcer disease, such as alcoholism, smoking, etc., or risk factors such as being associated with anticoagulant use. Elderly or debilitated patients seem to tolerate ulceration or bleeding less well than other individuals and most spontaneous reports of fatal upper GI bleeding in this population. Studies to date are inconclusive concerning the relative risk of various NSAIDs in causing upper GI disturbances. This group probably carry a greater risk of these reactions, although controlled clinical trials showing this do not exist in most cases. In considering the use of relatively large doses (within the recommended dosage range), sufficient benefit should be anticipated to offset the potential increase in GI toxicity.

PRECAUTIONS: General: Blurred and/or diminished vision, scotomata, and/or changes in color vision have been reported. If a patient develops such complaints while receiving Ibuprofen, the drug should be discontinued and the patient should have an opthalmologic examination which includes central visual fields and color vision testing.

Fluid retention and edema have been reported in association with ibuprofen; therefore, the drug should be used with caution in patients with a history of cardiac decompensation or hypertension.

Ibuprofen, like other nonsteroidal anti-inflammatory agents, can inhibit platelet aggregation, but the effect of ibuprofen on platelet function is not as great as that seen with aspirin. It has been shown to prolong bleeding time (but within the normal range) in normal subjects. Because this prolonged bleeding effect may be exaggerated in patients with underlying hemostatic defects, Ibuprofen should be used with caution in persons with minor coagulation defects and those on anticoagulant therapy.

Patients on Ibuprofen should report to their physicians signs or symptoms of gastrointestinal ulceration or bleeding, blurred vision or other eye symptoms, skin rash, weight gain, or edema.

In order to avoid exacerbation of disease of adrenal insufficiency, patients who have been on prolonged corticosteroid therapy should have their therapy tapered slowly rather than discontinued abruptly when Ibuprofen is added to the treatment program.

The antipyretic and anti-inflammatory activity of Ibuprofen may reduce fever and inflammation, thus diminishing their utility in diagnostic signs in detecting complications of presumed noninfectious, noninflammatory painful conditions.

Since Ibuprofen is eliminated primarily by the kidney, patients with significantly impaired renal function in this order to be cleared and a reduced dosage should be anticipated in order to prevent accumulation. Prospective studies on the safety of Ibuprofen in patients with chronic renal failure have not been conducted.

Safety and efficacy of Ibuprofen in children below the age of 6 months has not been established.

Pregnancy: Reproductive studies conducted in rats and rabbits at doses somewhat less than the maximum human dose did not demonstrate evidence of developmental abnormalities. However, animal reproduction studies are not always predictive of human response. There are no adequate and well-controlled studies in pregnant women, this drug should be used during pregnancy only if clearly needed. Because of the known effects of nonsteroidal anti-inflammatory drugs on the fetal cardiovascular system (closure of ductus arteriosus), use during late pregnancy should be avoided. As with other drugs known to inhibit prostaglandin synthesis, an increased incidence of dystocia and delayed parturition occurred in rats. Administration of Ibuprofen is not recommended during pregnancy.

ADVERSE REACTIONS: The most frequent type of adverse reaction occurring with ibuprofen is gastrointestinal toxicity, the percentage of adult patients reporting one or more gastrointestinal complaints ranged from 4% to 16%.

Adverse reactions occurring in 3% to 5% of patients treated with ibuprofen: nausea, epigastric pain, heartburn, dyspepsia, rash. Adverse reactions occurring in 1% to 3% of patients: diarrhea, abdominal distension, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of GI tract, headache, nervousness, paresthesias, tinnitus, decreased appetite, edema, fluid retention, oedema, rash, urticaria of drug disposition. Still other reactions (less than 1 in 100) have been reported, and are detailed in the full summary of prescribing information.

DOSAGE AND ADMINISTRATION: Swish well prior to administration.

Fever reduction in Children 6 months to 12 years of age; Dosage should be adjusted on the basis of the initial temperature level (See CLINICAL PHARMACOLOGY for a description of the controlled clinical trial results). The recommended dose is 3 mg/kg if the baseline temperature is less than 102.5°F or 5 mg/kg if the baseline temperature is greater than 102.5°F. The duration of fever reduction is generally 6-8 hours and is longer with the higher dose. The recommended maximum daily dose is 40 mg/kg.

Mild to moderate pain: 400 mg every 4 to 6 hours as necessary for the relief of pain in adults.

In controlled analgesic clinical trials, doses of ibuprofen greater than 400 mg were no more effective than 400 mg doses.

HOW SUPPLIED: Ibuprofen Suspension 100 mg/5 ml (teaspoon) — orange, berry-vanilla flavored

Bottles of 16 oz (480 ml)

NDC 0045-0469-01

NDC 0045-0469-16

SHAKE WELL BEFORE USING. Store at room temperature.

Caution: Federal law prohibits dispensing without prescription.

Techniques can be used in combination and should be tailored to the interests and attitudes of the child.

continued from page 146

Hypnoanalgesia in Children

Goldstein and Hilgard took a different approach. They suggested that, if hypnoanalgesia was mediated through endorphin release, then administration of naloxone, a drug which reverses the effects of morphine and endorphins, should negate the analgesic effects of hypnosis. They found that naloxone did interfere with hypnotically induced analgesia in the adults they studied.

The results of these two studies argue against endorphins as the mediators of hypnoanalgesia. However, further investigation is necessary to conclude that endorphin release is not affected by hypnotherapy.

Psychological research has led to the development of the theory of alternative cognitive controls. This theory, advanced by Hilgard and Hilgard, postulates that while in a hypnotic trance, there is an "other part" of the mind that is hidden from the "hypnotized part." This "other part" continues to monitor what is occurring in the child's mind, and at the destination without remembering the process of driving there. However, since the driver apparently took the correct route, stopped at lights, stayed on the appropriate side of the road, etc., some portion of his or her mind must have been monitoring these things without the driver's conscious awareness. The Hilgards tested this theory on a group of adult subjects capable of hypnotic pain control and found that while the hypnotized part reported low levels of pain, the other part reported higher pain levels. The presence of this "hidden observer" may account for the fact that, despite reporting no pain, subjects experiencing hypnoanalgesia continue to demonstrate physiological signs of pain (eg, increased heart rate).

FACTORS AFFECTING EFFECTIVENESS OF HYPOANALGESIA

One of the most important factors for the successful use of hypnotherapeutic techniques is the skill of the therapist in joining in an alliance with the child and encouraging the child in the use of his or her natural trance capacity. It is also important for the therapist to
analyze his or her own attitude toward discomfort to avoid projecting any negative notions about pain onto the patient. The therapist needs to be comfortable with a personal use of hypnotic skills in order to be confident of the child's ability to successfully use similar skills. A therapist who does not believe in the efficacy of hypnoanalgesia or who lacks faith in the child's ability to overcome pain is unlikely to succeed in helping the child.

There are a number of characteristics of the child, the child's pain, and the child's environment that can also influence the effectiveness of hypnoanalgesia.

Age
Younger children have a decreased tolerance of pain, probably in part due to their more limited repertoire of coping strategies. As noted above, several studies have found preschool children to be less responsive to hypnoanalgesia than their school-age counterparts. However, recent evidence points to the fact that when hypnotic techniques are altered to fit the child's developmental stage, even young children can benefit from hypnotic approaches to pain control (see "Helpful Strategies in Working With Preschool Children in Pediatric Practice" by Leora Kutner, pp 120-127). Elementary school-age children and adolescents both respond well to hypnoanalgesic techniques, but the specific techniques used need to be developmentally appropriate for the child. While a younger child might enjoy pretending to be a super hero impervious to pain, an adolescent may be more comfortable with a more cognitively based, "physiologically correct" technique like turning down the volume of the pain signal in the brain. Younger children appear to master pain control techniques more quickly (an average of 2 sessions) than older children (an average of 4 sessions).11

Intellectual Ability
As with age, it is important to choose hypnotic techniques that are appropriate to the intellectual abilities of the individual child. However, even mildly to moderately retarded individuals can use hypnotic techniques when the approach used is appropriate for the retarded youngster's mental age. It should also be kept in mind that children with certain chronic illnesses, such as cancer or sickle cell anemia, may experience some deterioration of their cognitive functioning over time. When this occurs, hypnotic techniques, which were originally quite successful, may no longer be beneficial. The hypnoanalgesic approach used should be adjusted to current cognitive functioning.

Context of the Pain
It would be expected that children will benefit less from hypnoanalgesia if their pain occurs in a negative context than if it occurs in a neutral one. Multiple factors influence the context of the child's pain.

The child's previous experiences with pain will affect current expectations. If previous experiences were negative, the child is likely to be anxious and to feel helpless. If the child emerged from a previous painful experience with a feeling of mastery, he or she is more likely to view the current experience as a challenge which can be mastered. In fact, providing children with this sense of mastery is one of the outstanding benefits of hypnoanalgesia. What the child has heard about pain from those people who are close to him or her also will influence feelings about and expectations of a painful experience. It is therefore important not only to assess the child's previous experiences of pain, but also the experiences and attitudes of close family members.

Coexisting physical and emotional states can influence pain tolerance and the effectiveness of hypnoanalgesia. Fatigue and physical discomfort can decrease pain tolerance and render the child less receptive to hypnotherapeutic interactions. Similarly, anxiety and depression both accentuate pain perception and interfere with the child's ability to effectively use hypnotic techniques. Conversely, excitement and happiness increase pain tolerance and facilitate the optimistic use of hypnotic techniques.

The child's understanding of the purpose of the pain also can affect pain tolerance. Very young children may not see pain as having any purpose at all. Older children may believe that the pain has no purpose (eg, when it is the result of an accident) or that its purpose is unjust (eg, when it results from a fight in which the child's cause was just). On the other hand, the child may see the pain as punishment (eg, if the accident occurred when the child was misbehaving or if the child started the fight). Pain may also be viewed as punishment for some unrelated or imagined misdemeanor. However, pain may be much better tolerated when it is viewed as having some logical purpose or some benefit. An older child's understanding that dressing changes keep the burn clean and aid healing may help the child tolerate the discomfort.

Most children see pain as bad. They do not recognize it as an important warning signal that protects them from harm. Reframing pain as a useful and important part of their bodies' defense system often helps children shift from a negative attitude.
If the pain is serving an important psychological purpose, hypnoanalgesic techniques are unlikely to be effective without psychotherapeutic intervention directed at the underlying psychological situation.

toward pain to a more neutral stance. Likening pain to a fire alarm that goes off when something is wrong may help children understand this concept. The concept of pulling their hand away from something hot to avoid getting burned is one that most children recognize. Suggestions for pain control can easily be incorporated into the fire alarm analogy as follows: “A fire alarm is very loud. It is often so loud that it scares you when it goes off. But it needs to be loud to be sure you hear it and put out the fire. Once the fire is out, you don’t need the alarm anymore. Then the loud noise is just a bother. So once you are sure that things are okay, it is okay to turn the alarm off until you need it again.” This reframing may help chronically ill youngsters to stop seeing pain, and perhaps even their bodies, as enemies and promote a view of a more constructive, cooperative alliance. It also provides a natural introduction to the “switching” technique described below.

At this point, a word should be said about the differences between chronic and acute pain. Acute pain is often perceived as an indicator that something is wrong. The individual then mobilizes to take care of the problem and make the pain stop. In this situation, there is anxiety, but also mobilization to action. There is an expectation that once the problem is taken care of the pain will stop. With chronic pain, the pain no longer serves as a particularly useful signal—the patient knows what the problem is. The patient also knows that when the pain starts it is likely to get worse. This increases the anxiety. It is common that even when the pain goes away, it is likely to come back again. This diminishes any sense of relief.

Chronic pain patients often fear that their pain will not be adequately treated. This heightens anxiety. They also may be angry about the disability caused by their disease and about their continual lack of control. For chronic pain patients, this spiral of anxiety and despair may greatly magnify perception of pain. Providing prompt, adequate pain relief is an important step in breaking this cycle. Reframing the pain as a warning signal can also be helpful. Teaching hypnoanalgesia puts some control over the disease process back in the hands of the patient, providing relief from discomfort and decreasing concomitant disability.

The existence of an emergency situation profoundly influences the child's perception of pain. Because of the emergency, the child is already in a heightened state of awareness, albeit a negative one. The child also wants to be comfortable and is therefore highly motivated to respond to positive suggestions. In this situation it is important just to “do” hypnosis rather than engage in lengthy explanations. First, it is essential to capture the child's attention and to set up positive expectancy. This can be done by comments such as “What beautiful, healthy red blood you have” or “You have big, beautiful tears. Would you make some more?” The second statement reframes the child's crying into something that he or she is choosing to do. It is also important to convey an understanding of the situation and acknowledge the child's feelings, for example, “It must be scary to be in a new place like this and to have that cut.” The child should be reassured, but vague generalities should be avoided. Instead, statements such as “I wonder if it will stop bleeding in 1 minute or 2 or 5” imply that the situation will improve and arouse the child's curiosity, which in turn will decrease anxiety and improve cooperation.

Cognitive mastery is also important, and the child should be told what is being done and why. “I am going to wash the cut with cool water so that it is very clean and gets better quickly.” The physical sensations that the child is likely to experience should also be identified. If peroxide is used, the child may be told that “this sometimes feels cool and bubbly.” It is important to remember that for a frightened child, any unexpected sensation such as the tightness of a tourniquet or the coldness of alcohol is likely to be interpreted as pain. Reframing the sensations before they happen (e.g. “this will feel tight” or “this will feel cool”) will build both the child’s trust and diminish the likelihood that relatively innocuous sensations will be misperceived as pain. If something may be painful, the child should not be misled. However, statements such as “This is going to hurt” may limit the child's ability to modify pain by positive suggestion. Milton Erickson found a useful alternative, i.e., “This might hurt, but I think you can stop a lot of the hurt, or maybe all of it.” It is then appropriate to move into more specific therapeutic suggestions such as turning off pain switches (described below), imagining something else that the child would really like to be doing, or focusing the child's attention on some other part of the body, e.g., “What does the other knee feel like? Is it warm or cool?” Kohan21 and Olness and Gardner15 have described several techniques. Use of these techniques in emergency situations can decrease anxiety and discomfort, increase the child's cooperation and sense of control, and lead to positive

continued on page 152
The focus in teaching hypnotic techniques to children should always be on the child's mastery.

Individual Differences in Pain Tolerance
When confronted with the same painful stimulus, some children will continue playing, some will stop only long enough to have the parent “kiss it and make it better,” and some will abandon their play and act as if something catastrophic has happened. Using Petrie’s terms, these children are reducers, moderates, and augmenters, and they are likely to distort their perceptions in other areas in the same way they distort their perception of pain. Aspirin and alcohol, both of which are associated with increased pain tolerance, will lessen pain for augmenters, but have little effect for reducers. Similarly, one might expect hypnoanalgesia to be more effective for augmenters than for reducers. However, moderates might be the most responsive to hypnotic pain control, especially if the augmenters have some emotional investment in expressing pain.

Emotional Significance of Pain
In addition to the common emotional reactions to discomfort, pain may serve an emotional purpose for some patients. There are numerous reasons why a child could have a psychological investment in his or her pain. These include 1) getting love and attention, especially if the child is ignored when not in discomfort, 2) avoiding feared or unwanted situations that would be unavoidable if there were no pain, 3) maintaining family stability if the family mobilizes and comes together only when the child is in pain, 4) being punished for real or imagined wrongs, 5) identifying with a loved one who has similar pain, and 6) controlling others by using pain. Needless to say, if the pain is serving an important psychological purpose, hypnoanalgesic techniques are unlikely to be effective without psychotherapeutic intervention directed at the underlying psychological situation.

Acceptability of Hypnosis to Family
The family may share many of the misconceptions about hypnosis described above. These must be dispelled prior to beginning hypnotic work lest the parents unwittingly undermine the child's confidence. Many of the approaches useful in explaining hypnosis to the child can also be of value with the family. It is important to mobilize the parents as therapeutic allies in promoting the child's sense of mastery. However, it is also important that the parents realize that the child's hypnotic work is his or her own and that the parents should not nag the child to practice or otherwise interfere. It is often useful to teach the child hypnotic skills and then allow the child to teach the parents what he or she has learned. At times, cultural factors must also be considered. Among Carribean black families concerns about voodoo or black magic may need to be explored. With Hispanic families, traditions of curanderos or espiritistas may support the use of hypnotic techniques.

Attitudes of Medical Staff Toward Hypnosis
As with the family, the medical staff can undermine the child's ability to successfully use hypnotic
techniques. If the health care provider expects an experience to be a negative one, then negative suggestions will likely lead to the fulfillment of this expectation. However, even professionals who are convinced that hypnosis can help may unwittingly sabotage the child's efforts by comments like "This is going to hurt." Such comments are usually made in an effort to be truthful with the child. The motive is commendable since lying to the child will only undermine trust, both immediately and in the future. However, by asserting that the procedure will hurt, the caretaker is denying that the child can alter his or her perceptions and eliminate the discomfort. More useful comments might be "This may hurt some, but it just may not bother you very much" or "Some people say this feels like pressure, some like a buzzing, some like a mosquito bite. I wonder what it will feel like for you." These implicit suggestions can be used even in the absence of formal hypnotic training.

Hypnotizability
There is evidence that, in adults, efficacy of hypnotoanalgesia is related to hypnotizability. Hilgard and LeBaron found that children who were less hypnotizable were less successful with hypnotic pain control. However, children are very hypnotizable and usually score quite highly on formal tests of hypnotizability. It is now a widely held opinion that formal tests of hypnotizability do not discriminate sufficiently to be of any value with children. Moreover, in a recent study of 6 to 12 year olds, Zeltzer and colleagues found that hypnotic susceptibility was not strongly related to hypnotic pain reduction.

GENERAL PRINCIPLES FOR TEACHING HYPNOANALGESIA
The focus in teaching hypnotic techniques to children should always be on the child's mastery. The therapist should demonstrate confidence in the child's abilities. The therapist's behavior must reflect this attitude as well. Thus, the child should be given choices about the imagery to be used and how much to practice. This process requires getting to know the likes and dislikes of the child as well as adapting to the child's developmental stage. An understanding of the parents' needs and wishes can facilitate enlisting their support of the hypnotic work and avoid possible sabotage.

In the initial conversations about the child's discomfort, it is important for the child to describe the pain. It must be recognized that the descriptive words used by adults may not be meaningful to a child. If the child cannot describe the pain, alternatives such as "a hen pecking," "a cat scratching," "a raging fire," or "a squeezing" might be offered. Children who have developed number concepts should be asked to rate
The therapist should avoid being too specific about when and how the pain will go away.

continued from page 153

their discomfort on a scale from 0, no hurt, to 10, the worst hurt ever for this problem. There are several picture scales available for rating pain in younger children. Rating the pain is important because, if the pain decreases from 10 to 7, although it may still be quite severe, the child will get feedback that it is getting better.

As noted above, if a child has difficulty believing that hypnosis can control pain, biofeedback to demonstrate physiologic control can be useful. Similarly, demonstration of other hypnotic phenomena such as catalepsy or arm levitation often impresses the child and increases their receptivity.

In most cases, it is important to go beyond relaxation to specific suggestions or imagery to obtain hypnoanalgesia. The types of suggestion that can be used are discussed below. For prolonged pain, the child need not stay in trance for the pain to be controlled. Rather, posthypnotic suggestion can be used to maintain pain relief for up to several hours. If discomfort begins to return, the child can simply reinduce trance, repeat the hypnoanalgesic and posthypnotic suggestion, and come out of trance to enjoy several more hours of pain relief.

The therapist should avoid being too specific about when and how the pain will go away. Comments such as “The pain will be gone when I count to 10” back both the therapist and the patient into a corner. If the prophecy is not fulfilled, the therapist and the use of hypnotic techniques will lose credibility, so that even appropriate suggestions may not be effective. It is also important to avoid situations in which the patient or the therapist must demonstrate hypnotic pain control or loose face. Such situations remove the control and mastery from the child and lessen the likelihood of success.

Defining success is also an important consideration. Some children may choose to continue crying or saying “ow” during procedures as an expression of fear or anger. This may occur despite excellent control of discomfort, lack of anticipatory anxiety, and good cooperation with the procedure. The case of Erin mentioned above is an example of this phenomenon. Similarly, children may say that the “hypnosis helps some, but not a lot” despite pain ratings which drop from 10 to 2. A young man who made such a statement explained that “it didn’t help a lot until I had no pain at all.” Regardless of what happens in any single experience, it is important to positively reinforce the child for whatever he or she accomplishes. It is useful to suggest to children that as they continue to use hypnosis, their skills will get better and better.

Children may not always choose to use their hypnotic skills. A child may use hypnoanalgesia quite effectively for one or a number of procedures, and then not use it. There are usually excellent reasons for the child’s decisions, even though they may not be readily apparent to the clinician. An example of this is a teenage girl, Latoya, who was able to use hypnosis quite well to control the pain of her sickle cell crises. However, after several months, when Latoya was hospitalized for crisis pain and the therapist came to see her, although clearly in pain, she would demur from using hypnoanalgesia. The therapist would stay with her for half an hour, and then return the following day. On the second hospital day, Latoya would willingly use her hypnosis skills to decrease her pain. After several such hospitalizations, Latoya was able to articulate her feelings. Pain had always been an important fact in Latoya’s life. However, whenever she was in pain, people tried to make her better and, when unsuccessful, avoided her. Her therapist was the only person who was willing to accept her the way she was and to stay with her when she was in pain.

Hypnosis may significantly decrease the amount of medication required for pain control. However, it should be noted that certain medications may diminish the effectiveness of hypnoanalgesia. Medications that are sedating or cloud the sensorium may limit the child’s use of cognitive faculties, thus inhibiting the successful use of imagery. Needless to say, medication should not be withheld from a child who is in pain. However, in order to facilitate their use of hypnotic techniques, many patients opt to forgo preprocedural sedation or to minimize the use of strong antiemetics.

HYPNOANALGESIC TECHNIQUES

There are many different techniques that have been developed to facilitate hypnoanalgesia. Most techniques suggest dissociation, either directly or indirectly. Using phrases such as “that hand” instead of “your hand” promotes such dissociation. Techniques can be used in combination and should be tailored to the interests and attitudes of the child. Sometimes, a child will develop his own technique. When this happens, it is likely to be more effective for that child than any technique devised by the therapist.

There are several basic categories of techniques, each of which will be briefly described. Then one technique, the switch technique, will be described in more detail. Readers interested in descriptions of more specific techniques are referred to Olness and Gardner.15

One approach to hypnoanalgesia is direct suggestion for anesthesia. These techniques include suggesting numbness, imagining applying topical anesthesia or local anesthesia, developing glove anesthesia and transferring it to another part of the body, and the
switch technique. Another approach involves distancing suggestions and may include moving the part of the body in pain away from the self, putting the pain in some other body part, or imagining being somewhere different which is comfortable and happy. There are suggestions for feelings that are antithetical to pain. These suggestions involve imagining being comfortable, being relaxed, or laughing at something funny. There are also techniques that distract the child. These include talking about favorite activities, telling stories, focusing minutely on the medical procedure or on recounting the injury, or focusing on some other sensation or part of the body. Finally, some children are unable to focus attention on anything but the pain, and there are hypnoanalgesic techniques that ask the child for a detailed description of the pain, with the therapist offering subtle suggestions for change.

As noted previously, the switch technique is one that directly suggests analgesia. It is based on a simplistic model of how pain is transmitted and received. What follows is a case example of a child using this technique.

Kenny is an 11-year-old male with acute lymphoblastic leukemia who is currently in remission. He was referred for training in self-hypnosis when he had to be wrestled to the floor and dragged into a treatment room for a lumbar puncture. He often exhibited similar reactions to placement of intravenous lines and intramuscular injections. Kenny was very distressed by his own behavior, but felt that he had no control over it. From the initial discussion with Kenny, it became obvious that he was very interested in what was happening to his body and how things worked. The signal function of pain was discussed as was hypnosis and what it was like. Kenny was initially taught to self-induce a trance state using an eye roll followed by deep breathing and progressive relaxation. After 1 week of home practice, Kenny was quite adept at this procedure. At the second visit, Kenny was taught the switch technique for pain control. Since he was to receive an intravenous injection of vincristine that day, Kenny selected to work on anesthetizing his hand. Before beginning, permission was obtained from Kenny to touch his hand. The following is a transcript of the switch technique that was used after Kenny put himself into a comfortable trance:

"You may want to imagine that you are looking at your hand, seeing your skin and your fingernails and the bluish lines of your veins. And then it might be interesting to use 'x-ray vision' to look underneath the skin and see the muscles and the bones, the blood vessels and the nerve. The nerve can be particularly interesting. It might look like a wire or a thread. I wonder what color that nerve from your hand is? [Kenny said white. This indicated that he was in fact visualizing as suggested.]

"You may want to follow that nerve to see where it goes. Because, as you know, nerves carry signals from all parts of the body to the control rooms in the brain. And you may enjoy following that white nerve, up the arm to the elbow, up to the shoulder, across the shoulder into the neck, into the spinal cord, and up to the brain. It is interesting to see what that control room looks like. Some people's look like a computer center. Some look like the control room of a spaceship, you know with the TV screens, each for a different part of the body. Do you see TV screens? [Kenny nodded yes.] You may want to look around at all of the different TV screens until you find just the right one. The one for that hand. You may even be able to see the hand on the screen. Let me know when you've found the right screen. [Kenny nodded.] Very good.

"Now there is often a switch beside the screen. Or maybe it's underneath. And sometimes the switch is like a light switch that just turns on and off. And sometimes it is like the volume control on a TV or radio, the kind that you can adjust to how loud you want it to be. Or sometimes it's buttons like on a remote control. I wonder what kind of switch your screen has. [Kenny said like a TV knob.] Good. Now it's nice to know that the knob controls how loud the signal from the hand is. And now as you feel me touching the hand, you may want to turn the knob just a little bit to see which way makes the signal louder and which way makes it lower. And then you may want to turn the knob to the place where the signal from the hand is just exactly as low as you would like it to be. You may even want to turn it down so low that you can barely feel me touching the hand. Or maybe you want to turn the switch off completely. It is nice to know that the more you practice turning the knob, the easier it will be to lower the signal more and more. When you get the knob just to where you want it to be, you can leave it there. Even when you come out of trance, the signal will stay low for up to several hours. It's also nice to know that if the signal starts to get louder, you can always just go back into your control room and readjust the knob to where you want it to be. Of course it is important to remember not to leave the knob turned down when you are just practicing. Because the signal is important to warn you if there is a danger. So it is important
when you are practicing to turn the knob back to normal before you bring yourself out of trance."

Kenny successfully used hypnoanalgesia for his intravenous vincristine that day. The nurses were amazed, particularly since it required five attempts before access was obtained. Kenny was very proud of his accomplishments and was quite pleased with all of the praise he received from the staff. He continued to use the technique successfully for intravenous medications. After 8 weeks, Kenny was scheduled for a lumbar puncture, and was secure enough with the technique to forget premedication. Although anxious, he successfully completed the lumbar puncture, having reduced his discomfort level from 10 to 2. He continues to use hypnotic techniques regularly for procedures and has learned to adapt them to use for performance anxiety at school.

SUMMARY

Hypnoanalgesia is a simple and effective method of pain control that is easily learned by children. It has been shown to be effective across a wide variety of clinical situations. In addition to decreasing discomfort, hypnoanalgesia diminishes anxiety, and increases mastery, cooperation, and hope. Particularly for children with chronic illnesses, this technique can place some control over the illness in the hands of the child and engender greater competence and independence.

REFERENCES
