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APPLICATION OF HYPNOSIS AND SUGGESTION IN ANESTHESIOLOGY

by

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Hypnosis was believed in early days to be a panacea in medical practice, especially in psychiatric therapy. In 1821, hypnosis was first utilized by Recamier (1) for the prevention of pain in surgery, and there were several reports on the experiences of hypnosis in anesthesia or in surgery until 1850. Since 1846, when certain chemoanesthetics such as ether and nitrous oxide proved to be more successful in anesthesia, the use of hypnosis has lost its popularity, because these chemical agents made the technique of anesthesia more simple and the result was more efficient than that of hypnosis. However, at the end of the 19th century, there arose a renewed interest in hypnosis and it was used again to minimize fear, apprehension or feeling of pain intensified by psychic tension and to reduce the total amount of chemical agents used for premedication and anesthesia. Some anesthesiologists have used the technique of hypnoanesthesia (2) to obtain a complete anesthesia without any chemoanesthetics. Moreover, posthypnotic suggestions (3,4) have been reported to be effective in lessening postoperative pain and in reducing the amount of narcotics in the postoperative period. From the point of psychiatry, hypnosis and suggestion (5,6) may be used to protect the patient against psychic traumas referred to anesthesia or surgical procedure.

We performed hypnosis and suggestion in 27 clinical cases which underwent various surgical procedures (Table 1). As a means of hypnotic induction, we used generally the relaxation technique of limbs and body under hyperventilation and sound of calm music or metronome, or the "concentration of attention" technique by a steady gaze at a fixed point. And then some verbal suggestions were added, e. g. : "You are getting more drowsy and feeling more

and more sleepy. Your eyelids are very heavy. Now, ... sleep soundly, very deeply." The verbal suggestions were not always the same, and the patients were given suitable suggestions case by case. In several cases we recorded the changes of galvanic skin response, from which we might be able to assess the stage of hypnosis.

Table 1

No.	Age (Years)	Sex	Diagnosis
1	8	♀	L. C. C.
2	38	♀	Breast cancer
3	11	♀	Cushing's syndrome
4	45	♀	Breast cancer
5	19	♀	Paralysis of right antebrachium
6	52	♀	Breast cancer
7	32	♂	Raynaud's disease
8	5	♂	Retained testicle in inguinal canal
9	28	♀	Pericostal abscess
10	20	♂	Adhesive pericarditis
11	7	♀	Harelip
12	9	♀	Osteomyelitis of left tibia
13	29	♀	Stomach polyp
14	50	♀	Nephrospasis
15	35	♀	Thyrotoxicosis
16	30	♀	Grave's disease
17	53	♀	Nephrolithiasis
18	12	♀	Tuberculous lymphadenitis of the neck
19	17	♀	Ovarian tumor
20	32	♂	Mixed tumor of left parotid gland
21	24	♂	Cleft-palate
22	19	♀	Grave's disease
23	28	♀	Cystoma of neck
24	48	♀	Coxalgia
25	24	♀	Stomach cancer
26	21	♀	Monteggia's fracture
27	25	♀	Uterine cancer

I. Preoperative Interview

The psychic tension of preoperative patients was generally affected by fear, apprehension and anxiety. As Schultz (7) has reported, preoperative patients usually have been such fears that he may awake during surgery, that the operation may be too painful, that he may tell his secrets to others during the induction

of anesthesia, that he may not get well postoperatively, that he may suffer from postoperative pain. Hypnosis and suggestion can be a suitable method for alleviating these fears or anxiety. Successful results may not be obtained with the first application of hypnosis. Repeated preoperative interviews of the anesthesiologist with the patient is very valuable. It is also important to make ready the patient for hypnotic induction, especially it is desirable that he may believe the hypnotic physician to be a competent and sincere person. Most of the preoperative patients are generally ignorant of the relation between hypnosis and anesthesia or surgical procedure in comparison with the subjects who were treated with hypnoanalysis or hypnotherapy. It is unsuitable to perform hypnosis directly without any sympathetic approach to the patients. They may show psychic resistance to the induction of hypnosis or the hypnotic physician. Therefore, a well-trained anesthesiologist or psychologist must have a preoperative interview and talk with the patients frankly. From this interview, we can well appreciate the patient's psychic tension and can win their confidence. Once a good rapport with the patients is established, they may accept suggestions willingly and cooperate with hypnotic or anesthetic induction and surgical procedures.

Case 1

R. W., a 21 year-old woman, Monteggia's fracture: She had been operated on under local anesthesia about 8 months ago. She was admitted to our hospital two weeks prior to the reoperation. When we visited her in the ward, she said us anxiously; "The last operation was very painful. The operation this time will be painful, too? I am afraid I can't sleep to-night, for fear of operation." Then we brought her to a quiet room, and talked with sympathy; "You will undergo the operation safely. You will get a comfortable recovery from anesthesia." And we began hypnotic induction, but she could not reach the medium trance of the hypnotic stage. Then we gave the suggestion; "You will surely have a sound sleep to-night. You can sleep better and better, if you breathe deeper and deeper." After she opened her eyes, she told us; "Thank you, I feel very comfortable now. I may be able to sleep to-night."

II. Hypnosis, Suggestion and Premedication

Preoperative patients may apparently be calm by the administration of premedication. However, when they were brought to the operating room at the scheduled time, they showed not infrequently a tendency of elevated psychic tension. Hypnosis and suggestion are often useful to alleviate the patient's apprehension and to achieve a state of psycho-muscular relaxation (4,5). This relaxation can be achieved in some cases by hypnosis alone without any premedication. Generally we performed a rapid induction of hypnosis in conjunction

with some premedications: pentobarbital calcium by mouth with meperidine and atropine or ganglioplegic agent (Pacatal) intramuscularly. In some cases barbiturate or meperidine resulted in an exaggerated behavior to suggestion, but Pacatal seemed to be useful to induce hypnosis more easily and smoothly, particularly when it was administered with barbiturate. The cases which were administered atropine alone showed rigidity of the extremities and catalepsy of the eyelids in the stage of light trance. On the contrary, physical and mental relaxation were more remarkable than the rigidity or catalepsy in those cases which were administered meperidine, especially ganglioplegic agent. The hypnotic stages of patients may be influenced not only by an induction technique of hypnophysicians, but also the total amount of chemical agents used as premedication. Although we could not always successfully arrive at the deep trance in many patients, hypnosis and suggestion appeared to be a suitable method to alleviate psychic tension and to reduce the amount of chemical agents. In our 27 cases, the levels of hypnotic trance were as follows: the hypnoid was in 5 cases, the light trance in 13 cases and the medium trance in 8 cases.

Case 2

K. S., a 12 year-old girl, tuberculous lymphadenitis of the neck: At 9:30 a.m. the patient was given 4 mg/kg of Pacatal and 0.3 mg of atropine as premedication. She was brought to the operating room at 10:30, when her galvanic skin response was suddenly agitated apparently by anxiety and apprehension caused by some noises of the operating room (sounds of instruments or footsteps and voices of doctors or nurses) (Fig. 1). Immediately the following

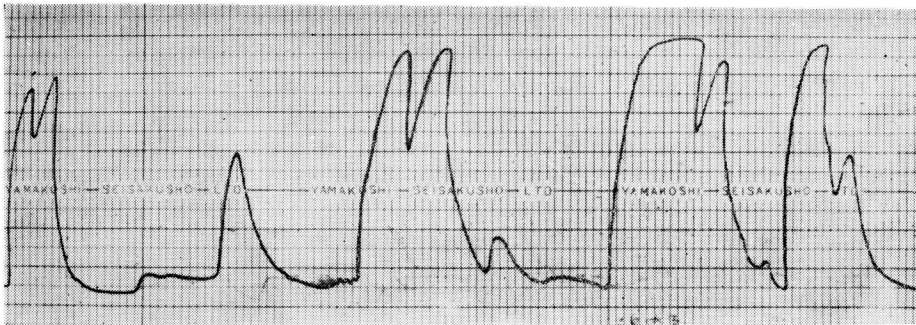


Fig. 1: Galvanic skin response in the operating room

suggestions were given; "You can relax all the muscles of your body. It may seem strange to you at first, but soon you will find it very easy. Breathe deeply and deedly. You'll fall fast asleep. You'll feel sleepy and sleepy; sleepier and sleepier. Now you can not hear any sounds. You are not afraid of being operated. You feel very comfortable." Then she breathed quietly and responded slowly to the galvanic skin response (Fig. 2).

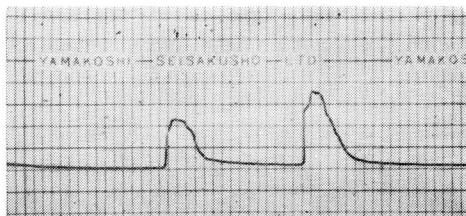


Fig. 2: Galvanic skin response after hypnotic induction

III. Hypnosis and Suggestion in Relation to Anesthesia

In suitable patients, minor surgeries (dental extraction, curettage, incision and drainage) may be performed successfully under hypnoanesthesia alone or hypnosis in conjunction with local anesthesia or light general anesthesia. (4,5,8,9). Marmer reported his successful experiences in cardiac surgery under hypnoanalgesia or hypnoanesthesia. However, in major surgery of stomach, intestine, liver, kidney, lung or heart, hypnosis and analgesic suggestion may not always be a substitute for chemoanesthesia except in certain carefully selected patients under suitable situations.

Case 3

F. S., a 19 year-old woman, paralysis of right antebrachium: The day before operation, the patient exercised physical and mental relaxation. At the scheduled time she was given 2 mg/kg of pentobarbital calcium by mouth. After 30 minutes of this premedication, she was brought to a quiet room and induced to hypnosis. Arriving at the medium trance, she was given analgesic suggestion with positive or negative pin stimulation at the site of cut down. Her breaths changed irregularly at the beginning of positive pin stimulation (Fig. 3). We

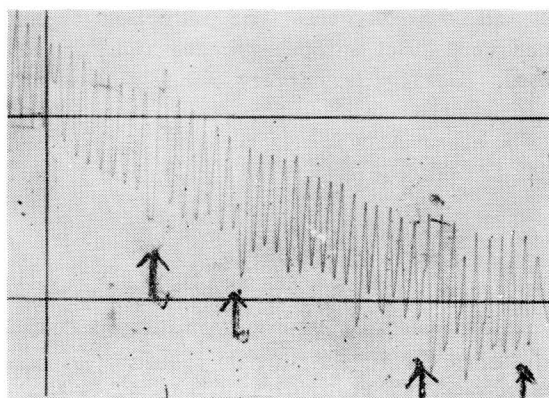


Fig. 3: Spirogram in the medium trance
 ↑: positive pin stimulations while giving analgesic suggestion

repeated analgesic suggestions, then she could breathe regularly and quietly. Cut down was performed under complete hypnoanesthesia without any local anesthetic (Fig. 4).

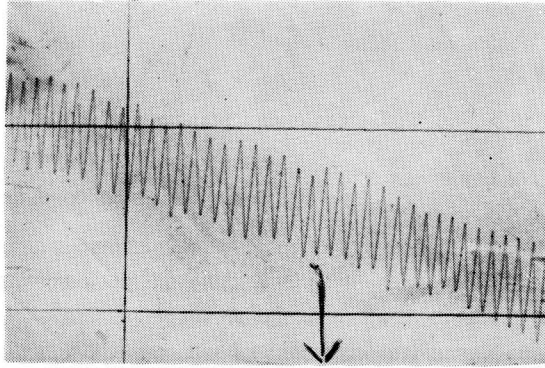


Fig. 4: Spirogram under complete hypnoanesthesia
↓: cut down started

Case 4

S. A., a 9 year-old girl, osteomyelitis of the left tibia: About 2 hours before operation, only 0.3 mg of atropine was administered as premedication and hypnotic induction was begun. But the hypnotic level could not reach beyond the hypnoid. Immediately we told her with sympathy; "The anesthesia this time will be different from last time. We will not use an inhalation mask. We will not give you a stink of inhalation gases." Then she achieved the medium trance, and we put the mask after the following suggestions; "I'm going to touch this area of your mouth, and when I touch it, you will lose all sensation and feeling. You may be able to smell a perfume." Inhalation anesthesia was performed with 50 % nitrous oxide and 50 % oxygen. The induction of anesthesia was very smooth, she remained very quiet without grimace and her respiration and pulse rate were not agitated. During the surgery of one and a half hour, the total amount of 4 mg/kg of pentothal was administered intravenously with 50 % nitrous oxide and oxygen. The operation was performed successfully under hypnoanalgesia. At the termination of the procedure, she was given the postanesthetic suggestion.

IV. Postanesthetic Suggestion

During the recovery from anesthesia and surgery, the patients may suffer from various complications such as nausea, vomiting, hiccups, palpitation, pressure sensation in the chest or in the throat, inability to move the extremity and benumbed sensation in the limbs. These symptoms can result partly from certain pathologic conditions and partly from emotional disturbances after anesthesia and surgery. Postanesthetic suggestions may often be useful to

alleviate such complications(9,10), but these suggestions were not always accepted by the patients, because of the make-up of physical and mental tension by the feeling of pain. When surgery was completed, we used postanesthetic suggestions repeatedly, reemphasizing deep breathing and coughing on command and suggesting that there would be no pain or discomfort. It was interesting to note that in our 14 cases any narcotics and sedatives were required during postoperative course (Table 2).

Table 2

No.	Age (years)	Sex	Diagnosis
1	8	♀	L. C. C.
* 2	38	♀	Breast cancer
3	11	♀	Cushing's syndrome
4	45	♀	Breast cancer
* 5	19	♀	Paralysis of right antebrachium
* 6	52	♀	Breast cancer
* 7	32	♂	Raynaud's disease
8	5	♂	Retained testicle in inguinal canal
* 9	28	♀	Pericostal abscess
*10	20	♂	Adhesive pericarditis
11	7	♀	Harelip
*12	9	♀	Osteomyelitis of left tibia
13	29	♀	Stomach polyp
14	50	♀	Nephrosipasis
*15	35	♀	Thyrotoxicosis
*16	30	♀	Grave's disease
17	53	♀	Nephrolithiasis
*18	12	♀	Tuberculous lymphadenitis of the neck
19	17	♀	Ovarian tumor
20	32	♂	Mixed tumor of left parotid gland
*21	24	♂	Cleft-palate
22	19	♀	Grave's disease
*23	28	♀	Cystoma of neck
*24	48	♀	Coxalgia
25	24	♀	Stomach cancer
*26	21	♀	Monteggia's fracture
27	25	♀	Uterine cancer

(*: needed no narcotic or sedative medication postoperatively)

Case 5

N. O., a 32 years-old man, Raynaud's disease: The operation finished at 4:20 p. m.. During the recovery from anesthesia when the patient was in a state

of amnesia, we suggested him; "Your operation finished successfully. Your recovery will be comfortable. You may be free from postoperative pain. You may be able to pass urine at 8:00 p.m., if you will pay attention to your wrist watch. Now I will count from 1 to 5 and you will open your eyes and awake comfortably." Then he relieved from hypnoanalgesia. He passed urine at 7:30 p.m.. During the postoperative course he complained of no nausea and no feeling of pain. When we visited him in his ward on the next day, he said; "I hear that the recovery from anesthesia and operation is uncomfortable. But I myself felt very comfortable. Thank you very much."

V. Comment

Although hypnosis and suggestion are an antique method to achieve anesthesia in a surgical operation, it can be applied again in modern practice of medicine. Hypnosis and suggestion seem valuable not only as a means of reducing the amount of total chemoanesthetics required, but also as a protective method of psychic trauma(11) derived from operation or anesthesia. Betcher(9) has reported that the patients who are in fear and anxiety prior to operation often show emotional reactions postoperatively, and are likely to suffer from postoperative complications due to psychic tension. Schultz(7) has suggested that deaths can occur in the operating room due to excessive fear and anxiety. Hypnosis can be used to help the patients to relax and to obviate excitement or apprehension. The combination of hypnosis or suggestion with chemoanesthetics may reduce the total amount of chemical agents for preoperative sedation, anesthesia or postoperative medication, and may protect the patients from harmful effects due to heavy application of chemoanesthetics. Moreover, hypnosis and suggestion may help the patients to breathe deeply, quickly or slowly according to the order of a hypnotic physician, and it can be maintained for long periods and terminated at will. But there are still many problems whether it be reasonable or not to perform major operations under hypnoanesthesia or hypnoanalgesia. Raginsky(3) and Marmer(10) suggested that under hypnosis they could not find any deleterious effects upon the circulatory, respiratory, hepatic or renal systems. In our own experiences, we could not find any remarkable changes in blood pressure and pulse rate in comparison with the cases under ordinary chemoanesthesia. During the postoperative course, some suggestions are given to the patients. These suggestions are generally called "posthypnotic or postoperative suggestion" (2,4,10), but the word "posthypnotic suggestion" is not suitable, for in those cases chemical agents are used in conjunction with hypnosis. The word "postoperative suggestion" is not suitable, too, because at the end of operation, the patient may be still under certain influences of anesthesia. Therefore it seems rather reasonable to call it "postanesthetic sugges-

tion. The postanesthetic suggestion in amnesia may be more effective than the suggestion given during chemoanesthesia or after the complete recovery of anesthesia.

VI. Summary

1. If an anesthesiologist can establish a good rapport with the patient, hypnosis and suggestion can minimize preoperative fear, anxiety or apprehension of the patient and is valuable to relax the psychic tension.

2. The susceptibility of a patient to hypnosis and suggestion may depend upon his character and be varied according to the situation. Hypnoanalgesia or hypnoanesthesia seems not always suitable in every case, but if hypnosis and suggestion are successfully performed, the total amount of chemical agents can be reduced and the postoperative complications may be minimized.

3. Postanesthetic suggestion appears to be able to alleviate the feeling of pain and to reduce certain complications due to psychodynamic disturbances.

4. Hypnosis is time-consuming, it requires a suitable situation and a special anesthesiologist, and not all the patients can be successfully hypnotized. These are the disadvantages of hypnosis. When the patients can not smoothly respond to hypnotic induction, it is better to give up hypnosis. If the patients are terrified at hypnosis, we use only some suggestions. If we will try to hypnotize them forcibly, they may become un-cooperative, resulting in a difficult induction of chemoanesthesia.

5. It is unsuitable that an anesthesiologist, who has not had any experiences of hypnosis, tries to hypnotize the patient without any consideration for the patient's character. The suggestion without any sympathy for the patient may elevate his psychic tension and lead to the loss confidence on the part of anesthesiologist.

We have reported the application of hypnosis and suggestion in anesthesiology. If hypnosis and suggestion are given to the patient with sympathy and kindness in pre- and post-operative periods, these are a suitable method to establish the peace of mind of the patient, to reduce the amount of chemical agents and to minimize the complications due to chemoanesthesia. But further precise experiments are required to investigate the following points: the relation between hypnotic trance, suggestion and anesthetic stages as well as the effects of hypnoanalgesia or hypnoanesthesia upon the vital organs.

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Résumé

Pour 27 sujets, nous avons employé l'hypnotisme et la suggestion dans l'anesthésiologie. Les résultats sont les suivants:

- 1) L'entrevue préopératoire semble assez utile à réduire la crainte ou l'inquiétude du malade.
- 2) L'hypnoalgésie ou l'hypnoanesthésie nous permit d'accomplir des petites opérations, et d'ailleurs fut capable de diminuer du chémoanesthétique.
- 3) La suggestion postanesthétique allégera la douleur postopératoire du malade et réduisit sa complication.
- 4) La suggestion postanesthétique réduisit la tension psychique du malade et fit sa guérison confortable.

Zusammenfassung

Wie und inwieweit sind der Hypnotismus und die Suggestion auf die Anästhesiologie anwendbar? Über diese Frage wurden die klinischen Studien an 27 Fällen ausgeführt und zeigten die folgenden Resultate;

- 1) Das preoperative Interview erwies sich im allgemeinen wirksam genug, um preoperative Furcht oder Angst der Kranken zu beseitigen.
- 2) Hypnoalgésie und Hypnoanästhesie waren nicht nur ziemlich brauchbar bei den kleinen Operationen, sondern auch machten es möglich die grossen Operationen mit weniger Anästhetikum auszuführen.
- 3) Durch die postanästhetische Suggestion wurde der postoperative Schmerz des Patienten erleichtert und auch einige postoperative Komplikationen weggenommen.
- 4) Die postanästhetische Suggestion reduzierte die psychische Spannung der Kranken und ihr postoperative Kur war sehr günstig.