PSYCHOLOGIC PREPARATION AS A METHOD OF REDUCING THE EMOTIONAL TRAUMA OF ANESTHESIA IN CHILDREN *

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THE emotional trauma associated with anesthesia and surgery in children has for a long time been widely recognized by psychiatrists and pediatricians. In 1945 Levy (1) reported a retrospective study of 124 of his patients who demonstrated night terrors, disobedience, temper tantrums, destructiveness, dependency reactions and increased fears following surgical procedures or painful office procedures.

The general and reasonable assumption has been made that any procedure that will reduce the child's fear of the anesthesia experience will tend to reduce its traumatic effect. The methods used to accomplish this result fall into two groups, pharmacologic and psychologic.

Pharmacologic preparation consists of sedative premedication or basal anesthesia. Leigh and Belton (2) believed that the benefits of preanesthetic sedation outweigh their disadvantages and recommended the use of an opiate along with a barbiturate even in young infants. Other anesthesiologists use barbiturates alone in the younger children and a combination of opiate and barbiturate in the older group. Karp and Teuscher (3) use seconal alone in large doses or in smaller doses combined with demerol. As a basal anesthetic agent, avertin formerly enjoyed wide popularity. It is gradually losing favor, however, because of its depressant effect and its potential toxicity. Recently, rectal sodium pentothal has been used as described by Mark, Fox and Burstein (4). This procedure is effective and in their cases was attended by no undesirable side effects.

Psychologic technics for reducing the terrors of anesthesia have included the use of stories, music, flavors on the mask and "pretending." Although these technics have not been published in the scientific literature, they form a recognized part of the art of anesthesia and are employed by anesthetists the world over.

The disadvantages and inadequacies of all of these mechanisms for quieting the child must be considered. The use of drugs in amounts necessary to produce somnolence or even docility in a frightened child

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may have serious side effects. Leigh and Belton (5) mentioned especially the respiratory depression and the associated long induction time. The respiratory effort and exchange which seems adequate at the beginning of anesthesia may, with loss of consciousness, be so depressed as to be entirely inadequate. Except in cases in which a closed system is being used and the anesthetist can control the exchange, this poses a real problem. The child can be neither oxygenated nor anesthetized properly.

The psychologic technics have real value and, combined with small amounts of sedative premedication, usually serve the purpose. They are likely to fail, however, with the child whose fear makes him unable or unwilling to listen to the story, or with one who has been previously "diverted" prior to a painful experience.

Preparation of the child for the experience of anesthesia and operation has been recommended by Jessner and Kaplan (6) as a result of their investigation into the emotional reactions of 60 children to tonsillectomy. In their cases, the mothers were expected to prepare the children at home and a psychiatrist saw them preoperatively at the hospital. Lack of information or a very natural anxiety on the part of the mother often incapacitates her completely for this task. Few hospitals can supply the services of a psychiatrist in routine pediatric surgery.

The procedure to be described, utilizing the anesthetist for this role, was worked out in connection with an experimental study of the emotional trauma associated with anesthesia and tonsillectomy in children of 5, 6 and 7 years. It has been used largely in this age group. For the main study it was considered advisable to have the child come to the operating room conscious of his surroundings and quite aware of what was going to happen. Sedative premedication was omitted or kept to a minimum and given two hours before anesthesia was to start. Atropine was given about half an hour prior to induction of anesthesia.

METHOD OF PSYCHOLOGIC PREPARATION

The preanesthetic conversation between the child and the anesthetist took place in the early evening of the preoperative day. At that time the anesthetist was dressed in ordinary street clothes. If the mother was with the child, she was included in the interview to the extent of supplying information not obtainable from the patient. Attention was always directed toward the child, however, and he was encouraged to speak for himself. The following outline presents the general plan and purpose of the interview:

1. Learn whether the child has had previous anesthesia experience and determine its present influence.
2. Learn what preparation he has had at home—planned or accidental, positive or negative.

3. Explain that he is to be asleep and will feel no pain during the entire procedure, except for a sore throat after it is over.
4. Let him handle the mask (Yankauer) and explain that breathing the medicine will make him fall asleep.
5. Describe simply but realistically the dizzy, queer or sinking feeling that he may have as he goes to sleep.
6. Describe the operating suite and the dress of the personnel, including the anesthetist.
7. Most important of all, do and say whatever is necessary to get him to accept the anesthetist as a person whom he will be willing to trust.

In addition to the description of the specific preparation, mention should be made of the general atmosphere in the pediatric ward in which these patients were cared for before and after the operation, since it contributed materially to the success of the method. Any child who enters this department is made to feel, by doctors, nurses and attendants, that he is a welcome guest. His happiness is as much their concern as is his physical welfare. Such discipline and restraint of the individual as are necessary for his own or for the general good are carried out with unusual understanding and warm feeling. Except in such an atmosphere, the previously described preparation by the anesthetist would have been much less effective.

TECHNIC OF ADMINISTRATION OF ANESTHESIA

On the morning of operation the anesthetist usually called for the child and took him to the operating room. Older children who were not afraid and were accustomed to meeting strangers were called for in the usual way. In no case, however, was a promise broken; if the anesthetist had promised to come for him, this was done regardless of delay or inconvenience.

Open drop vinethene (vinyl ether) was used for induction in all cases. This agent was chosen because it is rapid in its action and less unpleasant and less irritating than ethyl ether. The open drop method was used because it is simple for the child to understand and because he can feel that he has some part in and control over the procedure. The change from vinethene to ether was begun soon after the child lost consciousness, except in cases in which there was evidence of unusual irritability of reflexes or production of secretions. The substitution was always gradual, with reduction of the vinethene drop as the ether was increased.

GENERAL OBSERVATIONS

Sedative premedication was used in half the cases in the form of seconal or nembutal, ¾ grain, given two hours before operation. It was at first thought advisable to give a sedative to children who were to go to the operating room after 10:30 a.m. Thus the use of sedative

does not indicate that the child was apprehensive. Two children were a little drowsy but were awake and recognized their surroundings at the time of induction. It is of interest to note that 7 of the 10 children in whom induction was not perfectly quiet had had preoperative medication and 3 had not.

Of the 30 children in this series, 20 lay quietly on the operating table, held the mask themselves and went to sleep without resistance. Four of the 20 made a quiet, unemotional remark during the induction, such as: "I feel dizzy" or "I think I have had enough." Two of these went to sleep giggling as if amused by their sensations.

Of the other 10 children, only one made an outcry. Three cried almost inaudibly for a few seconds, none cried violently and only one went to sleep crying. A few made half-hearted attempts to move the mask but promptly replaced it themselves upon reassurance and suggestion. No child required restraint except an occasional reinforcement of the child's hand by the anesthetist. This seemed to be accepted as help in holding the mask. The following case histories demonstrate the use of the procedure in the various types of children:

Case 12. The patient was a boy age 5 years. His mother was not present during the preoperative visit, but had told him that he would go to sleep with a "thing" over his face. He was alert, interested and cooperative. He did not seem afraid and was smiling and cheerful during the entire interview. I was not able to detect any evidence of repressed fear. He had no sedative premedication. He was brought to the operating room by an orderly and smiled when he recognized me. He moved to the operating table spontaneously and put the mask over his face. After a few seconds he said quietly, "I feel kinda dizzy" but made no move to protest. After another few seconds he began to giggle as if amused by his sensations and was soon asleep. There was no evidence of an excitement stage and upper second plane anesthesia was reached in about five minutes.

Case 3. A girl, age 7 years, repressed her fear, and was the only child to make an outcry during the induction of anesthesia. She is the daughter of a woman who works in the hospital. Her mother and her 4-year-old brother who was also to have a tonsillectomy were present during the preoperative interview. The mother had made no effort to prepare the children for the experience. The patient listened willingly but asked no questions and seemed to have something on her mind which she did not want to talk about. Her only comment during the conference was to remark that the anesthetic agent "smelled nasty." She was given nembutal, ¾ grain, because the brother was to go to the operating room first and it was thought that this might upset her. When I called for the brother, she seemed a little excited and talked a great deal about the number of times she had been stung by bees—an association, doubtless, which she had on seeing her brother receive an injection of atropine. After the boy was taken from the room, the mother sat down and cried openly while the patient looked on.

The nurse reported that she screamed and pulled away when given atropine, but she had recovered her control by the time I called for her. She made mild protests at getting to the carriage and to the operating table, but in each case a second suggestion was complied with.

She held the mask in both hands but, after a few drops, began to raise it a little. I assured her that I would give the agent slowly and she replaced the mask immediately. After another few seconds she raised the mask again, but when I placed my hand over hers, she replaced it. In spite of reassurances she made one more weak attempt, but at the same time took three or four deep breaths. At this time she opened her eyes widely and seemed to have lost consciousness, although it was impossible to be sure. She then made one violent effort to get away from the mask and emitted one loud scream. The entire episode lasted only a few seconds and it was impossible to determine whether it occurred during consciousness or was a part of an excitement stage. There was moderate hyperpnea for several seconds with rapid descent into surgical anesthesia.

Case 14. This girl, age 5 years, represented another case in which the child's fear was repressed. Her mother was present during the preoperative interview and had attempted to prepare the child. Both mother and child were anxious about the experience, however, because of the death of a baby sister a few months before.

The patient was intelligent and willing to cooperate. She looked extremely fearful but denied being afraid. She was not given sedative premedication. When I called for her, her mother said that she had hardly slept during the night. She began to cry a little just before leaving the room, so I took her on my lap and talked to her about being afraid. Although she would not admit her fear, she seemed comforted and left with me willingly.

In the operating room she lay quietly on the operating table and held the mask without protest, although she was obviously fearful. I asked her if she would like me to help her hold the mask and she nodded. The agent was administered with extreme care and she breathed normally and made no effort to resist it. She lost consciousness quickly and without making any sound or movement. There was a very mild excitement stage, consisting of stiffening of the neck and widely open eyes. Surgical anesthesia was accomplished in about six minutes.

Case E. This child, a girl age 6 years, was unresponsive during the preoperative conversation. The mother was not present. The patient seemed younger than her age and a little dull. It was apparent that she was not accustomed to meeting strangers and seemed fearful and suspicious. She was preoccupied with the matter of just when she was to go back home. Special efforts were made to gain her confidence, but it was thought that they were of little avail.

She was not given a sedative preoperatively. She went to the operating room without protest but was obviously dependent upon my being beside her. She moved to the operating room without hesitation.

She held the mask well for about a minute, but thinking that she was really afraid, I placed my hand over hers. She promptly put both her hands down over her chest. I asked her if she would like me to hold the mask and she nodded. She held her breath for a few seconds but resumed normal breathing without suggestion. She fell asleep quietly, but had a moderate excitement stage with purposeless movements and rolling eyes. Second plane anesthesia was reached in about eight minutes.

Case 5. This girl, age 5 years, had had rheumatic fever several months before and, because of cardiac complications, the doctor had advised the mother not to discipline her in any way that would make her cry. Her pulse rate while she

was sitting on her mother's lap, before any mention of anesthesia or operation, was 120 per minute. No effort had been made to prepare the child; in fact the mother was doing her best to divert the child's attention and to avoid considering the situation herself.

No amount of effort suceeded in winning her confidence, although the mother agreed to the wisdom of the procedure and tried to cooperate and to persuade the patient. To every suggestion the response was "I don't want to."

Nembutal, ¾ grain, was given on the morning of operation but seemed to have little effect. I made a call on the child during the morning, at which time I assured her that I understood what a bad time she had been having because of her illness and that I would be especially careful that nothing should hurt her.

When the time came for her to go to the operating room, she wanted her mother to go along. The mother went as far as the elevator and there I said, "Now it is time for me to be the mother for a while. When you wake up your mother will be with you." She made no protest except for a fretful expression on her face.

In the operating room she moved to the operating table without hesitation and put the mask over her face. After a few drops of the agent she moved the mask a little but replaced it when I spoke. I placed my hand over hers lightly, anticipating resistance. She made one more move to lift the mask. I said, "I don't want to have to hold it tightly," whereupon she relaxed and made no further move or sound of protest. She lost consciousness in another minute and gave no evidence of an excitement stage.

The pulse rate before anesthesia started was 140 per minute and during anesthesia ranged from 140 to 160 per minute.

The reactions of the parents of these children have been observed in almost all cases, either preoperatively or postoperatively. Those who had been able to prepare their children were grateful for corroboration and assistance. They seemed to feel that they were putting their child into the care of an interested and trustworthy person. Parents who, because of lack of information or anxiety, were unable to prepare the child at home, still recognized his need and appreciated this effort to meet that need.

DETAILS OF TECHNIC

The Preoperative Visit.—During this conversation it is essential to win the real trust and confidence of the child. This is sometimes extremely difficult with children who have had previous unpleasant experience with hospitals, doctors or nurses and with those who, for one reason or another, have developed a distrust of adults in general. One child remarked during the conversation, "But things don't always happen the way people say they will."

The success of this visit lies principally in the ability of the anesthetist to understand what makes the child behave the way he does, and in a real desire to help him in his need. It is necessary to remember that fear may express itself in belligerence, resistiveness and showing-off, as well as in crying, reticence or withdrawal. A great show of nonchalance may cover a quaking heart. With a little experience and warm feeling, an anesthetist can detect these defense mechanisms. He

can then use indirect methods of reassurance that will register with the child even though he may seem to reject them as unnecessary.

It is important that no promise, however trivial, be broken, and that every effort be made not to disappoint the child. Therefore, one must make very sure that he understands what has been said. This may involve repetition and questioning, and even then with some children it is impossible to be certain of their comprehension. In our experience, however, when a good effort has been made, a child who has seemed unresponsive during the preoperative visit, does fairly well during the induction of anesthesia.

It should also be recognized that children are notoriously hard to deceive, especially in the realm of feeling. A smiling face and a soft voice that would often win the confidence of an adult mean nothing to a child if it is a mask for indifference, reproach or lack of understanding. This type of anesthesia is for the person who can have a warm feeling for all children, no matter what their behavior may be.

Induction of Anesthesia.—Just as there is infinite variety in the administration of the anesthetic agent, depending on the patient, there is variety in the psychologic aspects of the induction. The child who has appeared fearful during the preoperative visit must be reassured from the beginning of induction and constantly until all possibility of consciousness and subjective sensation is past. With experience, the anesthetist can discern from the child's breathing, the tension in his face and hands, and many other little signs, what he needs to prevent panic from developing. The child who is obviously and truly unafraid needs less conversation and often seems to be better without it.

It requires some skill and understanding to discern when the unresponsive child needs reassurance and positive expressions of understanding. The child may seem indifferent, although we know that this is impossible, or he may even seem to be accepting, until he begins to feel the effects of the anesthesia. Even then he may give little evidence of apprehension; he may open his eyes and look at the anesthetist, hold his breath a few seconds, tense his muscles or move the mask. If the feeling between the child and the anesthetist has been even fair the night before, this resistance is always mild, in fact it has a tentative quality about it. In almost every case the child will relax and cooperate when the anesthetist's voice is heard. It does not seem to matter much what is said as long as the tone is understanding and comforting.

EVALUATION OF METHOD

The practical advantages of the procedure described are five: (1) there are none of the undesirable side-effects of heavy premedication, (2) less anesthetic agent is used, (3) induction time is shortened, (4) excitement stages are decreased and (5) operating rooms are relieved of the noise and confusion of stormy inductions.

The first and last of these need no comment. In the matter of the amount of agent used, I have only a clinical impression to offer since no

accurate measurements were made. On the basis of many years experience with open drop technic, it is my opinion that the amount of each of the agents used in these cases was about one-third that required when other methods were used.

The average time required to produce surgical anesthesia (upper second plane) was under ten minutes, which seems definitely less than when other technics are used. When sedative premedication is used with psychologic effectiveness, induction time may be increased owing to low tidal volume. In this series it was noted that when an induction time was prolonged, it was because of the obstruction of large tonsils or the excessive secretion of mucus.

The excitement stages were so short and so mild that accurate timing was impractical. This episode was carefully described in every case and no excitement stage lasted for more than a few seconds.

From the child's point of view, we believe that the method has great value. Instead of a terrorizing, overpowering, existence-threatening ordeal, forced upon him by a stranger, he enters into an experience which, although frightening, he finds he can endure. We do not deceive ourselves that these children are not frightened, but we do believe that they usually meet the situation with courage and assurance. Furthermore, such an experience, rather than producing emotional trauma, may in some cases actually strengthen a child's courage and self-assurance.

SUMMARY

A method of reducing, by psychologic preparation, the emotional trauma incident to anesthesia has been described, along with its application in 30 cases. The practical advantages of the method are: less anesthetic agent used, quieter inductions, milder excitement stages, lack of physiologic depression from premedication and quieter operating rooms. The advantage to the child consists in the fact of having an otherwise terrifying experience become a cooperative enterprise between himself and the anesthetist. Conscious of the situation with which he is faced, he is able, with the help of a person he can trust, to accept and to deal with his fears. Thus the experience loses some of its traumatic effect and may in some cases be of constructive value to the child.

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