

levels, no significant interaction terms were found in the analysis of variance to indicate a difference between penicillins G and V in this respect.

The chief difference between the two drugs was found in the blood levels at three and five hours, when penicillin V was much more reliable in producing detectable blood levels. This small experiment indicates that, in children at least, adequate blood levels may be reasonably expected up to three hours and possibly up to five hours following oral administration of 120 mg. of penicillin V (free acid).

Summary

The small investigation in children here described indicates: (1) that penicillin V (free acid) and penicillin G given by mouth in equivalent amounts give similar blood levels at one hour after administration; (2) that, nevertheless, penicillin V may not infrequently show considerable delay in absorption; (3) that three hours after administration penicillin V gives higher blood levels than penicillin G, and that these may persist, though diminished, till five hours; (4) that higher blood levels are obtained when either of these penicillins is given half an hour after food than when administered one hour before food.

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HYPNOSIS IN THE CASUALTY DEPARTMENT

BY

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There is a vast literature on the subject of hypnosis, but relatively few references are to be found on its use in a general hospital. Michael (1952) obtained a high degree of success by the criteria he established for its use in childbirth. He used volunteer subjects who were given training sessions. In 1946 Sampimon and Woodruff gave their observations on the use of hypnosis as a substitute for anaesthesia in the special circumstances of a P.O.W. camp where chemical anaesthetics were not readily available. Whitlow (1954) described a rapid method for the induction of hypnosis in his clinic, where, apart from the method, it may be that patients are in the nature of volunteers, as they may choose that clinic knowing that hypnosis is used there.

This paper describes the treatment, using hypnosis, of unselected patients in the casualty department of a general hospital during the month of April, 1954. These include only those cases which required an operation in the casualty department. Among these were fracture cases that would otherwise have been given a chemical anaesthetic. After Sampimon and Woodruff's observations it was thought to be of practical value to carry out the present investigation, there being occasions when a general anaesthetic cannot be given or is not available, or some time must elapse before the patient can safely receive one.

The aim of the work was to estimate the practical value of hypnosis in the casualty department; to evaluate its function as an adjunct to, or substitute for, more conventional ways of producing anaesthesia; and to demonstrate a technique that is simple and effective with untrained subjects and based on principles that can be comprehended and used by patient and operator.

Method

Patients were first seen in a small office if ambulant, or in cubicles if they had other than minor injuries. Operations were carried out in a large room containing an operating-table which could be screened off from the rest of the room. Patients were placed on the table with as little handling as possible. The doctor had one sister or nurse standing by to hand him instruments, etc. Only the doctor spoke to and handled the patient when once the procedure began; patients were talked into, rather than forced into, position and immobility.

The technique used varied in detail from patient to patient, but had the following common characteristics. A fractured wrist would be gently manipulated and related to the x-ray appearances, the patient being held in conversation. The patient was asked if he had a "vivid" imagination. Could he visualize going to bed or relaxing on the beach on holiday? Attention was then drawn to the fact that one is unaware at different times of various sensations—for example, until it was mentioned he was not conscious of the feel of his clothes on his body or shoes on his feet; if engrossed in a book he might not hear his name called or the footsteps of someone who had come close unknown to him. It was explained that, in the same way, it would be possible to become unaware of the sensations produced by the surgical procedure. It was emphasized that resort could always be had to a general or local anaesthetic should he be distressed in any way. He was asked to be sure to intimate if at any time he felt any pain. Some patients asked if this was hypnosis, when it would be admitted that this was the case. It was stressed that this was a function of themselves and required a complete lack of tense effort on their part.

Induction was begun by asking the patient to select one of a variety of ways of distracting his attention from the injured part. If it helped he could picture as vividly as possible a scene and a time in which he relaxed, or he could concentrate on ensuring that, with each expiration, individual and finally all his muscles were loose and completely relaxed. Reductions were done as smoothly and as gradually as possible. It was found that with children this preamble could be abbreviated or eliminated altogether in many cases. Very anxious children were, it seemed, disarmed by being asked to be sure to say if at any time they felt pain, and were told that they were free to choose whether or not they kept their eyes open or closed, and, within limits, the position in which they wished to remain. Apart from the orthopaedic cases it was not found necessary to produce apparent sleep; the fact that suggestions had had an effect could often be inferred from the tears and anguish produced by the nurse's injection of antibiotic or A.T.S. after an abscess had been incised or a wound sutured without any evidence or complaint of pain.

The youngest patient treated was aged 3½ years and the oldest aged 57. The following are examples of some of the cases treated.

Illustrative Cases

1. *Colles's Fracture*.—A married woman aged 27 went into a deep sleep in 10 minutes, and was completely flaccid whilst the fracture was reduced and the plaster applied. She awakened when told to do so, incredulous that the procedure had been completed. The orthopaedic registrar questioned her the next day, when she had no memory of the procedure. The fracture healed uneventfully in excellent position.

2. *Internal Derangement of Knee*.—An unmarried man aged 29 came with his right knee locked painfully in flexion. Reduction was attempted by a house-surgeon and a surgical registrar. These attempts were unsuccessful, and the patient was then hypnotized in 10 minutes. The knee reduced readily without disturbing him. He would otherwise have had to wait some time before a general anaesthetic could be given, as he had recently had a meal. He afterwards told me that whilst in the Forces a stage hypnotist had unsuccessfully tried to induce him.

3. *Dislocated Shoulder*.—A secondary schoolgirl aged 15 was extremely anxious and frightened, and induction and reduction took 15 minutes.

4. *Fractured Radius and Ulna*.—A girl aged 3½ had a mid-shaft fracture of both radius and ulna angulated at approximately 35 degrees. The child was asked who she liked playing with most, and was then told that she would go to sleep and dream of playing her favourite game with her friend. Within five minutes she went into a deep and relaxed sleep. She groaned once as the bones were realigned and awakened smiling after the plaster had been applied. On questioning she told her parents that all that had happened was that she had had a nice dream. She asked if she could come again. When seen by the orthopaedic registrar the next day she still had no memory of the procedure. As in all similar cases, she was told before awakening that all normal feeling would now return to her arm, and when awake she was told to be sure to tell her parents if the plaster felt tight or uncomfortable in any way.

5. *Dental Extraction*.—This patient was not seen in the casualty department, but was seen at the request of the dental surgeon as she was a very apprehensive child with an infected I² with alveolar abscess. She had been admitted because it was thought that a general anaesthetic would be necessary to allow the tooth to be extracted, though she had had several antrum lavages without one. She remained fretful and apprehensive in hospital. At operation she at first refused to open her mouth when in the dental chair. After 20 minutes, with eyes open, she allowed the dentist to extract the tooth. After a minute she wiped off some blood that had trickled down her chin, and seeing it on her hand began to whimper. Later, under a very light anaesthetic at another hospital, she had a further five teeth extracted, and the surgeon, not knowing that hypnosis had previously been used, commented on the small amount of anaesthetic needed, and the excellent co-operation of the patient.

6. *Laceration of Lower Lip*.—A girl aged 6 had a deep through-and-through laceration of the lower lip. Without any preamble she was told to go to sleep, when she would feel nothing. She went immediately to sleep and four sutures were inserted. The child awakened when told to do so, smiling. She had no memory of the procedure.

Further Cases

There were no failures in the fracture cases. Among the other orthopaedic cases there were two failures. One of these patients was a middle-aged man who was awaiting an anaesthetist. He had a dislocated shoulder, and as I was passing through the casualty department I had a brief and hurried talk with him, taking two minutes. This did not relieve in any way the pain that he complained of when reduction was attempted. Another patient, a large, obese, plethoric lady with a dislocated shoulder, was told simply to relax, and, as reduction could not be attempted because of pain and apprehension when the limb was handled, a general anaesthetic (gas and oxygen) was given. The patient did not go unconscious, and, whilst the anaesthetic was continuing, relaxation suggestions were given and the reduction was completed.

A patient, aged 30, with a breast abscess, expressed her scepticism and very self-consciously attempted to go into a trance. As neither analgesia nor anaesthesia could be produced, as tested by pin-prick over the breast and the affected

area, a general anaesthetic was subsequently given. A girl aged 17 requiring a minor operation on her foot became anxious, though relaxed and with eyes closed. As sensation was still present in the foot 8 ml. of procaine was injected 3 in. (7.5 cm.) distal to the ankle on the dorsum of the foot, and within five minutes, in addition to the expected area of anaesthesia, there was complete insensitivity to pin-prick of stocking type extending to 1 in. (2.5 cm.) above the malleoli.

Results

A sleep-like flaccid state was not thought to be a prerequisite for operation except in the case of orthopaedic injuries. In these latter cases sleep was induced, and it was interesting to observe that, with or without specific suggestion, there was an amnesia for the procedure. In others the suggestions and effects produced varied from complete anaesthesia or analgesia to a state in which there would be awareness of sensations which were neither disturbing nor distressing. In these later cases—that is, suturing, removal of foreign bodies, incisions, and nail avulsions—it was considered that the effects of hypnosis or suggestion could not be assessed in individual cases as there was much variation apart from hypnosis in the amount and type of anaesthetic, if any, required. The effects of hypnosis used during the month of April were assessed by comparing the numbers of general and local anaesthetics used in March and April of 1954. The personnel (doctors and nurses) and the allocation of sessions remained unchanged during these two months.

Patients requiring and having operations in the casualty department were classified under five headings: A, incisions; B, removal of foreign body; C, suturing; D, orthopaedic cases (fractures and dislocations); and E, nail avulsions. Cases coming under these headings were further subdivided into those that had a general anaesthetic or local analgesic, and those who had neither.

Totals of Cases Treated in March and April, With Numbers Receiving Anaesthetics in the Two Months and the Critical Ratio Between the Two Proportions

Procedure	No. of Cases Treated		No. of Anaesthetics (G.A. + L.A.)		Critical Ratio
	March	April	March	April	
A. Incisions	43	59	32	37	1:185 Not significant
B. Removal of foreign body	13	18	10	8	1:850 Not significant
C. Suturing	95	95	15	7	8:610 Very highly significant
D. Orthopaedic fracture/dislocation reductions	27	38	22	12	4:120 Very highly significant
E. Nail avulsions ..	2	6	2	3	Numbers too small for comparison

These results were treated in the following manner. The 38 orthopaedic cases for April (D) were taken to be a random sample; of 28 consecutive cases in which hypnosis was used 26 were susceptible enough to allow a reduction to be performed. This proportion of 26:28 was tested against the proportion 3:5 (quoted by some authors), and was found to differ from it at a very high level of significance. Indeed, if this proportion of 26:28 was tested against the hypothesis that four people out of five can be hypnotized, the observed proportion exceeds it at the 5% level of significance. When compared with experimental work in which only 30% of those hypnotized were capable of producing anaesthesia this result is even more striking.

The proportions were compared using the arc sine transformation of the square roots of the proportion, which transforms them into normal deviates. The proportions of

people receiving an anaesthetic (general anaesthesia plus local analgesia) to those who did not (see Table) differ very significantly between March and April for suturing (C) and reductions (D), but not for incisions (A) and removal of foreign body (B). This indicates that the reduction in the numbers requiring anaesthetics due to hypnosis being used in April is most marked in C and D—that is, those cases that nearly always require immediate attention—whereas under A and B quite often some time had elapsed before the patient came to have treatment, and the lesion was less often the result of trauma.

Discussion

I believe that terms such as “trance” and “susceptibility” when discussing hypnosis are misleading, unless related to the state and situation of the subject. The high success rate of fracture reductions as compared with other procedures confirms this. In this discussion the hypnotic state must be operationally defined as that state produced without the aid of chemical anaesthesia which allows a particular operation to be performed without pain and discomfort. It is here unnecessary to speak of trance depth—that is, degree of susceptibility—or the frequency with which people capable of demonstrating various phenomena occur in the population. The greatest number of successful applications of hypnosis would seem to be in those patients who come to the hospital, often for the first time, with an injury for which they feel immediate treatment is imperative. The hospital and the things that happen there are still, in these circumstances, surrounded by much that to the lay mind is esoteric.

The orthopaedic and suturing cases gave the best results, whereas profound anaesthesia was less often produced in those whose injuries could for a time be left untreated—for example, abscesses and foreign bodies. In the latter the reduction in the numbers requiring orthodox anaesthetics is not marked. It may be for the same reasons that children went so much more quickly into the required state. The impression was gained that some of the most anxious children were the most easily induced.

In addition, the above observations indicate that comparisons in experimental work on suggestibility between “normals” and neurotics cannot be valid—for example, in one series of experiments, in which an objective test of suggestibility was used, patients were tested within a few minutes of arrival in hospital (Ingham, 1954). One or other of the groups compared included subjects who came to hospital, perhaps for the first time, in a state and in circumstances which the present series indicates will influence “suggestibility” profoundly, independently of neuroticism. Further, it may be that admission to a mental hospital is at least as disturbing as arriving at a general hospital with a fracture, and the patient's previous experiences of hospital will also influence his reactions.

The technique used has the following rationale, and is based on the hypothesis: (1) there is an infinite variation and gradation from the normal waking state to the most marked alteration of consciousness produced by suggestion, and the phenomena resulting from it; and (2) the perceptual and other changes may not differ qualitatively from those experienced by all persons in the non-hypnotized, waking, fully conscious state. As a result (a) the technique involves relating for the patient what is required to what is his normal experience; (b) the process needs the active and voluntary co-operation of the subject in full control of all his faculties; and (c), ethical considerations apart, the patient, conscious or not, must be treated and spoken to as a rational being in full control of his faculties; drugs would diminish his ability to do this (contrary to prevalent teaching that drugs aid rather than hinder process), and unusual or bizarre requests and tests diminish rather than enhance the possibilities of success. (Such demands also disturb the operator, making him self-conscious of success or failure—feeling, with the subject, that he is taking part in a fantastic or ludicrous procedure.)

Summary and Conclusions

An account is given of the use of hypnosis in the casualty department, with details of illustrative cases. There was a reduction in the number of anaesthetics required. In 28 orthopaedic cases there were two failures; these were not fractures.

Hypnosis or suggestion may with advantage be used in the casualty department in the treatment of minor injuries.

As an adjunct to the anaesthetic facilities in the casualty department it may reduce the number of anaesthetics that need to be given and reduce the time spent in waiting for the digestion of a recently eaten meal or for the busy anaesthetist occupied with major or more urgent operations.

The technique is effective with untrained subjects, especially those most likely to require an anaesthetic.

It is believed that this paper, though not definitive, should redirect our attention to the need for more liaison between clinician, psychiatrist, and psychologist in the setting up of controlled scientific experiments in the *milieu* of the general hospital.

Many incidental observations have been made in this survey, each of which suggests for further study topics that are the province of clinician and research worker alike.

Further work will, it is hoped, remove hypnosis and related phenomena from the position of a medical curiosity, impracticable in use and unsavoury in reputation. It may then gain its proper place as a technique (in no sense is it a treatment) with indications, contraindications, and dangers (or, more euphemistically, complications).

This work is suggestive, but cannot claim to have found the final place for hypnosis, but only the ways and means by which this may perhaps be discovered. All techniques—hypnosis is no exception—vary with the skill and personality of the operator. The ideal is to minimize this factor by widespread use and training.

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