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TREATMENT OF ALCOHOLISM IN AVERSION CONDITIONING HOSPITALS

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HIS CHAPTER FOCUSES

primarily on the techniques and outcomes of inpatient alcoholism treatment facilities using aversion conditioning as a major therapeutic modality. At the present there are 16 hospitals in the United States that meet this criterion, three Schick Shadel Hospitals and 13 Raleigh Hills Hospitals. Other hospitals also use aversion conditioning as part of their program.

AVERSION CONDITIONING

Aversion conditioning in general includes pairing a stimulus (e.g., the sight, smell, or taste of an alcoholic beverage) associated with an unwanted behavior (e.g., drinking alcoholic beverages) with a noxious (aversive) stimulus (e.g., nausea or electric stimulus). This pairing is designed to associate the aversive stimulus with the formerly pleasant stimulus (sight, smell, and taste of alcoholic beverages) to such a degree that the unwanted behavior (drinking alcohol) is eliminated.

Agras [1] in commenting on behavior change methodologies notes that some unwanted behaviors can be reduced in frequency or completely eliminated, either by reinforcing competing adaptive behaviors or by using extinction procedures. At other times, as in the case of self-destructive behaviors, it is necessary to

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bring behavior under control rapidly, which is not usually possible with reinforcement or extinction procedures. In such cases aversive procedures are applicable.

Three major paradigms for the use of aversive procedures are available. The first is that of classical conditioning, in which the aversive stimulus is paired with elements of the unwanted behavior (such as the sight or smell of an alcoholic beverage). The second is that of punishment, where the behavior (drinking alcoholic beverages) is followed by the aversive stimulus. The third procedure is avoidance training, in which the person avoids punishment by avoiding or rapidly discontinuing the unwanted behavior (e.g., by pushing away the glass of alcoholic beverage) before the aversive stimulus is given. In clinical practice, most treatment facilities that use aversive procedures employ a combination of these three paradigms.

History

Aversive conditioning is perhaps the oldest approach to abstinence-oriented alcoholism treatment. The ancient Romans placed spiders or other repellent objects in the bottom of the wine cup to be discovered by the drinker after draining the vessel. In more modern times Kantorovich [11] gave one of the first reports on the use of aversion conditioning using electrical stimulation.

In the United States, in 1935, Charles Shadel [16] founded the hospital system that still bears his name (now Schick Shadel Hospitals). He and Voegtlin [20] developed a pharmacologic aversion technique that still forms the basis of treatment at the Schick Shadel Hospitals and at the Raleigh Hills Hospitals. The first Shadel Hospital was founded in Seattle, Washington. In 1943, Shadel opened a second hospital in the Raleigh Hills section of Portland, Oregon. This was later sold and formed the basis of the present Raleigh Hills Hospital system.

Therapeutic Techniques

Although aversive conditioning was originally, and still is, a major factor in treatment, both hospital systems employ other therapeutic modalities as well. In order to show the similarities and differences more clearly each hospital program is discussed separately.

SCHICK SHADEL HOSPITAL TREATMENT

Emetine Aversion

In 1940 Voegtlin [20] first reported on the techniques in which emetine-induced nausea was paired with the sight, taste, and smell of a variety of alcoholic beverages (with emphasis placed on the patient's preferred beverage). Emphasis was

also placed on the temporal relationship between the unconditioned stimulus (nausea) and the conditioned stimuli (sight, smell, and taste of alcoholic beverages). The value of a treatment is vitiated if drinking is delayed until after the onset of nausea [13]; the later situation would lead to backward conditioning, which Frank [6, 7] calls a most difficult form of conditioning to develop and a form easily extinguished. In fact, Elkins [3] suggested that backward conditioning, since it pairs alcohol with decreasing nausea, could actually increase the reward value of the alcohol.

The usual treatment session involves having the patient take nothing except clear liquids by mouth for 6 hours prior to treatment. This reduces the likelihood of aspiration of solid stomach contents during treatment. The patient, after receiving a full explanation of the treatment procedure, is taken to the treatment room, which is small in size and has shelves containing all types of alcoholic beverages along the walls. It also has cutouts of various liquor ads on the walls. The intent is to have the majority of the patient's visual stimuli associated with alcoholic beverages and visual cues for drinking. The patient is then seated in a comfortable chair with an attached large emesis basin. He receives an injection containing the emetic agent, emetine, (see Voegtlin [20] for details). The emetic effect begins in approximately 5 to 8 minutes. Prior to that time the patient is given two 10 oz glasses of warm water with a small amount of added salt. The water provides a volume of easily vomited material, while the salt content tends to counteract the excessive loss of electrolytes during the procedure. Shortly before the expected onset of nausea the nurse administering the treatment pours a drink of the patient's preferred alcoholic beverage and mixes it with an equal amount of warm water. The patient is then instructed to smell the beverage and to take a small mouthful, swish it around in the mouth to get the full flavor of it, and then to spit it out into the basin. This "sniff, swish, and spit" phase is designed to insure that the patient has well-defined visual, olfactory, and gustatory sensations associated with the preferred beverage prior to the onset of the aversive stimulus of nausea. The nausea and vomiting ensue shortly thereafter and the procedure is altered to that of "sniff, swish, and swallow." The alcoholic beverage swallowed is shortly returned as emesis so that no significant amount of alcohol is retained to be absorbed, an event that would negate the treatment. After an intensive conditioning session in the treatment room lasting 20 to 30 minutes the patient is returned to the hospital room, where 30 minutes later another drink of alcoholic beverage is given containing an oral dose of emetine, which induces a slower acting residual nausea lasting up to 3 hours.

The average patient receives 5 aversion treatments encompassing approximately 15 hours of aversive conditioning during the initial 10-day intensive treatment phase. The treatments are usually administered on an alternate day basis with a pentothal interview administered on the nonaversion treatment day (e.g., day 1 aversion treatment, day 2 pentothal interview, day 3 aversion treatment, etc.).

Some patients develop adequate aversion in only three treatments, while others require six or more [17]. The medical staff determines the adequacy of aversion by the response of the patient in the treatment room and his or her own hospital room afterward as well as by questioning the patient under pentothal the following day (see below for details of the pentothal interview).

Although the patient's preferred beverages are emphasized in each treatment session, aversion does not generalize to all alcoholic beverages (e.g., if only bourbon whiskey was used for treatment the patient would have no aversion to Scotch). Therefore, the patient receives all types of alcoholic beverages sometime during the treatment process. Carbonated beverages are never mixed with the alcohol and ice is never added, as both are associated with appropriate nonalcohol-containing drinks. Also, both tend to diminish the sensations of odor and taste of the alcoholic beverage and are thus contraindicated during treatment. On the contrary, warm water is often mixed with the beverage to be conditioned against in order to bring out the odor and flavor more strongly.

Purpose

The purpose of aversion conditioning is two-fold. First, sufficient aversion must be developed so that the patient is granted a period of time free of active craving for alcohol, a period during which there is an opportunity to reorient his or her life in a way that does not contain alcohol. Second, the treatment tends to break down conditioned reflexes to drink. Most social drinkers going out to dinner may automatically call for a drink; for others playing poker automatically calls for a drink, and so forth. The alcoholic usually has these normal conditioned responses to take a drink and many more: getting angry may call for a drink, 5 o'clock may call for a drink, getting home from work may call for a drink, and the like. When adequate aversion is achieved, these past associations are no longer present. Descriptions of the treatment [17] emphasize that the experience is different from a hangover in that the aversive stimulus (nausea) is presented simultaneously with alcoholic beverages in order to achieve the counterconditioning. In contrast, the hangover occurs the morning after at a time too remote to develop a conditioned aversion. In fact, as Elkins [3] suggests, if alcohol is used to relieve the hangover the reward value of alcohol is enhanced and the person may be conditioned to take a drink by the hangover (instead of conditioned to avoid it).

These same descriptions [17] also emphasize that the treatment does not make it impossible to drink since one could deliberately break down even a high level of aversion by drinking an alcoholic beverage (even if much was later vomited) repeatedly until a significant amount had been retained and absorbed. The euphoriant effect of the absorbed alcohol would rapidly eliminate the conditioned aversion response so that the patient could once more drink without nausea. The procedure instead is intended to make it possible to not drink, that

is, to eliminate the urges to consume alcohol and thus lead to a comfortable sobriety.

Since this type of pharmacologic aversion treatment is relatively physically demanding, not all patients are suitable candidates. Upon admission to the hospital each patient receives a comprehensive physical evaluation by the medical director. Upon detoxification of the patient [18] the medical director designs the treatment program based on the patient's physical condition and laboratory findings. The patients who are not candidates for emetine aversion therapy are assigned to faradic aversion therapy instead.

Faradic Aversion Therapy

Faradic (electrical stimulation) aversive therapy was instituted at Schick Shadel Hospital in 1970 because of the perceived need for a less physically strenuous aversive technique and because various studies [2, 9, 14, 22] indicated potential usefulness of this technique in alcoholism treatment. The patient is assigned to the faradic therapy modality only after the attending physician determines that he or she is either physically or emotionally unable to tolerate the emetine aversion procedure. The chemical aversion method is treatment of first choice because it has a long history of successful use at the hospital. In addition, Garcia and Ervin [8] showed that gustatory and olfactory stimuli are specifically and rapidly associated with visceral states (e.g., nausea); cutaneous stimuli (e.g., shock) are more rapidly and specifically associated with visual cues. Therefore, on theoretical grounds nausea should be a more effective aversive stimulus in eliminating alcohol consumption [10].

The faradic aversion technique also involves five individual treatment sessions. During each session a pair of electrodes is attached to the forearm of the dominant hand and placed approximately 2 in (0.05 dm) apart. The electrodes are attached to an electrostimulus machine capable of delivering 1 to 20 mA (AC) (constant current). The faradic therapist runs an ascending series of test stimuli to determine the level perceived as aversive by the patient on that particular day (there is a relatively wide variance between patients and within the same individual from day to day).

The treatment paradigm [10] consists of pairing an aversive level of electrostimulation with the sight, smell, and taste of alcoholic beverages. At the direction of the therapist (forced choice trial) the patient reaches for a bottle of an alcoholic beverage, pours some of it in a glass and tastes it without swallowing. Electrostimulus onset occurs randomly throughout the entire behavior continuum from reaching for the bottle through tasting the alcoholic beverage. The number of electrostimuli with each trial vary from one to eight.

An additional 10 free choice trials are designed so that the patient is negative-

ly reinforced with removal of the aversive stimulus if he or she selects a nonalcoholic choice such as fruit juice.

The patient is instructed to not swallow alcohol at any time throughout the faradic session, and this behavior is closely monitored by the therapist to insure compliance. If the patient should swallow alcohol more than twice during the treatment (a rare occurrence) the session is terminated. A completed faradic aversion session lasts from 20 to 45 minutes, depending on selection speed of the individual patient. The total time of exposure to aversive conditioning is no more than 4 hours during the initial 10-day course of treatment.

Reinforcement Treatment

Both the emetine and faradic aversion method include two reinforcement conditioning sessions, the first at 30 days and the second at 90 days after the initial 10-day treatment.

Pentothal Interview

In the mid-1940s the technique of the pentothal interview was introduced into the Schick Shadel Hospital treatment program [19]. The patient receives five of these pentothal interviews in addition to five aversion treatments. He or she also receives one pentothal interview on each of the scheduled admissions for reinforcement treatment at 30 days and 90 days.

Although the procedure is generally referred to as a "pentothal interview" the medication used is a mixture of equal parts of sodium thiopental and sodium amytal diluted to a concentration of 0.3% in normal saline. This mixture is administered by slow intravenous drip at a rate that keeps the patient in a deeply sedated state just short of sleep. The interview is conducted in this state.

The average patient receives between 300 mg to 400 mg of each drug during the 20- to 40-minute interview. The amount given varies greatly depending on the size and tolerance of each individual. However, if administered in the manner described an overdosage is easily avoided. Although the patient is not taken to the deep level of sedation common to surgery, he or she is prepared for the treatment in much the same way as if it were presurgery. That is, a 5-hour fast is required and premedication with atropine is administered in dosages similar to those used preoperatively. At the conclusion of the interview the patient receives a small additional dose of the "pentothal," which deepens the sedation to the point where light sleep is attained.

The patient may sleep anywhere from 15 minutes to several hours after the interview. Many have the erroneous impression that the longer they sleep the better the treatment. However, since the drugs are metabolized relatively rapid-

ly those patients who sleep for several hours are sleeping on their own for the majority of that time. Furthermore, the objective is not sleep but the attainment of a state of relaxation sufficient to enable the patient to talk freely and to bring out any emotional or environmental factors that may be contributing to the drinking problem. During the pentothal interview patients are less likely to block material that is in some way unpleasant to them. This facilitates obtaining information sufficient to make a psychiatric diagnosis in a relatively brief time (four or five interviews) instead of the weeks or months that are often required using conventional interviewing techniques [19]. Pentothal interviews should not be equated with intensive psychotherapy since they are intended only to facilitate the discussion of personal problems or situations that may contribute to drinking.

Treatment Adjuncts

In addition to the somewhat dramatic treatment elements of aversion conditioning and pentothal interviews, each patient participates in an educational program with lectures concerning the physiology of alcohol addiction, the physical and psychological effects of heavy drinking, and so forth. The emphasis is on the goal of achieving a life free from alcohol (and other drugs). Relaxation training techniques are also taught in order to provide a suitable drug-free method of dealing with tension. Each patient also participates in group and individual counseling sessions and has a psychiatric evaluation from the hospital consulting psychiatrist. The psychiatric evaluation is based largely on material obtained from the pentothal interviews. Patients found to have significant psychopathology (approximately 20%) are referred for appropriate care after completing their alcoholism treatment [19].

Aftercare

The hospital also maintains an organized Aftercare Department where an individualized aftercare plan is developed in consultation with the patient and (when possible) family and significant others. The aftercare counselor then makes any referrals agreed upon (e.g., AA, marriage counseling, vocational training, etc.) and maintains contact for up to 2 years posttreatment.

Results of Treatment

The first published report of the results of this treatment was a study by Voegtlin [20] in which he reported 64% of 538 patients remained abstinent for 4 years or longer. Subsequent studies have reported rather similar results [10, 12, 21].

A comparison of the emetine aversion treatment and faradic aversion treatment reported virtually identical abstinence rates for the two groups 2 years after

treatment [10]. Two subsequent unpublished studies support this original observation [4, 5].

RALEIGH HILLS HOSPITAL

History

In 1942 a second Shadel Hospital was opened in the Raleigh Hills area in Portland, Oregon. The treatment methodology used at that hospital was the same as initially used at the Seattle Shadel Hospital [16, 20]. This hospital was later sold and eventually became the foundation for the Raleigh Hills Hospital system, which now contains 13 hospitals in 6 states.

Emetine Aversion

After detoxification and medical evaluation the typical patient is placed in the treatment room in which the windows are blacked out and the walls are set up as in a bar, with different forms of alcoholic beverages exhibited on the shelves around the patient. After the treatment nurse explains the treatment and its expected effects, the patient, as in Shadel's treatment paradigm, receives an intramuscular injection containing the emetic agent emetine. This is followed by drinking a glass of warm water and, near the onset of nausea, drinks of alcoholic beverages. The first treatment usually includes five or six drinks. The second treatment (on day 3, following a day of rest) involves a similar procedure except the number of drinks given is doubled from the first treatment. Patients usually receive five such treatments with a day of rest in between. By the fifth treatment they may receive as many as 20 drinks during the treatment session [23].

The patient is usually discharged at the end of a 10-day treatment program (postdetoxification) and returns for periodic reinforcement treatments. The single-day reinforcement session is usually a somewhat abbreviated session modeled on the fifth treatment. The length of time until the first reinforcement varies with the apparent conditioning of the patient, and the general consensus of the physician and other staff regarding the degree of conditioning, patient attitudes, and other prognostic factors. The first reinforcement treatment is usually at 1 to 2 weeks following initial discharge. Additional dates are tailored to the needs of the patient over the succeeding year. Each patient receives six such treatments but fewer or more may be given depending on the individual and the circumstances [23]. Upon discharge it is emphasized that patients are welcome to come to the hospital for reinforcement treatment or to simply stay overnight without further cost for the remainder of their life as long as they do not return to

drinking alcohol. This policy is regarded as a safety mechanism to avoid relapse, since patients are made to feel welcome at any time they should experience an urge to drink [23].

Education and Counseling

Patients participate in informal group therapy. Psychiatric consultation is available on a selective basis and those requiring ongoing psychiatric therapy are referred to resources in their home areas. Each patient attends a round table session with the medical director that includes the medical aspects of alcohol addiction. A second round table is held by the staff psychologist, who deals with behavioral and psychological issues. A third roundtable is held with the counselor, who addresses issues related to attaining sobriety through the aversion method.

In addition to these educational sessions the treatment team (medical director, director of nurses, staff psychologist, alcoholism counselor, and aftercare coordinator) assesses the needs of the patient and develops an individualized treatment and aftercare plan. Appropriate referral is made for additional additional help (e.g., assertiveness training, marriage counseling, etc.) and the aftercare program is updated at the time of each reinforcement treatment. Emphasis is placed on the need for permanent abstinence. Family and significant others are encouraged to participate in the educational and treatment planning process.

Patients also receive meditation instruction and relaxation training using a biofeedback apparatus that monitors tension, the electromyogram (EMG). These procedures are undertaken in an attempt to give patients a suitable drug-free method of dealing with tension.

TREATMENT RESULTS

Wiens et al. [23] reported that 65% of 261 patients receiving emetine aversion reported they were abstinent from alcohol for the 1 year between treatment and follow-up. Other studies [15] show similar results.

ETHICAL CONSIDERATIONS

Aversion conditioning sometimes comes under attack as a treatment modality because it involves deliberately causing acute discomfort for the patient, an act that is repugnant to most people, particularly those in the helping professions. However, in alcoholism one must consider the alternative. Continued drinking or multiple relapses all too often lead to death or at least permanent disability as

well as dissolution of family and other important social ties. To undertake a course of action (or inaction) that does not rescue the person from this potentially lethal situation is to hurt that person much more severely. As noted earlier [1] in cases of self-destructive behavior (such as alcoholism) the behavior should be brought under control as rapidly as possible, thus making aversion conditioning more suitable than other slower, though more pleasant, methods. The moral question seems to resolve itself down to, "Does the technique work? How long does it take compared to other methods?" There appears to be no way that discomfort of some sort can be avoided. The problem is primarily to determine which discomfort is most intense and/or more dangerous and which lasts longer. In short, the dilemma seems to be more of a bookkeeping problem than a moral problem.

Perhaps the most persuasive argument in favor of aversion procedures is that it is extremely rare for a patient to discontinue treatment. Despite the discomfort they are able to see in themselves the rapid loss of desire for alcohol and feel that the freedom from craving alcohol is worth the short period of discomfort.

CONCLUSIONS

Pharmacologic aversion conditioning using emetine-induced nausea as an aversive stimulus has been used since 1935 to treat alcoholism. There are currently 16 hospitals in the United States (16% of the private investor-owned alcoholism beds) using this therapy. All have permanent abstinence from alcoholic beverages as their major treatment goal and all report long-term abstinence rates of approximately 60%.

Three hospitals also use faradic (electrostimulus) aversion conditioning in patients that they consider unsuitable for pharmacologic aversive conditioning. They also report abstinence rates of approximately 60% using this treatment modality. These same three hospitals also use pentothal interviews as part of their therapeutic regimen.

All aversion conditioning hospitals employ adjunctive techniques of educational sessions, counseling, relaxation training, aftercare and follow-up reinforcement treatments, and referral to appropriate agencies after discharge.

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