TREATMENT OF PSYCHONEUROSIS

MODIFIED CO₂ ABREACTIVE TECHNIQUE

BY

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During the past few years the production of abreaction by drugs or gases has taken a place in recognized psychiatric therapy. Sargant and Slater (1940) and Sargant (1942) have described the use of intravenous barbiturates ; Palmer (1944) the use of ether ; Rogerson (1944) the use of nitrous oxide ; and Simon and Taube (1946) intravenous "methedrine" (methamphetamine hydrochloride). Meduna (1947) reported successful abreactions following inhalation of 30% carbon dioxide and 70% oxygen. None of these methods are completely free from danger, and some are decidedly unpleasant for the patient. High concentrations of carbon dioxide can produce an irreversible failure of the respiratory centre, and in this respect Meduna's method would appear to be fraught with danger. It occurred to me that more use might be made of the "subcortical excitatory state" described by Meduna, and that it should not be necessary for the patient to lose consciousness. The following modified technique was therefore developed.

Method

The patient receives treatment in bed in a quiet room and the procedure is briefly explained. It is emphasized that consciousness will not be lost, and that after inhaling the gas he is to "let himself go" and do and say exactly what he wants. It is useful to spend some time in ensuring that the patient knows what is required of him. A Boyle anaesthetic apparatus is used and the patient is first allowed to inhale pure oxygen, the mask being held a few inches above the face and gradually lowered into position. It is not wise to employ the harness, as this produces a feeling of constriction and would naturally tend to increase apprehension. After a few respirations, carbon dioxide is gradually introduced until 10-15% is being given. After twenty respirations the amount of carbon dioxide is increased to 30% and then almost immediately lowered to the former level. The inhalation is terminated rapidly after 25-40 respirations. The concentration of carbon dioxide required varies quite markedly between individual patients, but the aim is to produce overbreathing with some restlessness.

As soon as the mask is removed the nursing staff retire, but should be within call lest any subsequent violence ensues. Some patients abreact immediately, but others recount former incidents for as long as half an hour before any true release of emotion takes place. It is necessary for the psychiatrist to devote at least an hour to each patient and to be content to await results, it only rarely being necessary to encourage the flow of material. When, however, the abreaction occurs, it is helpful to increase the drama and heighten the emotional atmosphere.

Meduna originally described the treatment as a purely physical method, but I have used the modification described above purely as an aid to psychotherapy. Accordingly, only a few induced abreactions have been

required in each case: the maximum number of such treatments in any one case was twelve. Up to date some 40 patients—mainly cases of hysteria or mixed states showing anxiety and obsessional features—have been treated. Every patient has benefited considerably, and in some the response has been dramatic. The following are illustrative cases.

Case 1

A tense, anxious man of 33 was seen as an out-patient after an abortive suicidal attempt. He complained of a severe "pounding" headache, inability to relax, insomnia, and depression of seven years' duration. He was unable to carry on his business as newsagent and tobacconist, and stated that he had had impulses to attack customers and commercial travellers. There was no relevant family history ; he was happily married and had two children.

His personal history did not reveal any instability until 1941, when, after taking part in 15 operations as an air-gunner in the R.A.F., he was "grounded," as he had suddenly become "a bag of nerves." This was attributed to the fact that several of his friends had failed to return from a recent bombing operation. He received some psychiatric treatment, but improved only slightly, and continued to reproach himself with thoughts that he was "letting the side down." After a further trial on ground duties, he was eventually invalidated and sent to a neurosis centre, where he spent six months and received treatment by narco-analysis. There was some improvement in his condition, but a few months later he relapsed and was sent to another neurosis centre, where he was given modified insulin therapy. There was again some improvement in his condition ; he gained a little weight, and was able to return home in four months. He stated that he felt better, but still had severe headaches and trembled easily. He started in business and struggled on, often visiting his doctor and, in his own words, "living on phenobarbitone."

The patient's confidence was gained at the first interview (at the beginning of which he had protested that he was sceptical of all psychiatrists), and it was decided to start abreactive treatment at once. After 35 inhalations of the carbon dioxide mixture he lay back peacefully and said, "This is the first time in seven years that I have felt really relaxed yet thoroughly conscious." He then began to talk quite rapidly about his Service experiences, and mentioned particularly the "injustice" of his not being given another chance to return to air-crew duties. He became more and more vehement, and then relived an incident which occurred when he was being medically boarded, and during which he felt that a senior officer had inferred that he was "merely yellow." He clenched his fists, shouted, raved, and finally burst into tears. After this session he was much calmer and relatively cheerful. Two days later he reported that there was a definite improvement in his condition and that he was able to sleep better.

During the next session, after ranting on about "the frustrations of modern business," he mentioned his father, who had financed his venture. There was a short pause, and he then suddenly began to shout and swear at the top of his voice. He fought, kicked, struggled violently, his face being contorted with rage—staring at some unseen person, threatening murder, and all the time pouring forth a torrent of abuse. After a few minutes he became lacrimose and sobbed for a considerable time. When he had settled down somewhat he said that, immediately before his illness began, he received a letter from his wife telling him that his father had, under the influence of alcohol, tried to seduce her. He had felt homicidal and lay awake all night, thinking out how he could put his father to death in the most painful possible fashion. He could not mention his feelings to anyone, but finally decided that, as his father appeared duly contrite, he would "forget" the incident. This story was punctuated by further emotional outbursts. He was allowed to rest for half an hour, and thereafter he was found to be calm

and seemed quite happy. His first words were, "What a fool I've been."

He has been seen on several occasions since then and has remained perfectly stable and completely symptom-free. His relations with his father are cordial and his business is flourishing.

Case 2

A well-built girl aged 22 was referred because of aphonia of four years' duration. She was accompanied by her mother, a dominant woman who did all the talking and said that she had read in a book that "this could be caused by a shock," that her daughter had had such a "shock" because of an accident at her work, and that therefore the company should pay compensation. Seen alone, the girl was quite serene, and stated that just before the beginning of her illness there had been an accident in the factory where she was employed and another girl was "dragged into the machinery and killed." She maintained that she had been perfectly well until this incident, but had "lost her voice" immediately after. She had apparently attended a psychiatric clinic and narco-analysis had been attempted, without improvement.

Little was revealed during the first abreactive session, but she spoke (in a whisper) a great deal about her brother, and said that she wanted to get better "more than anything else in the world" so that she could resume singing in the church choir. She maintained that she did not want compensation, and released some aggression against her mother. During the second induced abreaction she mentioned the name of a former boy friend and then became extremely agitated; she clenched and opened her hands and tears rolled down her cheeks. After this session she was very depressed and agreed to being admitted to hospital for a few days.

On the following morning carbon dioxide inhalation was again administered, and it was suggested that she should try to remember the happenings of the day before the accident. On this occasion she lay quite still when the mask was removed, and then, after straining to produce a long sibilant sound, uttered a piercing scream. She struggled, shouted, wept, and continued this activity for three or four minutes, after which she sat bolt upright, seized me by the hand, and poured forth her thanks. It appeared that on the day previous to the accident she was returning from choir practice with her boy friend, when he attempted to have intercourse with her. She had previously permitted some "love play" and did not at first realize what was happening, but when she discovered this she screamed, struggled, and eventually ran away. She felt ashamed, humiliated, and afraid of becoming pregnant. She managed to evade her family and went to bed, but lay awake weeping all night. In the morning she dressed hurriedly and left the house before the rest of the family were awake. When she arrived at her work she could not speak, and imagined that God had taken away her voice as she had been so wicked. The accident occurred later that morning, and it was assumed that her misery and agitation were due to this. She was discharged from hospital the next day and resumed work in a few weeks. She has since been seen on several occasions, and remains stable.

Case 3

An excessively tidy married woman aged 42, obsessed with the idea that she was suffering from schizophrenia, was referred by her doctor, who stated that she was constantly calling him in the middle of the night, saying that she was dying.

On examination she was found to be extremely tense, anxious, apprehensive, and morbidly introspective. She sat rigidly on the edge of the chair, with hands and teeth clenched. She admitted that she had always been "nervous," but denied that her parents or her brother were otherwise than "extremely well-balanced people." She expressed a great love of her parents, particularly her mother, whom she described as "the best mother in the world." Her symptoms were of over 20 years' duration, and she had received

treatment (modified insulin and electric convulsion treatment) in two mental hospitals. She felt that her case was hopeless and was tortured by the thought that her child would "be the same." Narco-analysis was attempted, but on infinitesimal amounts of thiopentone she would merely become somewhat drowsy and elated, repeating over and over again, "My beautiful son." It was decided to employ induced abreaction with carbon dioxide.

On the first occasion she started talking rapidly as soon as the mask was removed and, almost immediately, relived an incident which occurred when she was 10 years of age. She had apparently reported to her mother that her brother had been disrespectful to some people in the street, and after this her brother (to whom she was very much attached) did not speak to her on any occasion for two years. She wept bitterly for several minutes and then began to disclose several other incidents. After this treatment she was much more calm and self-composed. She reported that after leaving the treatment room she found that for the first time in her life she felt "easy" with people and wanted to talk to them. When she went to bed that night she felt relaxed for the first time in many years and did not want to go to sleep "as it was so wonderful to feel entirely at ease." On the next morning, however, she had again become tense and worried.

During the second treatment she began by talking about her mother, and then re-enacted three childhood incidents, with appropriate emotional reaction. At the age of 5 she accidentally upset a bucket of water over her 3-year-old brother, who developed pneumonia on the same night. Her mother would not speak to her for weeks, except to accuse her of causing her brother's illness. The emotional storm aroused by this incident lasted for 15 minutes. When she was 7 her mother developed a fear of animals, and on one occasion she received an unmerciful beating because she fondled a dog. After relating further incidents she sat up in bed and said, "This is all very childish, as well as being disloyal to my mother." She then proceeded to continue her story as if nothing had happened. After this session she said that she felt much improved.

The major abreaction in the third treatment occurred when she mentioned her mother's "peculiar habits." She said that her earliest recollection was of her mother spitting on the floor and making her take some of the sputum on her finger and then place her finger in her mouth. She was commanded to do this on frequent occasions, and when her brother was old enough he too assisted in the ritual. During this enactment she evinced horror, disgust, and revulsion, and she retched. Immediately after, however, she recalled that she had fractured her femur at the age of 10, and her mother had "spent all her savings to pay for the best doctors" and had nursed her day and night. She later recalled seeing her father in "epileptic fits."

During the fourth and last treatment she recalled that when she was 16 a man working in the same office kissed her. Her mother had always threatened to kill her if she "did anything wrong with a man," and she was terrified lest she was found out. It was after this that she began to feel tense and became "nervous." This re-enactment produced the most extreme emotional reaction of all, and she wept for half an hour.

This patient is still attending the out-patient clinic, but a very good adjustment has been obtained; she is now able to cope with her problems in a realistic way and is living a happy and useful life.

Comment

The method described has much to commend it, in view of its technical simplicity, the patient's freedom from unpleasant physical sensations, and the fact that consciousness is retained throughout the treatment. Most patients express amazement at the clarity with which incidents are recalled. Names and faces, long since forgotten, are remembered "as if I had seen the

person yesterday." Repressed material is released fluently, and the saving in time is tremendous. In my experience the method is much more successful in revealing repressed incidents and particularly repressed emotions than the procedure of narco-analysis, using intravenous barbiturate. If partial resistance is encountered during the session, a few further breaths of 20% carbon dioxide will usually be sufficient to overcome this. The patient is able to leave as soon as the session has ended, and there are no complaints of headache and giddiness such as are found after the use of higher concentrations of carbon dioxide or one of the other methods of inducing abreaction. It is therefore a suitable method for use in the treatment of out-patients.

Case 3 is quoted to indicate the value of the treatment in even the most chronic types of psychoneurosis. The applications of this method are undoubtedly much more diverse than those of the abreactive techniques which were developed originally to deal with the casualties of war.

Summary

A simple method of producing abreaction and liberation of repressed memories by the use of carbon dioxide is described.

This method is perfectly safe, and is particularly suitable for use in the treatment of out-patients.

Three illustrative cases are reported.

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IDIOSYNCRASY TO AUREOMYCIN

BY

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Treatment with "aureomycin" is commonly complicated by side-effects which, although unpleasant, are rarely so severe that the drug must be discontinued (Spink *et al.*, 1948; *B.M.J.* Annotation, 1950a; Harris, 1950; Leitner, 1950; Parets, 1950; Tomaszewski, 1951). Further, the diseases for which aureomycin is available in this country are such that the risk of stopping treatment usually outweighs the unpleasantness of its side-effects. A case is here reported, however, in which a reaction to aureomycin was so severe as to preclude absolutely its further administration, and which in an elderly or enfeebled individual might well have been catastrophic. When its cost becomes less prohibitive and supplies less exiguous, aureomycin will be used as widely as penicillin, for it has a wide range of antibacterial activity, and "drug-fastness" has not yet occurred (*B.M.J.* Annotation, 1950b); similar severe reactions are therefore to be expected.

Case Report

The patient was a healthy but obese man aged 36, whose only known drug idiosyncrasies were to aspirin (with nausea, vomiting, and urticaria) and to penicillin (with eczematous dermatitis) (Bedford, 1946). There was neither a personal nor a family history of asthma, hay-fever, or other "allergic" disorders.

Although he was known to be "sensitive" to penicillin, the patient had undergone 72 hours' treatment with a total

of 1,500,000 units of penicillin four weeks previously, under a heavy "umbrella" of antihistaminics and ephedrine, for a cellulitis of the face which had failed to respond to sulphonamides. In spite of the "umbrella" he had developed dermatitis of the hands and feet which had gone on to heavy exfoliation. Other than this, no episode of drug idiosyncrasy had occurred since his first reaction to penicillin in 1944 (Bedford, 1946).

During the recent influenza epidemic he developed fever and a cough productive of purulent sputum. He was given 1 g. of aureomycin by mouth. Ten minutes later he noticed itching between the outer toes of both feet and of the groins, sites which had been infected with ringworm some years previously. Two to three minutes afterwards rapidly ingravescing respiratory embarrassment developed, consisting of inspiratory and expiratory dyspnoea accompanied by stridor and cyanosis. A suffocating minute ensued in a stridulous fight for breath, with eyes protruding and suffused, face a dusky purple, and "the world a reddening haze." A crowing indrawing of breath terminated the inspiratory difficulty, and was succeeded by a typical asthmatic attack, with the chest expanded in wheezing inspiration, the accessory muscles of respiration in action, the patient sitting bolt upright with hands on knees and shoulders elevated, and a difficult unproductive cough.

The only antispasmodic readily available was a proprietary preparation of *nor*-adrenaline in 20-mg. tablets for sublingual administration. Three of these were allowed to dissolve under the tongue, with no effect other than palpitations and a pounding in the head beginning after about 10 minutes and lasting for 15 minutes.

An itching tightness of the hands and feet developed and proceeded rapidly to gross pitting oedema of the hands, feet, scrotum, lips, and tissues about the eyes; several giant urticarial lesions appeared about the wrists and ankles. Subcutaneous adrenaline to a total of 1 ml. of 1/1,000 solution given half an hour later failed to modify the reaction.

The asthmatic attack subsided spontaneously two hours after its onset, but the oedema (a confluent urticaria) of the scrotum, hands, feet, and face reached maximum about two hours afterwards, and slowly subsided some 36 hours later.

The original infection was in no way modified by the aureomycin but ran its course, to subside by lysis within a week.

Discussion

The view that this alarming episode was due to aureomycin, and was not merely coincidental, was strengthened by a strongly positive skin test. A 12-mm. wheal with "pseudopodia" developed within 15 minutes after 0.1 ml. of a 0.25% solution of aureomycin in water had been injected intradermally (see Table); "controls" were negative.

Sensitivity Tests

Test Substance	Wheal at 15 min. (mm.)	Wheal at 30 min. (mm.)	Dose
Penicillin	10	13	100 units in 0.1 ml.
Streptomycin	9	12	0.1 ml. of 0.25% solution
Aureomycin	12	15	0.1 " " 0.25% "
Chloramphenicol	9	12	0.1 " " 0.25% "
Terramycin	9	10	0.1 " " 0.25% "
Trichophytin*	14	11	0.1 " " 1/100 dilution
Aerosporin (polymyxin B)	22	18	0.1 " " 1 mega unit/100 ml.
Vitamin B ₁₂ from streptomycetes	8	9	0.1 ml. of 20 µg./ml.
Vitamin B ₁₂ from liver	0	0	0.2 " " 10 µg./ml.
Sterile water	0	0	0.2 ml.
House dust	0	0	0.2 "
Pollen	0	0	0.2 "
Feathers	0	0	0.2 "
Acetic acid	4	4	0.1 ml. acetic acid pH 3.4
Horse serum	0	0	0.2 ml.

* 24 hours after the subsidence of this wheal a 20-mm. ringed, itching scaling lesion developed at the site of injection.

It is interesting to speculate on the possible relationship between this patient's idiosyncratic reactions to penicillin and aureomycin. His first episode of