

USE OF BENZEDRINE SULPHATE BY PSYCHOPATHS

THE PROBLEM OF ADDICTION

BY

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Benzedrine (amphetamine) sulphate was first introduced in America in 1935 by Prinzmetal and Bloomberg for the treatment of narcolepsy. Guttman in 1936 reported its use in this country in cases of depression, and in collaboration with Sargant described its psychological effects in 1937. Since then an enormous literature has accumulated on its pharmacological and physiological action and its therapeutic application in narcolepsy, post-encephalitic Parkinsonism, alcoholism, epilepsy, obesity, etc. Its use in psychopathic states and behaviour disorders, both in adults and in children, has been described by Cutts and Jasper (1939), Bradley and Bowen (1941), and Korey (1944), and, on a larger scale in connexion with electroencephalographic studies, by Denis Hill (personal communication). The beneficial effects of benzedrine in certain types of psychopathy have been observed in numerous instances by my colleagues at the Sutton Emergency Hospital. Hill, as quoted by Sargant and Slater (1944), has noted that certain psychopaths can tolerate benzedrine in enormous doses and benefit from the therapy, as opposed to normal persons, who are intolerant of high doses. The case here recorded illustrates this point.

Case Report

A man aged 35 was admitted to Sutton Emergency Hospital on Jan. 26, 1945, complaining of depression, insomnia, and bad nerves. There is a family history of psychopathy. The patient has been a nail-biter all his life, had periodical attacks of stammering, had nightmares, was enuretic up to the age of 12, and at school was a poor mixer. After normal schooling he trained for commercial art at Cardiff Technical College and had a succession of jobs in Wales and later in London. He had been married 17 years and had two children, but his wife left him in 1940 after they had had some "differences."

He is described as a persistently unhappy reserved man with few friends, stubborn, anxious, highly strung, sensitive, and easily depressed. Since 1939 he was a fire fighter in the N.F.S. and went through the London "blitzes," but had to "steel himself" to do so. He expected every bomb would be his last, but did not report sick. In March, 1944, during a raid, he received a slight injury to his arm and leg, and the "sudden realization that he had been hit at last produced shock." He fainted repeatedly, and remembers little after that until he found himself in hospital, where he remained some weeks. Sulphonamides with which he was treated made him depressed. After returning to duty he experienced some nasty flying-bomb incidents, and was tense and sleepless. His condition deteriorated, and he was sent to a Fire Force in North Wales for a month, but felt worse on return, yet continued on duty. His relatives were all evacuated and he had to look after himself. Finally he reported sick and was sent into Sutton Emergency Hospital. On admission he was tense and depressed, stammered, and stated that he had lost interest and had some thoughts of suicide, but was anxious to get well. He had bad dreams and felt that people were talking about him. There was a slight loss in weight. He insisted that he did not want to leave the N.F.S., because it gave him some measure of financial security.

Physical examination showed him to be a thin, asthenic individual. There were small scars on his right leg and the ulnar border of his right forearm. His pupils were dilated and B.P. was 120/95. There was no physical abnormality.

At the time of admission he gave no indication that he had been taking benzedrine. After five days of moderate sedation he was restless and agitated, and was put on continuous narcosis with sodium amytal and paraldehyde. The restlessness and agitation persisted for some days and he complained of vivid dreams of his experiences. His appetite was ravenous. When taken off narcosis he was treated with daily intravenous 33% glucose and with large doses of nicotinic acid, thiamine, and riboflavin. There was rapid physical and mental improvement, and he was no longer confused and agitated, was able to carry on a reasonable conversation, and slept well on small doses of paraldehyde.

He admitted he had been taking large doses of benzedrine early on during the narcosis, and later stated that he first began to do so

during the 1940 raids. At that time he took it when he needed it, and was scared of its potency; but soon he took daily six tablets of 5 mg. each. He found no ill effects—it seemed to banish all tiredness and fatigue, and gave him a strong feeling of well-being—and by increasing the dose he experienced "unlimited energy." Soon he was taking nine to ten tablets, and in the latter part of the 1940 raids 30 tablets daily. This larger dose produced a tendency to some "subtle" depression a few hours afterwards: "nothing very suicidal, but at the same time a distinct sense of depression, irritability, and an increase of perspiration." The effect of well-being was increased by strong tea: "benzedrine with a strong cup of tea was better than a good meal." His average dose was nine tablets three times a day; this produced no sense of intoxication, but merely increased his energy and allowed him to do a better job. "It stimulated my sense of perception, imagination, and formulation of ideas." After many months he cut down his benzedrine consumption to eight tablets a day when the air raids ceased, but increased the dose whenever he was called upon to do extra work or go without sleep. His injury in 1944 suddenly deprived him of benzedrine for a month when in hospital, and, he states, "I can't say that I missed it a great deal, and although I could not sleep well I felt no craving for it"; but he resumed taking 25 to 30 tablets daily during the flying-bomb era. When on maximum doses he had to take 30 gr. of barbitone to help him sleep, but found that the uplift of benzedrine was carried over until the next morning. A fortnight after admission to Sutton Emergency Hospital he said he had no craving for benzedrine: "It rather interests me, as I expected to feel a craving for it when I came into hospital, but I did not." He rapidly improved, put on 8 lb. in weight, and lost his tenseness, but throughout maintained that although he did not want any benzedrine, he "felt it had been a good thing for me."

Discussion

The *Journal of the American Medical Association*, in an editorial in 1938, issued a warning on the dangers of the use of benzedrine for obesity, for which it was commonly being employed in America. That journal stated: "Its use over long periods is certainly not without danger, particularly to the circulatory system." Lesses and Myerson (1938) replied to this: "As to addiction, the drugs to which human beings become addicted are the narcotics. There is no evidence in the entire literature of medicine that stimulants become habit-forming. One of us (Myerson) has had clinical experience with benzedrine sulphate for more than two years in a very large number of cases and has not seen a single case of addiction in the sense that a person, otherwise well, now feels it necessary to take the drug habitually and in ascending doses to produce the desired effect." Waud (1938) stated that a definite tolerance for amphetamine is slowly built up, and that increasing doses are necessary to produce the original effects, but he indicated that the question of addiction was not settled at the time. Despite the many hundred papers published in connexion with benzedrine very few describe possible cases of addiction. Friedenbergs (1940) quotes a case in which a patient in a period of six months took five 10-mg. tablets twice daily for obesity; reduction of the doses was followed by fatigue and depression and a demand for larger doses. Hahne (1940) described a case in which the patient had been taking benzedrine sulphate for nearly two years, averaging twelve 10-mg. tablets daily, and on many occasions double this amount. He was an alcohol addict before starting benzedrine, and, experimentally, was prescribed two benzedrine tablets daily. He returned many months later, and Hahne states: "He came looking fine. He had gained weight, and claimed that the taking of the drug had completely banished his craving for alcohol. He said, however, that if he missed taking the benzedrine he would get a terrific craving. He claimed that he could not carry out the daily routine without it. Withdrawal caused nervousness, exhaustive fatigue, an inability to think straight, and sleeplessness. In spite of the fact that he had been a lifelong drunkard he had not touched a drop since he began taking the tablets. Aged 49, his B.P. was 115/90." The last fact is interesting because one of the points raised against the regular use of benzedrine is said to be its hypertensive effect (Morse, 1936; Beyer, 1939). It will be noted that the blood pressure of my patient was normal. Cases of so-called addiction have therefore only rarely been recorded. Guttman and Sargant (1942) stated that they had not met with cases of addiction to benzedrine—the only queries were a few instances in patients with abnormal tolerance. They say: "The fact that patients cling to a drug from which they derive physiological benefit cannot be

regarded as liability to addiction. The same could be said of insulin or cough mixtures." In my patient there was little sign of "craving" when suddenly deprived of benzedrine in hospital in March, 1944. He says he did not miss it, and for five days in hospital before I put him on to continuous narcosis he took no benzedrine and showed no change in symptoms apart from some restlessness and sleeplessness. He was able to carry on in the N.F.S. for some years with large doses of benzedrine, and would almost certainly have broken down without it. Like a diabetic, he was efficient with his drug and inefficient without it. There were no serious physical changes as a result of its long use. Some cases of idiosyncrasy and collapse after the use of even small doses of benzedrine have been described in the literature, but they are rare. Bloomberg (1940), on the other hand, recorded his studies of three patients with narcolepsy who had been taking at least 70 mg. of amphetamine every day—for two years and eight months in two cases and for one year and eight months in another. In spite of the massive doses over a long period no significant abnormality was found in exhaustive regular tests: there was no rise in the basal metabolic rate, no rise in blood pressure, no evidence of organic damage to organs or blood, etc., and no evidence of addiction or habit-formation was found. We must conclude, therefore, that there is no evidence of physiological damage from benzedrine even in prolonged and massive dosage.

Summary

A case is reported of a patient taking large doses of benzedrine (amphetamine) sulphate for over four years, the daily consumption being from twenty-five to thirty 5-mg. tablets for many months periodically.

The only apparent withdrawal symptoms were increased restlessness and sleeplessness: There were no apparent physical ill effects. The blood count was normal. After stopping the benzedrine the patient had a marked hunger, which confirms the fact that benzedrine reduces the appetite.

Although the use of benzedrine was abruptly stopped when the patient entered hospital, he made no request for it.

Sleeplessness induced by benzedrine was well compensated by barbitone.

This paper discusses the question of "benzedrine addiction" and notes the clinical experience that certain types of psychopath can well tolerate and benefit by large doses of benzedrine.

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A circular from the Ministry of Health states that a substantial extension of mass radiography will not be practicable until normal production of the highly specialized apparatus required becomes possible and reduced demands on medical man-power release the skilled staff essential to the proper use of the apparatus. In view, however, of the general desire for an extension of mass radiography as soon as conditions permit, the Minister reminds tuberculosis authorities (other than the few who already have mass radiography units in operation) that the M.R.C. Committee on Tuberculosis in Wartime in its report issued in September, 1942, advised that a high standard of quality of miniature radiography is necessary for correct interpretation and that the use of compromise apparatus is to be condemned. Experience has since confirmed the soundness of this advice. The Minister suggests, therefore, that, when the present difficulties begin to relax, authorities wishing to undertake mass radiography should first seek the advice of his expert consultants, who will give every help and guidance.

ERYTHEMA NODOSUM AND TUBERCULOSIS

BY

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Recent articles in the medical press have stressed the common association between erythema nodosum and tuberculosis. The rheumatic theory of its origin, however, is still too prevalent among general practitioners, and often blinds them to the necessity for referring these cases to the tuberculosis officer for investigation. Perry (1944) states that in 72% of cases among school-children erythema nodosum marks the onset of primary tuberculosis. Daniels (1944) records 5 cases out of 284 tuberculin-negative nurses who became tuberculin-positive after an attack of erythema nodosum. The Norwegian authority Ustvedt claims that the condition is practically always a tuberculous one. The following cases have been seen at a tuberculosis dispensary in the past 18 months.

Case 1.—Boy, 13 years; referred to dispensary with erythema nodosum in June, 1943. Fading nodules on both shins, but nothing heard in chest. Failed to return to dispensary for two months. Cough then present, with pain in the chest. Temperature 99.6° F. Pleural effusion found at left base. No heart murmur. Patient admitted to sanatorium, and Mantoux test found positive to 1 in 10,000 dilution. Effusion cleared normally, and chest film a year later showed calcified hilar glands. Attack of acute nephritis while in sanatorium. Now well, and working. Family history: mother's uncle had tuberculosis and brother has tuberculous cervical glands.

Case 2.—Boy, 12 years. Developed erythema nodosum in Aug., 1944, and was treated in bed by the family doctor. When allowed up, started a cold and complained of periodic attacks of pain in the right side of chest. On Oct. 12 examination revealed right pleural effusion. Tuberculin patch test gave a slightly positive human reaction and a strongly positive bovine one. Treated in bed for a further eight weeks. A chest film on Dec. 9 showed absorption of fluid and a large right root shadow, suggesting a primary complex. He now feels well and is gaining weight. Family history: nothing of tuberculosis. Mother had a cough, but chest film was negative.

Case 3.—Youth, 16 years. Developed some pain in the right side in June, 1944, followed by erythema nodosum on the left leg. Referred to dispensary; a chest film showed opacity in and above the right horizontal fissure. Developed a slight cough, and admitted to sanatorium on Jan. 2, 1945. Film then showed a large root shadow with some infiltration in the right lower zone. There were two calcified shadows in the left root. No family history of tuberculosis.

Case 4.—Girl, 10 years. Referred with a history of erythema nodosum two months before, in June, 1943, and as a contact of her elder sister with active pulmonary tuberculosis and a positive sputum. A chest film showed some shadowing in the right mid-zone. Has been kept under observation for the past 18 months; complained of pleurisy pain in June, 1944. A chest film in August suggests that bronchiectasis may be developing at the right base. Her weight and appetite are good.

Case 5.—Girl, 16 years; referred with pain in the left shoulder-blade, cough, and sputum. Was just recovering from an attack of erythema nodosum. A chest film showed a fan-shaped shadow contiguous with the left root shadow. A few crepitations were heard in the left subclavicular region. Sputum was negative for T.B. Admitted to a sanatorium for treatment. Her father has a chronic cough, but refuses to be examined.

Case 6.—Girl, 6 years; referred with erythema nodosum and history of frequent colds and "styes" on eyelids. Bluish nodules on both shins. Tuberculin patch test gave a slightly positive human reaction and a strongly positive bovine one. Left tonsillar gland slightly enlarged. A chest film showed large left root shadow, suggesting a primary complex. Two or three weeks later she developed phlyctenular conjunctivitis and corneal ulcers, followed by a recurrence of erythema nodosum. As her general condition was poor, sanatorium treatment was advised. Family history: aunt attends dispensary with old mainly calcified disease and a negative sputum. Mother's chest film negative. Father has had chest trouble for years, but refuses examination.

Case 7.—Boy, 9 years; referred on account of a cervical abscess. Swollen glands first appeared after an attack of erythema nodosum in Jan., 1944, which had been described as surface rheumatism by the family doctor. The glands subsided after rest in bed, but recurred in October with abscess formation. The abscess was opened by the doctor and discharged intermittently. He was admitted to a sanatorium for treatment, and the Mantoux test was found positive in 1 in 25,000 dilution. A chest film was normal. There was no