Paradoxical Effects of Ritalin in Adults

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In 1937, Dr. Charles Bradley described the behavioral effects of children receiving benzedrine. Since that time this behavioral phenomenon has been referred to as a "paradoxical effect" because drugs which ordinarily are thought to be stimulants when given to some hyperactive children result in a lessening of their hectic motor behavior. The term "paradoxical" is somewhat misleading in that it implies that the pharmacological action of the drug is different in different children, but a more descriptive term might be "normalizing effect." When administered in the proper conditions, behavior becomes closer to the norm in such antithetical situations as accelerated or slowed behavior.

It is usually considered that children with Minimal Brain Dysfunction who are hyperactive may benefit from an amphetamine (Wender, p. 93), but this condition is self-correcting so that by puberty (Wender, p. 75) the condition disappears. No condition analogous to Minimal Brain Dysfunction (MBD) is traditionally described in adults. It is the purpose of this paper to describe two conditions in adults, probably related to Minimal Brain Dysfunction, in which the response to Ritalin is very much like that seen when it is used in children with MBD.

One condition has been seen in the treatment of acute paranoid reactions among prison inmates. These male patients present themselves in identical ways by complaining that they are afraid they are going to hurt someone. By the time of the complaint, there have already been one or more overt acts which justify their concern, and separate this group of patients from those who, because of their inadequacies, would like to gain self-esteem from aggressive fantasies. They do not complain that they have been maltreated in any way, and the object of their aggressions is a person in their geographical area regardless of his being inmate, staff, friend, or foe. The locus of such a threatening person can be described with considerable accuracy. He is usually in the area of peripheral vision and out of the area of central vision. Position in this area accompanied by hand motion makes him more threatening and is one the reasons that complaints frequently arise out of a handball game. Several inmates have received severe hand injuries when they deflected their blow from their game partner

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to the wall. In such patients the symptoms can be reproduced in the office by such maneuvers if done by a person experienced in dealing with acute paranoid states. One physician, however, during the course of a physical examination was seriously assaulted when he stood to the side of a patient, moved to put his hand on his shoulder, and asked him to turn around.

As a group these inmates are generally passive, dependent, and inadequate. Usually they are considered to be pleasant, agreeable, and to be employed at some menial task. Ordinarily, they make no threats to hurt anyone, and deny that they are under any pressure from inmates or staff.

They complain most plaintively. On further examination they volunteer that over the previous two to three weeks they have been getting "paranoid" by which they mean ideas of reference, with suspiciousness and grandiosity being conspicuous by their absence. They may have avoided the mess hall because of these ideas of reference, and there is a general feeling of discomfort in groups. Upon questioning they will identify increased sensitivity to sounds. The examination is not accompanied by signs of restlessness, a fact which appears to contradict the nature of the complaint. Attempts to locate an origin of social distress fail, and they insist that they are in general harmony with everyone.

Initially this was treated with phenothia-zines or antidepressants with little success in preventing assaults. Ventilation twice weekly seems to be the basis for any beneficial effects which occurred. Since the examination showed these patients to be overly inhibited, it was theorized that their rage was based in psychomotor retardation and that they were aware of the inability to handle ordinary daily frustrations, although it may not be entirely correct to consider the daily frustrations of inmates to be ordinary. Based on this assumption it was decided to give them Ritalin.

The attempt was fraught with some risk. Knowing that this class of drugs can produce paranoid reactions was one problem. Introducing such a drug into the population raised the question that it might become an important source of contraband, and as such would upset inmates taking it illegally and irritate the staff considerably. Therefore, the pill was crushed and suspended in water.

It was quickly learned that doses of 30 mg per day produced no subjective or objective response in these patients. Generally the inmate asked for something else, since he was getting nothing from his medicine. There appeared to be a threshold below which no response was obtained, and above which a normalizing or tranquilizing effect was obtained. This threshold varied from 60 to 120 mg per day.

Over the four years that this treatment was used the Superintendent of the prison estimated that the proportion of aggressive inmates admitted to the prison had risen from one-third to one-half of the population. Assaultive incidents, however, during this period diminished almost to the vanishing point. There was a marked decrease in all incidents, and the population of segregation was down considerably. Suicide, which was distressingly frequent, became almost nonexistent. The amount of contraband drugs in the prison decreased.

Among the inmates treated there was no habituation, and there was no difficulty in removing them from the medication after three to four months. Some of the men began to taper off the medication before a reduction was ordered.

During the same period that Ritalin was beginning to be used for assaultive inmates, it was decided to investigate other inmates by the use of the Glucose Tolerance Test. The inmates so investigated are not a particularly homogeneous group but they do not include the group who presented themselves asking for immediate assistance because of the homicidal feelings. By and large, they were inmates who complained of a wide variety of psychiatric, medical or neurological symptoms. But there was a rather constant thread running through the complaint of lassitude, inertia, and irritability. Many of their complaints were thought to be trivial and could be classified as hypochondriacal in nature. Often they had had many investigations in the medical department

for these symptoms without any tangible results. As a group, they seemed to have some difficulty with learning academic subjects, and many of these people came from such places in the prison as the high school or the computer school. Often their original complaint was that they simply could not retain information that they were trying to learn. These patients were subjected to a five hour Glucose Tolerance Test without any antecedent dietary advice.

Right from the beginning of this testing program, it was clear that these men showed fairly marked physical and emotional reactions to the test. They complained of severe fatigue, temperature changes from hot to cold at different times during the test, inability to concentrate, sometimes orthostatic hypotention, sometimes ataxia, frequently "dizziness" which lasted for an hour or two. It was also clear that these symptoms occurred during the time of the Glucose Tolerance Test and also tended to persist into the next day or even sometimes the following day.

As this program got started it appeared that many of the Glucose Tolerance curves were dropping substantially during the course of the five hours, so it became of some concern whether our equipment was in working order and whether or not we were measuring true blood sugar. Therefore, it was decided to plot the fasting blood sugars and also the mg percent drop during the course of the blood sugar in the same individuals. The fasting blood sugars are shown in Table 1, and show a distribution which is compatible with the statement accompanying our equipment that normal blood sugars range between 65 and 95 mg percent. The mg percent drop was calculated as the difference between the fasting blood sugar and the lowest point of the curve and the distribution of these differences is shown in Table 2.

The decision was made that many of these inmates showed a considerable amount of intolerance to carbohydrates, both in their symptomatology and behavior as well as in the laboratory findings.

Because there has been some speculation that Ritalin either promotes the secretion of the adrenal hormones or prevents their decay late in the afternoon, it was decided to treat some of these inmates with Ritalin. Their response to the drug was exactly the .same as the response of the acutely homicidal inmate. That is, in lower doses such as 30 mg a day the patients complained that they were getting no reaction at all from the drug. As the dosage was increased, finally at a point between 60 and 120 mg per day the patient just quit complaining about his symptoms. There was improvement in lassitude, inertia, and particularly irritability, as well as job performance and some improvement with learning. In spite of some very high doses of the medication there were no side effects from the drug that the patients complained about.

At the same time that this investigation was being conducted at Oregon State Prison, the same investigation was being conducted in the office practice. Five hour Glucose Tolerance Tests were being done on a majority of the office patients. It was reported by laboratory personnel that these office patients were responding in the same way as the patients in the penitentiary, and the laboratory personnel thought that the patients from my practice that were getting Glucose Tolerance Tests responded with much more illness during the course of the test than did the patients of other doctors. Because of their observation it was decided to personally observe the patients during the course of the Glucose Tolerance Test, as the laboratory was nearby the office. The observations were confirmed in that patients complained of fatigue, being hot and cold, periods of dizziness, sometimes ataxia, and sometimes the patients felt *so* ill that they had to be put to bed during the course of the Glucose Tolerance Test. In the office practice, these patients who responded with these symptoms during the course of the Glucose Tolerance Testing were treated with low-carbohydrate diets regardless of the levels of glucose in their blood during the course of the test.

Since the response in patients in the office practice came to be exceptionally good, regardless of whether the patients had a primary diagnosis of a Depressive Reaction or

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TABLE 1

FASTING BLOOD SUGARS
OREGON STATE PENETENTIARY

N=82

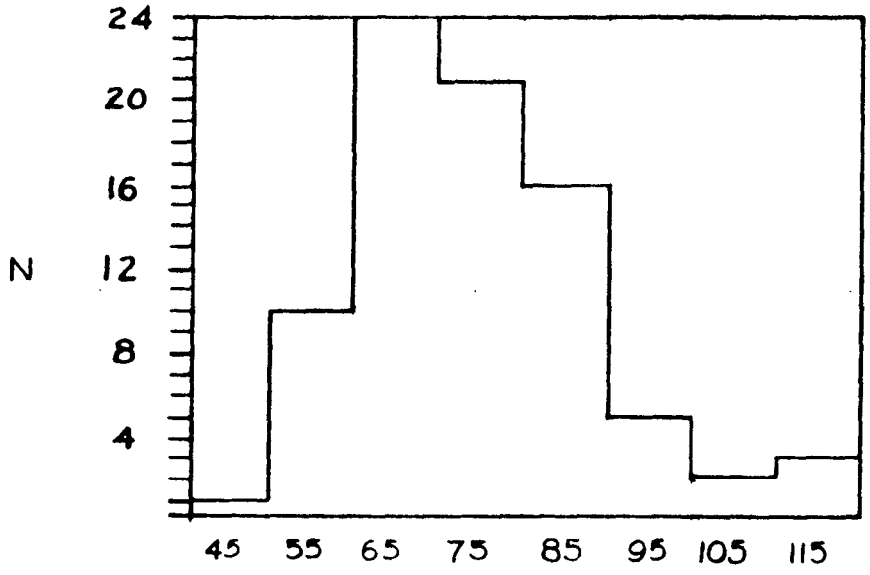
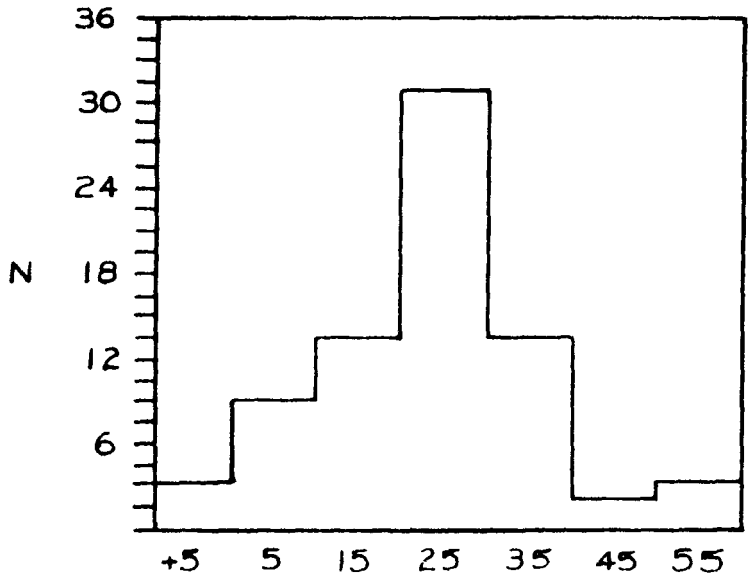


TABLE 2

MILLIGRAMS PERCENT DROP
DURING
FIVE HOUR GLUCOSE TOLERANCE TEST
OREGON STATE PENITENTIARY

N=76



Anxiety Reaction (the only patients treated were those with neuroses), it was decided to attempt the treatment of the non-homicidal patients at Oregon State Penitentiary with a low-carbohydrate diet rather than with the Ritalin. Part of this was based on the disfavor with which Ritalin is looked upon as a drug, especially when used with prison inmates. The manufacturer of this drug was strongly opposed to the use of this medication for any reason among the prison inmates.

The result of this approach was that during a period of a little over two years the inmates who were seen on a voluntary basis for treatment were treated almost exclusively with low-carbohydrate diets, between meal feeding with either Meritene or Sust-agen and a multi-vitamin, and the use of anti-anxiety drugs and anti-depressant drugs was almost discontinued. Since grossly psychotic inmates were removed from the prison population and placed in a special psychiatric facility where this kind of treatment was not done, the sample that was treated excluded psychotic or at least those who were sufficiently psychotic to be disturbing to those around them.

As a result of this work it was concluded that there was a group of inmates who became homicidal and were best treated with high doses of Ritalin and there was another group of inmates whose complaints were more neurotic in terms of fatigue, lassitude, hypochondriacal preoccupations who on the Glucose Tolerance Test showed rather marked drops during the time of the test and also had what appeared to be rather marked emotional, cognitive, and physical reactions to the ingestion of large amounts of glucose, and these patients responded in the same paradoxical normalizing way to Ritalin as did the acutely homicidal patient.

It was not possible to carry out an additional investigation of the acutely homicidal inmate with a Glucose Tolerance Test and a trial on a low-carbohydrate diet. One of the reasons why this was not done was that when the inmate presented himself in an acutely homicidal way the issues were too grave to temporize and since it was already established that 20 or 30 mg of Ritalin would allow this inmate to go up to his cell and go to sleep, one could not justify postponing treatment and investigating him with a Glucose Tolerance Test at that point.

Although the subjects of Minimal Brain Dysfunction, Hyperactivity, Hypoactivity, and Dyslexia were not investigated in this group of patients above described in a systematic way, it was generally true of the inmates there that they had substantial learning problems in school, and this was the basis for the fact that there was a school in the penitentiary. The results of this work were that it appears that many of the men in the penitentiary were diagnosable as having Minimal Brain Dysfunction, that many of them reacted in the same paradoxical or normalizing way to Ritalin and that many of these same patients also responded to low-carbohydrate diets, multiple feedings during the day and additional vitamins.

References

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THE PRESIDENT'S COMMITTEE ON EMPLOYMENT OF THE HANDICAPPED: Learning Disability: Not Just a Problem Children Outgrow.

BOOK REVIEWS

A PEBBLE IN NEWCOMB'S POND M. Dengler Holt, Rinehart & Winston New York, 1979

It is hard to understand schizophrenia from the inside. Insight is achieved by experiencing schizophrenia and recovering, by taking hallucinogenic drugs, by listening wisely to patients and guiding them through their disturbed sensory world or by reading many books written by patients while sick or after they have recovered. Dr. H. Osmond, Mrs. F. H. Kahan and I used the last three methods which led to our book **How To Live With Schizophrenia.** Within the past few years several books have appeared written by patients who credited Orthomolecular treatment for their recovery. This book is a novel written by a normal person, but there is no doubt she has learned what the schizophrenic experience is all about. I recommend this book to all parents and relatives of patients so they may begin the arduous job of learning what it is like.

Mara is a young, intelligent student who slowly sinks into her illness. She becomes moody, irritable and unreasonable. This is very puzzling to her family and friends who have no idea of the perceptual changes, visual illusions and voices which afflict her. Eventually her psychotic behavior leads her to an Orthomolecular psychiatrist. The first step in her recovery is her sudden comprehension that she is biochemically ill and that others suffer similar symptoms. Within a few months she is well and resumes her life, which had nearly been destroyed by schizophrenia. Mara was fortunate that she found an Orthomolecular therapist and was spared psychotherapy alone, tranquilizers alone, or any one of over 250 types of psychotherapy available in the U.S.A.

The description of Mara's chaotic world and how it influenced her behavior is very good. It will help psychiatrists to gain the understanding of schizophrenia which was already well known by Dr. John Conolly in 1850 and forgotten between 1900 and 1960.

Another fine book by Terra Ford, **Schizophrenia Cured,** describes a recovery from schizophrenia by Orthomolecular treatment. It is available from the Canadian Schizophrenia Foundation.

A. Hotter, M.D., Ph.D.

THE PSYCHOTHERAPY HANDBOOK
R. Herink
724 pages, New American Library
1633 Broadway
New York, NY 10(309.1980

"Psychotherapy" is flourishing in the U.S.A. and Canada if one can judge its state of health by the number of psychotherapies in use today. This valuable reference book describes over 250 different kinds and even includes nutritional and megavitamin therapy. In my opinion nutritional therapy when used properly would quickly remove the need for the vast majority of psychotherapies.

The number of psychotherapies is immense, but there is still a good deal of debate about the efficacy of these various treatments. I have no doubt that each form of therapy must help a proportion of those treated. One could enunciate a psychotherapy law which states that for every conceivable form of psychotherapy there will be a number of people who will think they have been helped. Every psychotherapist will find people who will come for help if the message is transmitted with skill and enthusiasm. One of the oldest is psychoanalysis which still remains pervasive and influential, and has spawned a number of modern offshoots, even if its results are no better than those yielded by any other form of psychotherapy. Therapies include Adlerian psychotherapy, creative aggression, ajase complex, aversion, behavior modification, biblio-therapy, bio scream, burn-out prevention, feminist, Cestalt, hotline, implosive, medical orgonomy, psychosynthesis, puppet, shadow, soap opera, to list a few.

Psychotherapists will find this handbook useful in understanding what their patients have been exposed to by previous therapists.

A. Hoffer, M.D., Ph.D