Vitamin B_3 Dependent Child

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Introduction

Since Dr. Humphry Osmond and I began the first double blind controlled studies in psychiatry in 1953 for testing the efficacy of vitamin B_3 for treating schizophrenia, we have explored various facets of what has been termed megavitamin therapy. It is better called Orthomolecular therapy. I will not review the many studies we, and more recently many other psychiatrists, have recorded but it is essential I emphasize the following points.

The first is that Orthomolecular therapy does not mean that only vitamins are used. It refers to a proper combination of nutrition, with megadoses of vitamin B_3 and, if necessary, of ascorbic acid, thiamine, Pyridoxine, vitamin B_{12}, plus any other chemical currently used in psychiatry. These are tranquilizers, anti-depressants, stimulants and so on.

It also includes electro convulsive therapy for adults where necessary. In other words, the Orthomolecular approach consists of treating patients with every known chemo therapeutic agent and increasing the intensity, variety and tempo of treatment depending upon the patient's response.

As a rule, treatment using chemicals normally not found in the body, i.e. tranquilizers, antidepressants, etc., is temporary and continued only until recovery can be maintained with vitamins, minerals and diet alone.

The second point is that without exception every psychiatrist who has used the Orthomolecular approach as described has become very impressed. They were able to double their recovery rate. So far, there has been no attempt to run controlled experiments of the overall Orthomolecular approach.

I think that I should list for you what we have claimed.

These are:

(1) That the addition of vitamin B_3 in an adequate dose substantially improves recovery rates.

(2) That relapses are decreased and that re-admissons are fewer and for shorter periods of time.

We have never claimed that vitamin B_3 treatment is the only treatment for every possible schizophrenic in every possible circumstance.

There is no doubt that a major proportion of schizophrenics recover on vitamin B_3. Any psychiatrist who begins with a cohort of 100 acute schizophrenics and follows the Orthomolecular approach for a sufficient period of time, say three years, will find that 90% of his patients are well, the rest are improved, none will be worse. Anyone who doubts this need only visit members of the Committee on Therapy, see their patients and records, and repeat the program on their own cases.

I have studied the use of megadoses of vitamin B_3 chiefly with adult schizophrenics and have published my results. So far, I have not made any claims for the efficacy of this approach for schizophrenic children although I have treated nearly a hundred cases. Cott[123] and Hawkins[4] have, however, published their results. We are in agreement that the megavitamin approach here has very great promise.

It is difficult to work with children. Diagnosis of disturbed children is in a very chaotic state, there being close to 50 different diagnostic terms for hyperactive or hyperkinetic children. They range from perceptually disturbed children, to minimal brain disorders, hyperkinetic disorders, schizophrenia and autistic children.

It occurred to me four years ago that we might be able to classify these disturbed children by their response to megadoses of vitamin B_3. Is there a syndrome that could be labelled "the vitamin B_3 responsive syndrome." This could be done by giving a fairly large number of disturbed and sick children ample quantities of vitamin B_3. Children who became well would then be examined for some constant features which could become an indication for using vitamin B_3. In principal it is the same as labelling every person who recovers on vitamin doses of B_3 as having suffered from pellagra or subclinical pellagra.

To examine this question, I began a single blind placebo controlled study three and one half years ago on children under age 13 who were referred to me because of disturbed and disturbing behavior. Many had been treated by various psychiatrists before this. This study will soon be completed, but certain conclusions are now evident.

Design

All seriously disturbed children referred to me by family physicians were carefully examined in my office and later by a colleague, Dr. B. O'Regan. They were then placed upon nicotinamide or, rarely, on nicotinic acid if there was no response to nicotinamide. The dose was increased from $1^1/2$ to 6 gm. per day. They were also given ascorbic acid, 3 gm. per day and rarely very small doses of tranquilizers or anti-depressants. They were then seen every three months to evaluate their progress. At no time were they given or were their parents given any dynamic psychotherapy.

As soon as the child recovered, whether it took three months or two years, he was taken off nicotinamide and given the same dose of equivalent placebo tablets. The ascorbic acid and other chemotherapy was not altered. The child was not aware of any change in medication. The mother was—as I consider it medically unethical for me to use any more double blind experiments with vitamin B_3.

As long as the child remained well he was kept on placebo. But as soon as the parents were convinced that the child had regressed to a substantial level, they stopped the placebo and started him back on the nicotinamide.

After three years I made a final evaluation of each child taking into account his performance in school, his relation to his family and the presence of any symptoms. They were also re-evaluated by Dr. O'Regan.

Each child was given a diagnosis but irrespective of this, they were placed into the research group.

Results

Of the 38 children entering the study six were terminated before they had completed their three years.

Of these, one, a mongoloid child whose father is a recovered schizophrenic did not respond after six months and there seemed then no point in carrying on with him.

A second child was making excellent improvement but would not keep her appointments.

Her parents seemed quite disinterested and she was dropped from the study. A third child would not take his medication. Whenever he was forced to take his vitamin he would begin to recover but the battle between he and his parents was too difficult and eventually he was sent to a home for disturbed children.

The remaining three children were the products of a schizophrenic, alcoholic father who killed himself, leaving a severely schizophrenic widow. It was impossible for her to ensure her children's cooperation, nor was she herself able to cooperate.

Twenty-four children went through the treatment-placebo-treatment cycle. In each cases he or she recovered on treatment, relapsed on placebo within one month, and recovered again on vitamin B_3. In many cases, recovery was slower after a placebo-induced relapse.

The remaining eight are still in the first phase of the study, are well or nearly well and will this year go onto placebo.

Thus, of 33 children who took medication as directed, only one was a failure.

I should emphasize that by "well" or "recovered," I mean they are free of symptoms and signs, are performing well in school, getting on well with their families and with the community. Some are now in their early teens and members of Schizophrenics Anonymous.

Twenty-seven families were included in this study. In 13 families, neither father or mother were ill. Of their 47 children, 16 were included in the group, i.e., 34% of their children were ill. Since they were target families with at least one sick child, this is close to what one would expect, assuming an average family size of around three.

In nine families one parent had been ill and had recovered from a vitamin B_3 responsive illness, usually schizophrenia.

Six had sick fathers and three had sick mothers. Out of 29 children, 13 or about 45% were ill.

In five families both parents had schizophrenia. From 22 children, 18 or 82% were ill.

Discussion

Most of the children who were given the medication regularly recovered but a few parents were too ill or too indifferent to cooperate and their children's recovery was too interrupted by failure to maintain medication. In other words, most of the children are vitamin B_3 responsive.

The main variable was vitamin B_3 for when this was replaced by placebo all children had relapsed within 30 days. There was no change in ascorbic acid, in other medication or in nutrition.

In every case good nutrition was emphasized. When vitamin B_3 was restarted, the children recovered again, although in many cases, more slowly.

Diagnosis of these children was as varied as with any group of disturbed children. The only thing in common was that they were ill, very disturbed and most were hyperactive. Diagnosis was no indicator of response.

Therefore, I must conclude that the condition which I term a vitamin B_3 dependent disease can manifest itself in a variety of forms. I consider it a vitamin B_3 dependent disease because they require 3 to 12 gm. per day of vitamin B_3 and because good diet alone has absolutely no effect upon them.

My data shows that vitamin B_3 dependency is inherited. In more than 100 families that I have examined in the past 10 years, I find that if one parent is vitamin B_3 dependent, one quarter of the children also will be. If both parents are vitamin B_3 dependent, one will expect more than % of the children also to be vitamin B_3 dependent.

There has so far been no generation gap. One can trace this from one generation to

another. I have now in my care five patients including one mother, three of her nine children and one hyperkinetic grandchild, son of one of the three. The grandfather was a paranoid, depressed personality. Of his 10 children three including the mother of the nine were mentally ill with schizophrenia or retardation.

Another example comes from this controlled study and covers two generations. Peter and Mary are patients in this study.

Peter, 9 years old, was the first member of a vitamin B_3 dependent family who was referred to me for treatment. For over a month he had markedly changed from a happy, too quiet, obedient boy to one who was hostile, irritable and fearful. He was terribly worried he might give way to his murderous impulses against his parents or against himself. Thus, he was afraid to take a bath because he was afraid that he might drown himself. These fears had been present over one year but not at the same intensity. Peter described his life as a nightmare of visions, perceptual illusions and fears.

He was started on nicotinamide *1%* gm. per day, ascorbic acid $1^1/2$ gm. per day, and continued on Thorazine 50 mg. at bedtime.

After one month he was slightly better. After the third month he was even better. He reported hearing voices and a choir of voices singing church songs. His performance in school had improved substantially. He reported that rubbing his ears no longer masked out the voices the way it used to and he described a vision he had seen before starting on megavitamin therapy. He saw Christ sitting on a chair.

After 7 months he was normal. He was started on placebo while continuing with ascorbic acid and Thorazine. After two weeks he began to relapse and his behavior began to revert to his pre-treatment condition. He could no longer sleep, nightmares came back, objects seemed far away and he became fearful and disobedient. There was no doubt he had relapsed.

After one month of placebo he was placed back on nicotinamide and Thorazine was discontinued. Within a month he was well. When seen after three years I found him normal as did my colleague who had examined him earlier. He reported that Peter was "a normal 12 year old boy."

Peter's HOD scores were:

1968	Total	Per-ceptual	Para-noid	De-pression
January	76	18	2	11
April	56	14	3	8
July	36	9	4	3
October	13	1	1	2

Peter's sister, Mary, age 7, was next referred. She was considered retarded. She had started to walk late and had learned to speak slowly. For two years she was a placid, quiet baby. Then she became disturbed; suffered many temper tantrums. In 1963 she was severely retarded but in 1961 she was classed as dull normal. She went to kindergarten but was too disturbing to the class and she was sent to a class for the retarded. She had not responded to tranquilizers.

When I saw her, I did not consider her retarded as she was very alert, perceptive, but was typically hyperactive. She was noisy, irritable, short-tempered. She had a marked epicanthal fold which gave her a mongoloid appearance. She was started on nicotinamide and ascorbic acid, the dose increasing to $4^1/2$ gm. per day of vitamin B_3. She was also on Thorazine and 200 mg. per day of Pyridoxine.

After six months there had been no improvement and the parents, in discouragement, stopped all medication. For one year she remained the same, but late in 1969 she began to hear voices and TV in her head. She was again started on nicotinamide 3 gm. per day, ascorbic acid 3 gm.

per day, glutamic acid 2 gm. per day and Pyridoxine 100 mg. per day.

Improvement was very slight. In July, 1970 she became violently psychotic. She heard voices telling her to kill, she was in a constant panic and terribly fearful. It appeared she would have to be treated in an institution.

As a last resort she was started on nicotinic acid 12 gm. per day, ascorbic acid 3 gm. per day and, as a sedative, Dilantin 150 mg. per day. For the next month this family lived through a nightmare in which they had to give Mary 24-hour nursing care. Then she began to improve slowly.

When seen on March 5, 1971 she had shown dramatic improvement. She was relaxed, at ease, no longer fearful, able to sleep alone, and getting on much better in school. It was very clear she was an intelligent girl slowly recovering from a very severe psychosis. If she maintains her present rate of improvement, she will be well by the end of 1971.

Peter's and Mary's father was referred next. He had been under psychiatric treatment for depression for two years. These episodes of depression had troubled him all his life. Medication had levelled out his mood to a chronic state of depression. He had read *How to Live With Schizophrenia* and concluded that he too suffered from schizophrenia.

When examined he was not very ill but he described having seen visions and other perceptual changes. He had also been paranoid in the past but his main complaint was depression and fatigue. As he was obese I ran the five hour glucose tolerance test and found he had relative hypoglycemia. After six months of Orthomolecular treatment he was well. (His father had been very irritable and suspicious for 10-years before he died at age 65.)

His HOD scores were:

1968	Total	Per-ceptual	Para-noid	De-pression
January 16	27	5	0	6
April 2	15	3	0	4

The next family illustrates another two generation transmission of vitamin B_3 dependency. Mr. J. D., born in 1933, was seen in 1967 because of severe marital disharmony. Their marriage was normal until their first baby died in 1957. Gradually the marriage deteriorated and was especially bad for the past five years. He had concluded that he and his wife must separate because he had no feeling toward her whatever and was sexually disinterested and impotent.

When examined he was very suspicious but admitted peculiar perceptual changes, complained that his memory was bad and was very depressed. He denied any paranoid ideas but these were reported to me by his wife. He also had a severe form of relative hypoglycemia.

He was started on vitamin B_3, 3 to 6 gm. per day, ascorbic acid 3 gm. per day, Elavil for one month and in three months was normal.

His HOD scores were down substantially:

	Total	Per-ceptual	Para-noid	De-pression
Nov. 30,1967	47	7	1	12
Dec. 14,1967	62	14	3	6
Jan. 19, 1968	23	3	0	0

Early in January, 1968 the second child, a girl age 8, was brought in because her performance in school was so erratic, because of her violent temper, and because of a reading problem. Words moved on

the page, faces pulsated, she saw vivid hallucinations, heard voices, and complained of being tired.

She was started on nicotinamide and ascorbic acid, 1 gm. of each per day. By May, 1968 she was normal. She was started on placebo to replace the nicotinamide. She deteriorated to her pre-treatment level within four weeks.

She was started again on nicotinamide but responded very slowly. The dose of nicotinamide was increased to 4 gm. per day by February, 1969. However, by October, 1970 she was well again and the dose was reduced to 2 gm. per day. At the end of the three years she was still normal.

There is a well-known vitamin deficiency disease which is an excellent model. Unfortunately psychiatrists are no longer familiar with the clinical manifestations of pellagra. When the older literature is examined, it is clear that the best model of schizophrenia is pellagra. It is so good that for many years psychiatrists in mental hospitals could not distinguish between them.

The only certain diagnostic test was the therapeutic one, once crystalline vitamin B_3 became available. If the psychotic patient recovered in a matter of days on 1 gm. per day or less he was labelled pellagrin. If he did not he was retained in the diagnostic group "schizophrenia."

Both diseases are characterized by changes in perception, in thought and mood. The major difference has been in skin pigmentation. Pellagrins usually suffer symmetrical brown pigmentary changes while this was less common in schizophrenics. It is likely, however, this was an artifact resulting from the way the patients were cared for. Schizophrenics generally were locked up in mental hospitals and were not exposed to the sun, whereas pellagrins came in from the community and either recovered fairly quickly or died.

What is not as well known is that long before pellagrins became psychotic they suffered from tension, depression, personality problems, fatigue and every other change commonly seen in neurosis, psychopathies, depressions, etc. In other words, mild forms of pellagra modelled non-psychotic forms of mental disease and severe forms the psychotic varieties.

Green has treated a large number of disturbed children with nicotinamide. From the dramatic responses he has concluded they suffered from subclinical pellagra. His examination of the literature led him to the same conclusion as mine.

There is one major difference between pellagra and schizophrenia. It is entirely quantitative. Pellagrins require vitamin doses and schizophrenics require megavitamin doses. But even this distinction is not absolute. Chronic pellagrins, who should be compared with chronic schizophrenics, also require megadoses for long periods of time.

There is thus a quantitative continuum from pellagrins who fail to ingest vitamin doses of vitamin B_3, say 50 mg. per day or less, to chronic pellagrins who require up to 1 gm. per day, to acute schizophrenics whose needs are 3 to 6 gm. per day to chronic cases who will require 6 to 30 gm.

The group who require 50 mg. per day or less will develop pellagra if their diet is deficient. The group requiring over 1 gm. per day will develop schizophrenia since no modern diet will provide this amount of vitamin B_3. What I do not know is how much vitamin B_3 per day given to this latter group will prevent them from developing schizophrenia. To be on the safe side I recommend 1 gm. per day for children of parents who are vitamin B_3 dependent. One could study this very easily by placing a large number of children from schizophrenic parents on various doses to see how much is required to prevent anyone from becoming ill.

Conclusion

In my opinion based upon this study

which I will report in detail later on, upon hundreds of other cases, my own and those reported by Cott and Hawkins, there is a syndrome in children arising from a vitamin B_3 dependency.

This syndrome is characterized by:

(1) Hyperactivity.

(2) Deteriorating performance in school.

(3) Perceptual changes.

(4) Inability to acquire or maintain social relationships.

Any child showing three or more of these features should be given a trial with the Orthomolecular approach. In each case there should be a titering of dose until the child is exposed to the optimum dose. Once the child is recovered, it can be slowly reduced to a maintenance dose.

I do not know how long they will require vitamin B_3 but I suggest it not be discontinued until they have achieved their final physical growth. One schizophrenic girl has been taking vitamin B_3 for 17 years but will need it for the rest of her life. Another young man stopped his vitamin at age 16 and is still well two years later.

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