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Hydrotherapy as a Possible Neuroleptic and Sedative Treatment

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ABSTRACT

Psychotic symptoms such as delusions and hallucinations can have a devastating effect on a patient's social functioning. Since psychosis is rarely congenital, it is possible that lifestyle factors play a role in its etiology. This paper offers a hypothesis that some of these factors could be: (A) A lifestyle lacking evolutionarily conserved stressors such as frequent exposure to heat and/or cold, resulting in a lack of "thermal exercise" which could lead to malfunctioning of the brain. (B) Partial retention and absorption of toxic waste in the colon, as described in more detail below. (C) Genetic makeup that makes a person vulnerable to the above conditions.

To test the hypothesis, three types of hydrotherapy are proposed (to be tested separately) as a putative neuroleptic treatment: head-out hot showers, adapted cold showers (twice daily each), and colon hydrotherapy (every 3-12 weeks, which also includes a dietary change according to Harvard's Healthy Eating Pyramid).

The following is supporting evidence: Dopaminergic transmission in the mesolimbic pathway is involved in central processing of pain and negative stimuli (e.g. stress-induced analgesia) in addition to its role in the pathophysiology of psychosis. It is also known that if a neural pathway can perform two different functions, then the execution of one function will often suppress the other (e.g. gate control theory of pain). Thus, a pain-based therapy,

such as a moderately hot shower, could have a “crowding-out” effect on pathological processes within the mesolimbic system. In addition, hyperthermia is known to induce fatigue and depress activity of the frontal cortex (the sedative effect).

As described previously, an adapted cold shower could work as a mild electroshock applied to the sensory cortex and, therefore, it might have an antipsychotic effect similar to that of electroconvulsive therapy. Additionally, a cold shower is a vivid example of stress-induced analgesia and would also be expected to “crowd out” or suppress psychosis-related neurotransmission within the mesolimbic system.

Human and bacterial toxic waste can sometimes be partially retained in the colon and it is known that many high-molecular-weight compounds can be absorbed there. Most narcotics can cause intoxication if administered rectally and there is also significant comorbidity of schizophrenia with intestinal illnesses. Additionally, there is indirect evidence that colon cleansing can significantly improve mental state. Therefore, it is possible that chronic intoxication with yet unknown components of partially retained waste could be one of the unrecognized organic causes of psychosis.

INTRODUCTION

Psychosis is defined as a well-pronounced loss of contact with reality that leads to deterioration of social functioning [1, 2]. Typical symptoms of psychosis include delusions, hallucinations and various forms of thought disorder, such as derailment, incoherence and illogicality [1, 2]. A classical psychotic disorder is schizophrenia, which is believed to affect about 1% of the U.S. population [3]. The currently prevailing theory of psychosis that is in large part supported by empirical evidence is the “dopamine hypothesis of

schizophrenia,” which states that psychotic symptoms such as delusions and hallucinations can result from an abnormal upregulation of synaptic transmission through dopamine D2 receptors in the mesolimbic pathway of the brain [4]. It has been found that dopamine D2 receptor antagonists can significantly reduce psychotic symptoms in most patients, although the theory cannot explain the delayed effect of these pharmacological agents in spite of their relatively rapid inhibition of D2 receptor function [5]. The dopamine hypothesis also cannot account for the so-called negative symptoms of schizophrenia, such as emotional withdrawal, poverty of speech, demotivation and anhedonia [4]. Another theory of psychosis that emerged relatively recently is the “hypothesis of N-methyl-D-aspartic acid (NMDA) receptor hypofunction” but empirical evidence supporting this theory is rather limited at this point [4].

Despite the progress in elucidating the pathophysiology of psychosis, its etiology remains poorly understood and is believed to consist of an unknown combination of environmental and genetic factors [3]. For example, the probability of developing schizophrenia is about 50% when a person has a monozygotic twin with this disorder [6], and no single gene has been shown to cause schizophrenia to date [3]. Nevertheless, in some cases, a cause of psychosis can be identified and it usually belongs to one of these three categories: organic, substance-related, and psychological. Psychological causes include stressful life-situations [7], while substance-related causes have to do with the use of certain medications and drugs of abuse [2, 8]. Organic causes are medical conditions that can interfere with normal brain function (various electrolyte disorders, hypoglycemia, and delirium-causing conditions, such as heatstroke and certain viral or bacterial infections and meningitis) including those that affect structural integrity of the brain (brain tumors, stroke, aneurisms, neurodegenerative diseases, and head trauma) [1, 2]. Schizophrenia is almost

never congenital and usually develops in late adolescence or early adulthood, and severe symptoms such as hallucinations very rarely occur in adolescent schizophrenic patients [3]. This suggests that lifestyle or environmental factors may play a role in the development of psychosis and this paper explores several factors that do not appear to have been tested in peer-reviewed literature so far.

One of the contributing factors could be a lifestyle devoid of stressors that have been present through tens of millions of years of evolution, such as heat and cold stress. It has been shown in numerous studies that small amounts of harmful or stressful agents can have beneficial effects on the health and lifespan of animals, a phenomenon known as hormesis [9]. In particular, exposure to heat may have a beneficial effect on psychotic patients because it can cause substantial (but otherwise harmless) pain, and pain can activate dopaminergic neurotransmission in the mesolimbic pathway [10, 11]. It is known that in addition to its role in the pathophysiology of psychosis, the mesolimbic pathway is involved in central processing of pain [12] and negative stimuli [11], one such mechanism being stress-induced analgesia [10]. It is also known that if a neural pathway can perform two functions, then the execution of one function will often inhibit the execution of the other (this is the basis of the gate control theory of pain [13]). Thus, if a therapy is designed that causes significant but bearable pain, e.g. a moderately hot shower, this pain-based therapy would be expected to activate the mesolimbic pathway via the mechanism of stress-induced analgesia and thereby inhibit or “crowd out” pathological processes of psychosis that are taking place within the same pathway. In addition, hyperthermia is known to induce fatigue [14, 15] and to depress electrical activity of the frontal cortex [16], which could have a beneficial sedative effect if psychosis is associated with agitation.

With respect to the cold stress, an adapted cold shower could work as a mild form of electroshock applied bilaterally to the sensory cortex and cold showers appear to have an anti-depressive rather than a sedative effect [17]. Since electroshock therapy is known to have beneficial effects on psychotic symptoms of patients with schizophrenia [18], it is possible that adapted cold showers might have a similar antipsychotic effect. In addition, cold hydrotherapy is known to cause analgesia [19, 20], suggesting that it may act through the mechanism of stress-induced analgesia involving the mesolimbic pathway [10] and thus could have the effect of “crowding out” psychosis in that region of the brain similar to the expected effects of the pain-based therapy described above.

Another possible contributing factor of psychosis that has not been tested in peer-reviewed clinical studies is partial retention and absorption of toxic waste in the colon, a condition that historically has been referred to as “autointoxication” [21], which, as a theory of illness, is believed by some authors to be discredited or obsolete [22, 23] despite the absence of peer-reviewed empirical studies on (non-gastrointestinal) therapeutic effects of colon hydrotherapy [22-25]. In support of the theory it can be said that low intestinal motility could theoretically result from the lack of fruits, vegetables and whole grains in the diet [26], and there is a large amount of bacteria (at least 75 different kinds [27]) and bacterial waste constantly present in the colon, as bacterial debris is estimated to comprise 10-30% of human feces by weight [27, 28]. Human waste could be partially retained in the colon as well due to the presence of numerous pouches and folds [29], and it is known that organic compounds of relatively high molecular weight (e.g. peptides) can be absorbed in the colon [30] and thus components of toxic waste can possibly be absorbed too. Additionally, it is possible to achieve intoxication if hallucinogenic or inebriating agents are administered rectally [31, 32]. Bacteria inhabiting the large intestine release a great

variety of substances (exotoxins, endotoxins, metabolites [33-35]) many of which have not been characterized in terms of their psychotropic effects. In addition, there is significant comorbidity of schizophrenia with intestinal illnesses [36, 37] and also indirect evidence that patients undergoing colon hydrotherapy can experience significant improvement in their mental state [25].

THE HYPOTHESIS

In light of the above, the hypothesis is that lifestyle factors can contribute to the development of psychosis in a genetically susceptible individual and that some of these factors could be the following. A lifestyle lacking evolutionarily conserved stressors such as: (i) frequent exposure to heat and (ii) frequent exposure to cold. Another putative factor is (iii) partial retention and absorption of toxic waste in the colon. This last part also contains a subhypothesis: While partial retention of toxic waste could result from a diet that is poor in fiber, switching to a healthier diet will have a limited effect on the bacterial and toxic load and additional cleansing techniques may be necessary.

EVALUATION OF THE HYPOTHESIS

To test the hypothesis, three types of hydrotherapy are proposed to be tested separately as a putative antipsychotic therapy: (i) head-out hot showers, 41-43°C (precise temperature would be selected that results in substantial but tolerable pain), 5-10 minutes, repeated 2 times a day; (ii) adapted cold showers, 20°C, 2-3 minutes, preceded by a 5-minute gradual adaptation, the whole procedure being repeated 2 times per day; and (iii) complete colon cleansing (every 3-12 weeks), using either colon hydrotherapy (tap water enemas until

clear, up to 4 liters total of intermittent inflow/outflow) or orthograde lavage with a balanced polyethylene glycol (PEG) solution. Method “iii” also includes a dietary change in accordance with Harvard’s Healthy Eating Pyramid [26].

10 to 30 volunteers diagnosed with a psychotic disorder would be needed to test each of the proposed treatments separately, with a properly selected control group of similar size receiving one of currently approved antipsychotic treatments. The proposed duration of testing is 3 weeks, which can be extended to 3 months if there is an improvement in symptoms. The detailed rationale for each treatment and some application notes are outlined below.

Rationale for hot hydrotherapy

Numerous studies have shown that small amounts of harmful agents can have beneficial effects on health of animals, a phenomenon known as hormesis [9]. In particular, hyperthermia may have beneficial effects on psychotic patients because:

- 1) Exposure to hot water can cause variable levels of pain depending on the temperature and pain is known to activate dopaminergic transmission within the mesolimbic pathway of the brain [10]. This pathway is thought to be involved in central processing of significant positive and negative stimuli, such as pain [11, 12]. In particular, it has been shown to play a crucial role in the mechanism of stress-induced analgesia [10].
- 2) Excessive dopaminergic activity in the mesolimbic system (a brain region which mostly consists of the ventral tegmental area and its projections to nucleus accumbens, including the latter) is believed to underlie the pathophysiology of psychosis [5].
- 3) If a neural pathway can perform two functions, then execution of one function can inhibit execution of the other. For example, some areas in the dorsal horn of the spinal

cord, called laminae, transmit signals received from both nociceptors and tactile receptors [38]. Stimulation of tactile receptors can suppress transmission of impulses received from pain fibers, in a sense “blocking the gate” for nociception [38]. This forms the basis of the gate control theory of pain [13]. Conversely, stimulation of pain fibers can suppress transmission of signals received from tactile receptors [38].

- 4) In view of the above, a moderately painful hot shower could activate the mechanism of stress-induced analgesia, which involves the mesolimbic pathway, and thereby “block the gate” for pathological processes of psychosis that are taking place in the mesolimbic area.
- 5) Local exposure to hot water is known to have an analgesic effect on areas of the body that were not exposed to heat [10], and whole-body exposure to hot water (a hot bath) is known to dramatically increase the blood level of beta-endorphin [39]. This peptide is an endogenous pain-killer and can also serve as an indicator of stress (its level is usually increased after various stressful stimuli [40]). These observations suggest that a moderately painful hot shower can indeed trigger the mechanism of stress-induced analgesia, and thereby enlist the services of dopaminergic neurons of the mesolimbic pathway.
- 6) Hyperthermia has been shown to induce fatigue [14, 15, 41] and to depress electrical activity within the frontal cortex [16]. This could be beneficial if psychosis is associated with agitation and when tranquilization is desired.

Application of hot hydrotherapy

The proposed procedure is a head-out hot shower 41-43°C lasting 5 to 10 minutes. The head is excluded to minimize the risk of a heatstroke and the procedure can be preceded by

an optional gradual adaptation period (2-3 minutes, expanding the area of contact with hot water from the feet up) to make it more comfortable. The proposed frequency of hot showers is 2 times per day.

The temperature of water can be adjusted for each individual such that the hot shower causes substantial but tolerable pain. To minimize the risk of heat-related illnesses, gradual acclimatization [15] to hot showers could be employed. For example, the first hot shower is only 1 minute, the next one (after several hours or the next day) is 2 minutes, the third one can be 3 minutes and so on. It would be preferable to avoid alcohol on the days when hot showers are used. If a volunteer experiences dizziness or malaise, it would be best to abort a hot shower immediately and wait one day before trying it again.

Rationale for adapted cold showers

Detailed physiological effects of cold showers were described previously [17]. Due to the high density of cold receptors in the skin [42], a whole-body cold shower can send a tremendous amount of electrical impulses from peripheral nerve endings to the brain, mimicking electroconvulsive therapy to some extent. In addition, it can be said that:

- 1) Electroconvulsive therapy (ECT) can have beneficial effects on such psychotic symptoms as delusions and hallucinations [18], and therefore it is possible that cold showers might have similar benefits. Although the amount of electrical impulses sent to the brain by a cold shower can be rather shocking and overwhelming, it is not sufficient to cause a seizure. On the other hand, adapted cold showers can be used for longer periods of time and more frequently than ECT [17, 43], such that the cumulative “electric charge” administered to the brain is of the same order of magnitude as ECT treatments (precise estimates would be hard to make).

- 2) A cold shower (either sudden or adapted) is rather stressful and also can result in significant analgesia [19, 20], possibly due to a several-fold increase in the blood level of beta-endorphin [44]. These observations point to possible involvement of the mechanism of stress-induced analgesia, where the mesolimbic pathway is thought to play an integral part [10]. As explained above in the section about hot showers, active involvement of the mesolimbic pathway in bringing about stress-induced analgesia would be expected to suppress psychotic symptoms.
- 3) Lowering the temperature of the brain is known to have neuroprotective and therapeutic effects [45]. It can relieve inflammation and accelerate recovery from an ischemic injury, if the cause of psychosis is organic [45].
- 4) There is some limited evidence that cold showers can have an anti-depressive effect [17], which may be beneficial for negative symptoms of schizophrenia, such as alogia, avolia, and anhedonia. If the desired effect is tranquilization rather than arousal, a hot shower immediately after a cold shower could potentially result in a net sedative effect as described above.

Application of adapted cold showers

The method can be used as described previously [17].

Rationale for colon cleansing

Some of the earliest mentions of colon hydrotherapy (a.k.a. enema or clyster) can be found as far back as 15th century B.C. [25]. Ancient Greek physician Hippocrates (5th and 4th century B.C.), who is believed by some to be “The Father of Medicine,” prescribed clysters for fever, quinsy, pleurisy, as well as intestinal and other disorders [46]. In the United

States, the popularity of colon cleansing treatments and the autointoxication theory [22] was rather high in the early decades of the 20th century, when colon irrigation equipment was commonly seen in doctor's offices [25]. German psychiatrist Emil Kraepelin was one of the proponents of the autointoxication theory of mental disease [21], although he believed the problem was rooted in dysfunction of sex glands rather than in absorption of toxic waste in the colon [24]. Some authors [22, 23] have stated that colon irrigation treatments were abandoned by conventional medicine around the 1930s *because* they were found ineffective, yet there is no empirical data supporting this point of view [22-25, 47, 48]. It is believed that commercial colon hydrotherapy is still practiced worldwide, but outside of the realm of conventional medicine, and there are very few reports on this practice in peer-reviewed literature [25, 49]. Recent years have seen a proliferation of infomercials on TV advertising colon cleansing equipment often with what appears to be exaggerated claims and pseudoscientific explanations for the mechanisms involved. Based on rather scarce scientific data available on the subject, the author has attempted to put together a possible explanation for the reported health benefits of colon cleansing [25, 46, 47, 49] and why it may be useful in the management of psychosis:

- (a) There is a large amount of bacteria (more than 75 different kinds, mostly anaerobic [27, 50]) and some species of yeast [51] living in the colon. Total concentration of live bacteria in feces is approximately 10^{10} colony forming units per milliliter [52] and bacterial debris (with bacteria) is estimated to comprise 10 to 30% of human feces by weight [27, 28, 50]. This could mean that there is a considerable amount of bacterial toxic waste constantly present in the colon, which inhibits further growth of bacteria despite the presence of nutrients.

- (b) Bacteria inhabiting the large intestine can release through excretion or cell lysis (death) a great variety of substances such as exotoxins, endotoxins, and various metabolites [33-35]. Many of these compounds most likely have not yet been identified due to the great diversity of commensal bacteria (most of whom are anaerobic) [35, 52], and their possible psychotropic effects have not been characterized. From what is known, components of bacterial waste can run the full gamut from toxic (lipopolysaccharide and exotoxins [33]) to moderately toxic (skatole [27]) to benign (vitamin K [29]).
- (c) There is evidence of notable absorption of nutrients in the colon in addition to the absorption of minerals and water [29, 50] frequently cited as one of the main functions of the colon. Vitamins [29, 50], simple sugars [53], short and medium chain fatty acids [54], peptides [30], and other relatively complex organic compounds [55] have been reported to be absorbed in the human colon. Therefore, numerous components of human and bacterial waste could be absorbed in the colon too, as if they were nutrients.
- (d) If the propulsion function and/or secretion of mucus by intestinal cells are below normal, the anatomical structure of the colon (numerous pouches and folds [29]) could make it possible for some waste to be retained in haustra (and diverticula) for weeks and maybe months due to the presence of numerous interhaustral folds. A diet that is poor in fiber (in fruits, vegetables and whole grains) is believed to be one of the contributing factors of low intestinal motility [26].
- (e) Various psychoactive compounds (such as hallucinogens and narcotics) can cause intoxication if they are administered rectally [31, 32, 56]. This observation and points (a)-(d) suggest that chronic intoxication with certain components of partially retained human and/or bacterial waste could cause psychotic symptoms.

- (f) Many animals including humans can live without gut microflora [57], and although it is generally believed that commensal intestinal bacteria have beneficial effects on the host, there are examples of negative effects [35, 57, 58].
- (g) There is evidence of comorbidity of schizophrenia and gastrointestinal disorders such as irritable bowel syndrome [36], constipation, and megacolon [37]. This is consistent with part (iii) of the proposed hypothesis, i.e. that incomplete evacuation of toxic waste from the large intestine could be a contributing factor of both psychosis and intestinal disorders.
- (h) There is some evidence that complete colon cleansing can significantly improve mental state [25]. In particular, in an indirect anonymous survey of 242 users of commercial colonic hydrotherapy in the United Kingdom, users reported some the following effects of this procedure: it ‘detoxifies’, ‘cleans’, ‘helps headaches and arthritis’, and ‘energizes’ [25]. It should be noted that Taffinder et al. [25] admit there were a number of shortcomings in the way the survey was conducted and they did not have a better choice.

As proposed above, the colon cleansing regimen would also include a dietary change according to Harvard’s Healthy Eating Pyramid [26]. The rationale for this is the following: (1) A healthy diet that includes sufficient fiber would be expected to improve intestinal motility [26] and minimize retention and absorption of toxic waste. (2) Studies show that schizophrenic patients are more likely than the general population to consume a diet that consists predominantly of junk food [59]. (3) Countries that consume more refined sugar and dairy products also tend to have worse outcomes of schizophrenia [60] and therefore it would make sense to significantly reduce consumption of these kinds of foods as part of an antipsychotic therapy.

Application of colon cleansing

Colon cleansing can be used as described previously [61, 62]. If there is concern about potential development of dependence on laxatives, in the author's experience, they could be replaced with massage and careful torso-bending exercise during enemas.

EMPIRICAL DATA

Cold hydrotherapy has been used by the author for about 2 years almost daily and colon cleansing for about 14 years several times a year. Three additional people shared their observations with the author on their use of those two methods (one or the other or both, used regularly or occasionally during the last 19 years) on the condition of anonymity. The author can only present his own limited personal observations on the effects of hot hydrotherapy (for the last 3 months). None of the "observed" people was diagnosed with a mental disorder or had experience with clinical psychotic episodes, which underscores the limitations of this empirical evidence. For this reason, there is no data on the effects of the three treatments on psychotic symptoms, such as bizarre delusions, hallucinations and thought disorder. All statements in this section are based on these limited unpublished data.

Effects of hot hydrotherapy

The author can make the following observations. A head-out, painful hot shower usually results in: (a) relaxation and a decrease in psychomotor agitation; (b) a hypnotic effect when used before bed [63], yet does not cause drowsiness during the day; (c) increased fatigue; and (d) slight dysphoria during the procedure that usually goes away soon after.

Other effects: (e) profuse sweating for 5 to 10 minutes after the procedure; (f) relief of physical pain, if it was present; and (g) diminished appetite.

Effects of adapted cold showers

Detailed effects of adapted cold showers were described previously [17], in brief, they appear to have anti-depressive and analgesic effects. If a cold shower is followed by a hot shower, the net result seems to be analgesia and tranquilization.

Effects of colon cleansing

Complete evacuation of all contents of the large intestine (which is the end result of successful colon hydrotherapy) does not seem to have immediate appreciable effects on a healthy person, except for the discomfort associated with the procedure. Nonetheless, outside of good health, the most noticeable effects are: (h) a decrease in negative thoughts and emotions; (i) decreased confusion; (j) an increase in mental clarity above a person's usual level (can become felt the next day); (k) improvement in quality of sleep; (l) a decrease in fatigue; (m) reduced psychomotor agitation, and (n) relief of psychomotor retardation. Other effects: (o) interestingly, relief of headaches was observed rather often, but not of other pain; (p) relief of fever (more often than not) if it was present.

DISCUSSION AND CONSEQUENCES OF THE HYPOTHESIS

Although theoretical underpinnings appear to be intriguing and there is some limited empirical evidence that hot hydrotherapy and colon cleansing can have a sedative effect (while adapted cold showers appear to have an anti-depressive effect), unfortunately, there is no empirical data on whether any of these treatments can be effective in the management

of psychosis. If statistically significant volunteer studies show that one (or more) of the proposed treatments has an antipsychotic effect, then it could become a therapeutic option in mania or psychoses. None of the proposed methods seems to have noticeable side effects or cause dependence based on the limited empirical evidence gathered by the author, although this may not be the case for a wider sample of volunteers. Based on existing literature [22, 25, 43, 61, 63-65], the three approaches are expected to have fewer side effects compared to existing neuroleptic treatments such as ECT [66] and pharmacological agents [3, 67]. The proposed methods could also provide patients with low-cost tools for self-management. In conclusion, theoretical evidence suggests that hot hydrotherapy, adapted cold showers, and colon cleansing may be beneficial in the treatment of psychosis, and further studies would be needed to test this hypothesis.

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REFERENCES

- [1] Encyclopaedia Britannica Online. Psychosis, 2007. *URL:* www.britannica.com/eb/article-9061736 Last accessed: 04-30-2007.
- [2] Wikipedia, the Free Encyclopedia. Psychosis, 2007. *URL:* en.wikipedia.org Last accessed: 04-30-2007.
- [3] National Institute of Mental Health, Bethesda, MD, USA. Schizophrenia, 2006. *URL:* www.nimh.nih.gov/publicat/schizoph.cfm Last accessed 04-30-2007.

- [4] Stone JM, Morrison P, and Pilowsky LS. Glutamate and dopamine dysregulation in schizophrenia - a synthesis and selective review. *J Psychopharmacol* 2007;*E-pub ahead of print*.
- [5] Jones HM and Pilowsky LS. Dopamine and antipsychotic drug action revisited. *Br J Psychiatry* 2002;181:271-5.
- [6] Weiser M, Davidson M, and Noy S. Comments on risk for schizophrenia. *Schizophr Res* 2005;79:15-21.
- [7] Opjordsmoen S. Reactive psychosis and other brief psychotic episodes. *Curr Psychiatry Rep* 2001;3:338-41.
- [8] American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, 4th ed., text revision., 2000.
- [9] Arumugam TV, Gleichmann M, Tang SC, and Mattson MP. Hormesis/preconditioning mechanisms, the nervous system and aging. *Ageing Res Rev* 2006;5:165-78.
- [10] Gear RW, Aley KO, and Levine JD. Pain-induced analgesia mediated by mesolimbic reward circuits. *J Neurosci* 1999;19:7175-81.
- [11] Pruessner JC, Champagne F, Meaney MJ, and Dagher A. Dopamine release in response to a psychological stress in humans and its relationship to early life maternal care: a positron emission tomography study using [¹¹C]raclopride. *J Neurosci* 2004;24:2825-31.
- [12] Scott DJ, Heitzeg MM, Koeppe RA, Stohler CS, and Zubieta JK. Variations in the human pain stress experience mediated by ventral and dorsal basal ganglia dopamine activity. *J Neurosci* 2006;26:10789-95.
- [13] DeLeo JA. Basic science of pain. *J Bone Joint Surg Am* 2006;88 Suppl 2:58-62.

- [14] Chad KE and Brown JM. Climatic stress in the workplace: its effect on thermoregulatory responses and muscle fatigue in female workers. *Appl Ergon* 1995;26:29-34.
- [15] Wexler RK. Evaluation and treatment of heat-related illnesses. *Am Fam Physician* 2002;65:2307-14.
- [16] Nielsen B, Hyldig T, Bidstrup F, Gonzalez-Alonso J, and Christoffersen GR. Brain activity and fatigue during prolonged exercise in the heat. *Pflugers Arch* 2001;442:41-8.
- [17] Shevchuk NA. Adapted cold shower as a potential treatment for depression. *Med Hypotheses* 2007. DOI: 10.1016/j.mehy.2007.04.052
- [18] Tharyan P and Adams CE. Electroconvulsive therapy for schizophrenia. *Cochrane Database Syst Rev* 2005:CD000076.
- [19] LaFoy J and Geden EA. Postepisiotomy pain: warm versus cold sitz bath. *J Obstet Gynecol Neonatal Nurs* 1989;18:399-403.
- [20] Kenunen OG, Prakh'e IV, and Kozlovskii BL. A change in the alarm level entails a change in behavioural strategy of mice in stress and a change in analgesia induced by it. *Russ Fiziol Zh Im I M Sechenova* 2004;90:1555-62.
- [21] Myers VC, Fisher JW, and Dieffendorf AR. The question of autointoxication in acute depressive psychoses. *Am J Psychiatry* 1909;65:607-31.
- [22] Ernst E. Colonic irrigation and the theory of autointoxication: a triumph of ignorance over science. *J Clin Gastroenterol* 1997;24:196-8.
- [23] Chen TS and Chen PS. Intestinal autointoxication: a medical leitmotif. *J Clin Gastroenterol* 1989;11:434-41.

- [24] Noll R. Historical review: Autointoxication and focal infection theories of dementia praecox. *World J Biol Psychiatry* 2004;5:66-72.
- [25] Taffinder NJ, Tan E, Webb IG, and McDonald PJ. Retrograde commercial colonic hydrotherapy. *Colorectal Dis* 2004;6:258-60.
- [26] Harvard School of Public Health, Cambridge, MA, USA. Food Pyramids, 2007. *URL: www.hsph.harvard.edu/nutritionsource/* Last accessed: 03-26-2007.
- [27] Microsoft Encarta Online Encyclopedia. Feces, 2007. *URL: encarta.msn.com* Last accessed: 03-26-2007.
- [28] Encyclopaedia Britannica Online. Feces, 2007. *URL: www.britannica.com/eb/article-9033888* Last accessed: 03-26-2007.
- [29] Encyclopaedia Britannica Online. Large Intestine, 2007. *URL: www.britannica.com/eb/article-9047200* Last accessed: 03-26-2007.
- [30] Hoffman A and Ziv E. Pharmacokinetic considerations of new insulin formulations and routes of administration. *Clin Pharmacokinet* 1997;33:285-301.
- [31] de Smet PA and Hellmuth NM. A multidisciplinary approach to ritual enema scenes on ancient Maya pottery. *J Ethnopharmacol* 1986;16:213-62.
- [32] Kronenberg RH. Ketamine as an analgesic: parenteral, oral, rectal, subcutaneous, transdermal and intranasal administration. *J Pain Palliat Care Pharmacother* 2002;16:27-35.
- [33] Wikipedia, the Free Encyclopedia. Exotoxin, 2007. *URL: en.wikipedia.org* Last accessed: 04-30-2007.
- [34] Encyclopaedia Britannica Online. Endotoxin, 2007. *URL: www.britannica.com/eb/article-9032624* Last accessed: 04-30-2007.

- [35] Guarner F and Malagelada JR. Gut flora in health and disease. Lancet 2003;361:512-9.
- [36] Garakani A, Win T, Virk S, Gupta S, Kaplan D, and Masand PS. Comorbidity of irritable bowel syndrome in psychiatric patients: a review. Am J Ther 2003;10:61-7.
- [37] Sonnenberg A, Tsou VT, and Muller AD. The "institutional colon": a frequent colonic dysmotility in psychiatric and neurologic disease. Am J Gastroenterol 1994;89:62-6.
- [38] Kandel ER, Schwartz JH, and Jessell TM. Principles of Neural Science. 2000, 4th edn. New York: McGraw-Hill; pp. 482-6.
- [39] Kappel M, Gyhrs A, Galbo H, and Pedersen BK. The response on glucoregulatory hormones of *in vivo* whole body hyperthermia. Int J Hyperthermia 1997;13:413-21.
- [40] Dai X, Thavundayil J, and Gianoulakis C. Differences in the peripheral levels of beta-endorphin in response to alcohol and stress as a function of alcohol dependence and family history of alcoholism. Alcohol Clin Exp Res 2005;29:1965-75.
- [41] Gonzalez-Alonso J, Teller C, Andersen SL, Jensen FB, Hyldig T, and Nielsen B. Influence of body temperature on the development of fatigue during prolonged exercise in the heat. J Appl Physiol 1999;86:1032-9.
- [42] Woodworth RS, Schlosberg, H. Experimental Psychology. 1965. New York: Holt, Rinehart and Winston; 347pp.
- [43] Holloszy JO and Smith EK. Longevity of cold-exposed rats: a reevaluation of the "rate-of-living theory". J Appl Physiol 1986;61:1656-60.
- [44] Vaswani KK, Richard CW, 3rd, and Tejwani GA. Cold swim stress-induced changes in the levels of opioid peptides in the rat CNS and peripheral tissues. Pharmacol Biochem Behav 1988;29:163-8.

- [45] Arrica M and Bissonnette B. Therapeutic hypothermia. *Semin Cardiothorac Vasc Anesth* 2007;11:6-15.
- [46] Hippocrates. On Regimen in Acute Disease (Part 6 and Appendix parts 1, 2, 3, 5, 7, 8, 9, 11, 19, and 24) 400 B.C. *URL: classics.mit.edu* Last accessed: 03-26-2007.
- [47] Richards DG, McMillin DL, Mein EA, and Nelson CD. Colonic irrigations: a review of the historical controversy and the potential for adverse effects. *J Altern Complement Med* 2006;12:389-93.
- [48] Noll R. Infectious insanities, surgical solutions: Bayard Taylor Holmes, dementia praecox and laboratory science in early 20th-century America. Part 1. *Hist Psychiatry* 2006;17:183-204.
- [49] Horne S. Colon cleansing: a popular, but misunderstood natural therapy. *J Herb Pharmacother* 2006;6:93-100.
- [50] Mader SS. The Large Intestine. In: *Understanding Human Anatomy and Physiology*. 2004: The McGraw-Hill Companies; 304-7.
- [51] Rosch W. Fungi in feces, fungi in the intestines--therapeutic consequences? *Versicherungsmedizin* 1996;48:215-7.
- [52] Marteau P, Pochart P, Dore J, Bera-Maillet C, Bernalier A, and Corthier G. Comparative study of bacterial groups within the human cecal and fecal microbiota. *Appl Environ Microbiol* 2001;67:4939-42.
- [53] Ukabam SO, Clamp JR, and Cooper BT. Abnormal small intestinal permeability to sugars in patients with Crohn's disease of the terminal ileum and colon. *Digestion* 1983;27:70-4.

- [54] Jorgensen J and Mortensen PB. Substrate utilization by intestinal mucosal tissue strips from patients with inflammatory bowel disease. *Am J Physiol Gastrointest Liver Physiol* 2001;281:G405-11.
- [55] Krishnaiah YS, Veer Raju P, Dinesh Kumar B et al. Pharmacokinetic evaluation of guar gum-based colon-targeted oral drug delivery systems of metronidazole in healthy volunteers. *Eur J Drug Metab Pharmacokinet* 2003;28:287-94.
- [56] Luburich P, Santamaria G, Tomas X et al. The gastrointestinal concealment of illegal drugs. *Rev Esp Enferm Dig* 1991;79:190-5.
- [57] Steinhoff U. Who controls the crowd? New findings and old questions about the intestinal microflora. *Immunol Lett* 2005;99:12-6.
- [58] Seksik P, Sokol H, Lepage P et al. Review article: the role of bacteria in onset and perpetuation of inflammatory bowel disease. *Aliment Pharmacol Ther* 2006;24 Suppl 3:11-8.
- [59] Roick C, Fritz-Wieacker A, Matschinger H et al. Health habits of patients with schizophrenia. *Soc Psychiatry Psychiatr Epidemiol* 2007;42:268-76.
- [60] Peet M. International variations in the outcome of schizophrenia and the prevalence of depression in relation to national dietary practices: an ecological analysis. *Br J Psychiatry* 2004;184:404-8.
- [61] Toledo TK and DiPalma JA. Review article: colon cleansing preparation for gastrointestinal procedures. *Aliment Pharmacol Ther* 2001;15:605-11.
- [62] Wexner SD, Beck DE, Baron TH et al. A consensus document on bowel preparation before colonoscopy: prepared by a task force from the American Society of Colon and Rectal Surgeons (ASCRS), the American Society for Gastrointestinal Endoscopy

(ASGE), and the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). *Gastrointest Endosc* 2006;63:894-909.

- [63] Mishima Y, Hozumi S, Shimizu T, Hishikawa Y, and Mishima K. Passive body heating ameliorates sleep disturbances in patients with vascular dementia without circadian phase-shifting. *Am J Geriatr Psychiatry* 2005;13:369-76.
- [64] Jansky L, Pospisilova D, Honzova S et al. Immune system of cold-exposed and cold-adapted humans. *Eur J Appl Physiol Occup Physiol* 1996;72:445-50.
- [65] Hannuksela ML and Ellahham S. Benefits and risks of sauna bathing. *Am J Med* 2001;110:118-26.
- [66] Sackeim HA, Prudic J, Fuller R, Keilp J, Lavori PW, and Olfson M. The cognitive effects of electroconvulsive therapy in community settings. *Neuropsychopharmacology* 2007;32:244-54.
- [67] Gardner DM, Baldessarini RJ, and Waraich P. Modern antipsychotic drugs: a critical overview. *CMAJ* 2005;172:1703-11.

THE TEXT BELOW IS THE AUTHOR'S UNPUBLISHED NOTES

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After many years of research, the author came up with a self-management system that can allow a patient with a diagnosis of schizophrenia or bipolar disorder to manage psychotic symptoms without medication or even cure the disease. The system consists of several lifestyle interventions, many of which have proven sedative effects, and in combination are expected to have a powerful tranquilizing effect [e.g., the horizontal body position (staying in bed all day), elevated air temperature, warmer clothes, a hot bath or sauna, honey, a mixture of sedative herbs, breath-holding exercises, a high-fat diet, a walk in a forest, and avoidance of all CNS stimulants, such as coffee, cacao, tea, ginseng, pungent vegetables, lemon juice, cardio exercise (e.g., climbing five flights of stairs), cold showers, and raw flesh (e.g., sushi, carpaccio, and smoked raw sausages)]. To get rid of hallucinations (without sedation), many healthy lifestyle changes are needed, and a raw diet should be helpful. Curative effects of some interventions such as the ketogenic diet and prolonged fasting are supported by published anecdotal evidence regarding schizophrenia and bipolar disorder (a number of case reports). The proposed system has a solid theoretical basis, but rigorous clinical proof is not expected any time soon because clinical trials are expensive (modern

clinical trials prove nothing anyway, as explained in [this article](#)). Nevertheless, the proposed system is free of charge, easy to try, makes sense, and is relatively safe. A patient can give it a try even without rigorous proof. Many if not most cases of bipolar disorder are a side effect of antidepressant drugs, and gradual discontinuation of all psychiatric drugs (tapering off the dose for several months) should be curative. The proposed system can also help a patient to gradually get off harmful useless drugs such as neuroleptics, i.e., to overcome their withdrawal effects. It should be noted that the diagnostic definition of "psychosis" needs to be updated, and the current one should be taken with a grain of salt. The term "bizarre delusion" is illogical itself and is difficult to prove; calling something "bizarre" because it deviates from the mainstream or because you find it funny constitutes at least two logical errors. Considering that the mainstream mostly consists of lies imposed as "truth" by the establishment, and that the vast majority of people, including psychiatrists, have been successfully brainwashed by the ruling elite, it will take much time and effort to prove that some idea is indeed incorrect ("bizarre"). Filling out a psychiatric questionnaire won't be enough. The scientific truth is absolute and universal, it does not depend on a cultural context. The current definition of psychosis depends on a cultural context and therefore is illogical and unscientific (it may be politically motivated, intended to suppress truths inconvenient for the powers that be). The current definition of paranoia is hypocritical and unscientific too: it's OK for the government to be extremely paranoid without any evidence (e.g., counterintelligence agencies and prosecutors accusing people of a conspiracy), but a little bit of paranoia exercised by an ordinary citizen toward the government is a serious offense punishable by placement in a mental institution and forced medication. In other words, there are many false diagnoses of mental disorders. I am convinced that the government intentionally promotes an unhealthy lifestyle (that appears to be healthy) to keep the population dumb and easy to control. At present, the author believes that complex mental disorders such as schizophrenia and depression necessitate a complete overhaul of the lifestyle (several simultaneous lifestyle interventions) plus psychotherapy (there are free online versions nowadays). The self-management system is described in appendix IX of the free ebook "How to Become Smarter" (2010) which the author wrote under a pen name:

<http://shevchuk-editing.com/HowToBecomeSmarter.zip>

If a patient hears voices or the brain is damaged by many years of antipsychotic drugs, then a full recovery may take several years, when brain tissues are replaced with healthier ones on a new lifestyle (just like getting rid of a brain tumor via noninvasive lifestyle changes takes several years, e.g., the Gonzalez/Kelley protocol and Revici method).

If some links below don't work, then try a Web proxy, the Tor browser, VPN, your smartphone, or archive.org

Wikipedia is a [horrible source](#) of information, but some articles are pretty good:

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[Логическая ошибка](#)

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