

Original research article

Study of high dose Vitamin-C in anxiety & depression cases

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Abstract:

Introduction: Mood refers to a positive or negative emotional state of varying intensity that changes in response to life circumstances .Mood is considered long-lasting in contrast to the more acutely experienced emotions. POMS gives five different measures of negative mood (depression, fatigue, tension, anger, and confusion) and a single measure of positive mood (vigour). In addition to the relationship observed with overall mood, we have seen significant inverse correlations of vitamin C status with the depression, anger, and confusion in the patients studied. results have shown that those with adequate vitamin C status tended to have an elevated mood.

Methodology: patients attending psychiatric op , Government Medical College and ESI Hospital, Coimbatore for mood disorders are randomly selected for study totally 142 patients are enrolled for study. (n=71)50 % of them received high dose LIPOSOMAL VITAMIN C 2 grams/day in a palatable drink form with bio availability of95% Others received normal vitamin c tablets 500 mg ,as control.bio availability 25%

RESULTS: One hundred and sixty two patients aged 18 to 60 years were enrolled for study 142 MALE 70 FEMALE 72 , 66 PERCENT IMPROVED IN 15 DAYS AND 98 % IMPROVED IN 30 DAYS

HE PATIENTS RECEIVED HIGH DOSE VITAMIN C IN LIPOSOMAL FORM FEELS BETTER AND IMPROVED WELL WHEN COMPARED WITH OTHER GROUP. younger patients improved within 7 days than older patients (14 days)female recover earlier than male patients.

CONCLUSION,: any mood disorders, anxiety, depression, can improve well with supplementation of high dose oral liposomal vitamin c with other standard medications. further larger studies are required ,to bring this in to standard treatment protocol

Keywords: vitamin C, ascorbate, plasma, mood, total mood disturbance, POMS

Introduction:

One of the best-established functions of vitamin C is in the regulation of neurotransmitter biosynthesis, including that of catecholamines dopamine, norepinephrine, and epinephrine. Vitamin C acts as a cofactor for the enzyme dopamine β -hydroxylase, which converts dopamine to norepinephrine. Animal models of vitamin C deficiency have shown decreased norepinephrine concentrations. Furthermore, vitamin C can also recycle tetrahydrobiopterin, which is necessary for activation of tyrosine hydroxylase, the rate-limiting enzyme in catecholamine synthesis that synthesizes the dopamine precursor L-3,4-dihydroxyphenylalanine (L-DOPA) . Similarly, tetrahydrobiopterin is a cofactor for tryptophan hydroxylase , the initial and rate-limiting enzyme in the synthesis of the neurotransmitter serotonin. There is also evidence emerging that vitamin C is involved in neuronal maturation and functioning . Indeed, brain neurons contain some of the highest levels of vitamin C observed in any mammalian tissue ; glial ascorbate concentrations are much lower by comparison.

While the underlying patho physiology of depression is not yet fully understood, these effects of vitamin C on neurochemistry may provide a mechanism by which it can affect this disorder. An early hypothesis suggested that deficiencies in dopamine, noradrenaline, and serotonin were responsible for major depressive symptoms ,with some antidepressants elevating levels of these neurotransmitters in the central nervous system. However, it is now apparent that the molecular basis of depression is significantly more complex. Disturbances in dopamine, noradrenaline, and serotonin neurotransmission itself may contribute to the disorder.

Methodology:

This cross-sectional study was undertaken between April and September 2019.all the patients attending psychiatry op with mood disorders are randomly selected and 71 of them received high dose oral vitamin in palatable lipolised vitamin form. Other 71 received 500 mg vit c in tablet form. at the end of 15 days and 30 days patients were asked about the improvement and results were analysed.

Analysis of Mood

The Profile of Mood States (POMS) questionnaire was used to determine the participants' mood during the previous week. Scores were calculated using a POMS standard scoring grid (Psychological Assessments, Australia). The form comprises 65 mood-related adjectives, which are rated on a 5-point Likert-type scale ranging from 0 (not at all) to 4 (extremely) and then categorised into six mood subscales: tension-anxiety, depression-dejection, anger-hostility, vigour-activity, fatigue-inertia, and confusion-bewilderment. A TMD score is calculated by adding the depression, fatigue, tension, anger, and confusion sub-scores and then subtracting the vigour score. TMD scores range from -32 to 200; a higher score indicates more severe mood disturbance .

Results:

Patients attending psychiatric op ,Government Medical College and ESI Hospital, Coimbatore for mood disorders are randomly selected from totally 142 patients are enrolled for study. 50 % of them received high dose LIPOSOMAL VITAMIN C in a palatable drink form Others receive normal vitamin c tablets 500 mg , One hundred and sixty two patients aged 18 to 60 years were enrolled for study 142 MALE 70 FEMALE 72 , 66 PERCENTIMPROVEDIN 15 DAYS AND 98.5 % IMPROVED with IN 30 DAYS.

disorder	Male	Female	Total	<15 DAYS	>30DAYS
Depression	18	14	32	22	10
Fatigue	13	10	23	18	5
Tension	8	8	16	12	3
ANGER	11	12	23	13	10
CONFUSION	6	8	14	7	7
VIGOUR	14	20	34	23	10
	70	72	142	95	45

A limitation of the current study is that the data is cross-sectional and does not take into account potential confounders of the relationship between vitamin C status and mood, for example, socioeconomic status or other health behaviours. We did not determine the potential impact of any .

Discussion:

There are inverse associations of vitamin C status with depression, confusion, and anger. These findings suggest that high vitamin C status may be associated with improved overall mood in young adult males. There is evidence suggesting that vitamin C deficiency is related to adverse mood and cognitive effects. The vitamin C blood levels associated with depression and cognitive impairment are higher than those implicated in clinical manifestations of scurvy. While laboratory testing for ascorbic acid can be practically difficult, these findings nonetheless suggest that mental health clinicians should be alerted to the possibility of vitamin C deficiency in patients with depression or cognitive impairment. Vitamin C replacement is inexpensive and easy to deliver, although as of yet there are no outcome studies investigating the neuropsychiatric impact of vitamin C replacement in those who are deficient. Evidence is accumulating that increased consumption of fruit and vegetables is associated with enhanced mood and psychological well-being. While it is possible that fruit and vegetable intake is simply a marker of a “healthier” lifestyle, fruit and vegetables are rich in micronutrients, and there are a number of these that may contribute to an effect on mood. Fatigue and depression are known to closely precede the physical symptoms of scurvy—a disease caused by vitamin C deficiency suggesting that vitamin C may also be a moderator of mood. Although known for its antioxidant properties, vitamin C (ascorbate) is also a cofactor for a family of biosynthetic and regulatory enzymes with important functions throughout the body. Critically, it is required for the synthesis of the monoamine neurotransmitters dopamine, noradrenaline, and possibly serotonin deficiencies and dysregulation of which have been hypothesised to contribute to depression [11]. Vitamin C is also a cofactor for enzymes involved in the synthesis of carnitine, which is required for the generation of metabolic energy and has been implicated in the fatigue and lethargy associated with scurvy. Furthermore, vitamin C regulates the epigenome; it is a cofactor for enzymes involved in both DNA and histone demethylation. Epigenetic modifications provide a mechanism by which environmental signals, such as stress, can alter gene expression and neural function and thereby affect behaviour, cognition, and mental health.

Vitamin C levels are tightly regulated throughout the body, and its distribution is generally thought to reflect a functional requirement. Concentrations are highest in the brain and other neuroendocrine tissues such as the pituitary and adrenal glands. Indeed, animal models have shown that the brain is the last organ to be depleted of vitamin C during prolonged deficiency, suggesting a vital role in this tissue.

Several observational studies have suggested a relationship between vitamin C status—typically measured by dietary intake—and mood. These are further supported by a number of small intervention trials in which participants were supplemented with oral vitamin C. Hoffer and co-workers found that supplementation with 1 g/day reduced mood disturbance and psychological distress in acutely hospitalised patients. Similarly, a reduction in anxiety was observed in high school students given 500 mg/day of vitamin C compared to a placebo. We have shown an improvement in subjective mood in a group of male tertiary students supplemented with two gold kiwifruit per day, a food source particularly high in vitamin C (~130 mg vitamin C per kiwifruit). A significant effect was observed in those individuals with higher total mood disturbance at baseline. In addition to a decrease in total mood disturbance, a decrease in fatigue, an increase in vigour, and a trend towards a decrease in depression were demonstrated.

Conclusion:

Vitamin C (ascorbic acid) is a well-known antioxidant that is involved in anxiety, stress, depression, fatigue and mood state in humans. Studies have suggested that oxidative stress may trigger neuropsychological disorders. Antioxidants may play an important therapeutic role in combating the damage caused by oxidative stress in individuals that suffer from anxiety. In this context, it was hypothesized that oral vitamin C supplementation would reduce anxiety.

Results showed that vitamin C reduced anxiety levels and led to higher plasma vitamin C concentration. The mean heart rates were also significantly different between HIGH DOSE vitamin C group and control group. Present study results not only provide evidence that vitamin C plays an important therapeutic role for anxiety but also point a possible use for antioxidants in the prevention or reduction of anxiety. This suggests that HIGH DOSE vitamin C may be an effective adjunct to medical and psychological treatment of anxiety and improve academic performance.

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