The Effect of Ascorbic Acid in the Treatment of Patient with Herpes Zoster Virus

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Abstract

Herpes zoster is a virus that affect aged and those less immunized patients after primarily infection by Varicella zoster virus, it is characterized by skin vesicular eruptions and painful neuralgia in the dermatome distribution. The current therapies are anti-viral as well as analgesics and sympathetic nerve block. However, in some cases, the patients don’t cure rapidly also the pain is persistent and does not respond well to those treatments. so the aim of this study is to give an oral vitamin C which can help those patients to be cured rapidly and to reduce the pain. a cohort study in which 200 patients with Herpes zoster virus have been selected from private dermatologist clinic in Al Najaf Al Ashraf in Iraq that were divided in to two groups: group (A) contain 100 patients after two weeks using normal treatment doctor added vitamin C supplements 1500 mg/day for a period of two weeks and group (B) contain 100 patients with normal treatment and do not uses vitamin C supplements. The serum vitamin C was estimated for both groups in different times then following up the patients’ health state to show the effect of vitamin C between the two groups in number of patients cured in a detected periods and in reducing the pain. there is a significant differences (P < 0.0001) between the two groups A and B before and after vitamin C supplements, so that the more serum vitamin C concentration the less period for healing with less pain feeling. Vitamin C has an important role to cure the patients with Herpes Zoster rapidly and with less pain than those patients with low vitamin C concentrations.

Keywords: Herpes Zoster; vitamin C; pain; shingles.

Introduction

Herpes zoster is caused by the recrudescence of a primary infection with the varicella zoster virus that causes chickenpox disease when the patients were cured of this primary infection, the varicella zoster virus stays latent in the root of ganglia and cranial nerve, then the reactivation of this virus can cause the typical dermatomal pain with a vesicular rash which is called shingles disease (1), as in figure 1.

Fig: 1: Real picture show the differences between Herpes and Varicella Zoster

So Shingles were caused by the same genus of virus Zoster, at the beginning Varicella which is the initial infection that causes a generalized rash, then Herpes will appear after reactivation, years later, and symptoms are usually localized to a specific dermatome (2).

More than 90% of peoples in the world have evidence of primary varicella zoster virus infection especially in Schools ages so therefore those peoples with chickenpox were at risk for reactivation and a secondary infection would have appeared. The risk of herpes zoster increases with advancing age, and with a decrease in immunity by any causes such as cancer, immune deficiency diseases, and any treatment that causes immunosuppression (3).

Herpes zoster differs from varicella zoster is not seasonal. Women and white peoples have a higher risk than males and black peoples. The post-herpetic neuralgia which is the commonest complication of herpes zoster, this pain will persist long after cutaneous healing (4). The periods of pain were depending on the time of detection of the neuralgia, the risk of postherpetic neuralgia ranges from 5% to 32% and increases with advancing in age, the pain duration also varies widely and can extend for years, although it usually resolves within months. People over 70 years are at increased risk of more persistent pain (5).

Vitamin C, which is known as ascorbic acid, is abundant in nature but it is highly labile. It is a water-soluble vitamin so...
that it is lost in large quantities during life (6,7). It is an acid structure as in figure 2 (8), its requirement was different across nations, for example, in England is 30mg/day, while in the American is 60mg/day, 100mg/day in Japan and about 1500mg in east of Asia (9,10).

These variations need for further research to establish the acceptable requirements for populations (11). The concentration of vitamin C should be more than the amount needed to prevent the occurrence of disease, also to be effective to treat some diseases (12,13,14). Vitamin C has an important biochemical function including the stimulation of certain enzymes, increasing immunity, biosynthesis of collagen in skins, activation of hormones, as anti-antioxidant, and has an important role in a pain reducing (1). Vitamin C can increase immunity by its action on the reduction of the level of stress hormones from the adrenal gland these stress hormones can suppress the immune system, high dose of vitamin C can increase the levels of an antibody that fights against viruses in humans also, the vitamin C can help in the wounds healing by its action on the synthesis of connective tissue, the major component of which is collagen, ascorbic acid has an important metabolic and biological functions, with respect to its role in the synthesis of connective tissue (15, 16).

About the effect of vitamin C with pain a recent epidemiological evidence has indicated an association between spinal pain and suboptimal vitamin C status (1). Any pain in musculoskeletal is also a symptom of vitamin C deficiency disease scurvy, furthermore, accumulating evidence indicates that vitamin C administration can exhibit analgesic properties in some clinical conditions (5). Also vitamin C has an important functions in the body, especially through acting as a cofactor for a family of biosynthetic and regulatory enzymes. Such as the synthesis of neurotransmitters and peptide hormones, and regulation of transcription factors and gene expression (1,5).

**METHODS**

2.1 Study individuals
In this cohort study 200 patients with Herpes zoster virus have been selected from private dermatologist clinic in Al Najaf Al Ashraf in Iraq then they were divided into two groups: group (A) contain 100 patients continuing on the normal treatment for two weeks then the doctor was advise them to use vitamin C supplements of 1500mg/day for two weeks and group (B) contain 100 patients on the normal treatment for two weeks they don’t use vitamin C supplements, The serum vitamin C was evaluated for both groups in different times by a method of Burtis (17) with following the patient’s health state to show the effect of vitamin C between the two groups in number of patients cured in a detected periods and its effect on reducing the pain.

2.1.1. The inclusion and exclusion criteria
All the selected patients were well diagnosed by the dermatologist to have the Herpes Zoster virus, all of them do not take any vitamin C, the age of all 200 individuals were between 40 to 60 years old.

2.1.2. Statistical analysis
To analysis the data between the two groups the student T and ANOVA tests were used (SPSS Inc., Chicago, IL).

**RESULTS**
The clinical and biochemical characteristics of study individuals are presented in table 1.
Table 1 shows the characteristics features of the two groups before taking a vitamin C supplement; the number and the ages of patients are identical in both groups while the concentration of vitamin C were higher in group B than Group A.

**Table 2:** The clinical and biochemical characteristics of study patients after two weeks of normal treatments

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Group A (not cured)</th>
<th>Group B (not cured)</th>
<th>P - Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>95</td>
<td>68</td>
<td>P &lt; 0.0001</td>
</tr>
<tr>
<td>Sex (male/female)</td>
<td>35/60</td>
<td>24/44</td>
<td>**********</td>
</tr>
<tr>
<td>Age (years)</td>
<td>40-60</td>
<td>40-60</td>
<td>No differences</td>
</tr>
<tr>
<td>Vitamin C mg/dl</td>
<td>0.98 ± 0.15</td>
<td>1.85 ± 0.43</td>
<td>P &lt; 0.0001</td>
</tr>
</tbody>
</table>

Table 2 show a decrease in level of Vitamin C in the serum for both groups the Herpes Zoster in group B was begin to cure more than in group A with less pain.

**Table 3:** The clinical and biochemical characteristics of study patients after addition of vitamin C 1500 mg/day for two weeks for group A only

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Group A (cured)</th>
<th>Group B (cured)</th>
<th>P - Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>95</td>
<td>2</td>
<td>P &lt; 0.0001</td>
</tr>
<tr>
<td>Sex (male/female)</td>
<td>35/60</td>
<td>22/44</td>
<td>**********</td>
</tr>
<tr>
<td>Age (years)</td>
<td>40-60</td>
<td>40-60</td>
<td>No differences</td>
</tr>
<tr>
<td>Vitamin C mg/dl</td>
<td>5.25 ± 1.15</td>
<td>0.75 ± 0.12</td>
<td>P &lt; 0.0001</td>
</tr>
</tbody>
</table>

Table 3 show an increase in the level of vitamin C in the serum of group A while a decrease in vitamin C in group B the Herpes Zoster in group A was cure completely 100% with no pain rather than in group B which they were begin to cure firstly.

**Table 4:** The differentiation between the two groups A and B in relation to number of patient that cured in a known period and in the pain felling in patients with Herpes Zoster after two weeks of normal treating.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Group A Before use Vitamin C</th>
<th>Group B Before use Vitamin C</th>
<th>P-Value</th>
<th>Percent of patients curing from Herpes Zoster Group A after 2 weeks from normal treatments</th>
<th>Percent of patients curing from Herpes Zoster Group B after 2 weeks from normal treatments</th>
<th>P value</th>
<th>Pain felling</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>100</td>
<td>100</td>
<td>No differences</td>
<td>5/100 (5%)</td>
<td>32/100 (32%)</td>
<td>P &lt; 0.0001</td>
<td>Group B less pain than group A</td>
</tr>
<tr>
<td>Sex (male/female)</td>
<td>38/62</td>
<td>44/56</td>
<td>************</td>
<td>3/2</td>
<td>20/12</td>
<td>************</td>
<td>************</td>
</tr>
<tr>
<td>Age (years)</td>
<td>40-60</td>
<td>40-60</td>
<td>No differences</td>
<td>40-52</td>
<td>40-55</td>
<td>No differences</td>
<td>************</td>
</tr>
<tr>
<td>Vitamin C mg/dl</td>
<td>1.25 ± 0.45</td>
<td>2.10 ± 0.60</td>
<td>P &lt; 0.0001</td>
<td>0.98 ± 0.15</td>
<td>1.85 ± 0.43</td>
<td>P &lt; 0.0001</td>
<td>************</td>
</tr>
</tbody>
</table>

Table 4 show the P-Value between the two groups after two weeks treatments before taking vitamin C supplements in which there was a significant increase in the concentration of vitamin C in group B than in group A that lead to significant increase in patients curing with less pain than group A.

Table 4 show the p-Value between the group A and B after taking 1500 mg/day of vitamin C supplements to group A so there were a significant increase in the concentration of vitamin C in group A that lead to cure all the patients in group A without felling of pain rather than group B that the patients need a time to cure in addition to the increase in pain felling.

**DISCUSSION**

The role of vitamin C is very important in many diseases (12), one of the most important diseases that can affect peoples is shingles disease that caused by Herpes Zoster that can...
causing skin vesicular eruptions with painful neuralgia in the dermatome distribution (1), in table 1 the vitamin C was evaluated in the two groups showing that group B have the highest vitamin C concentration the reason is due to the types of food that group B were used, after a list of question in the questionnaire sample shown that those group were depend on fruits and vegetable in large quantities due to their habitat in the rural region whose depend on fruit and vegetable in their diet which is considered a good source for vitamin C (18).

After two weeks from normal treatments (acyclovir, and pain killer drugs) the vitamin C in group A was depleted due to lose of healthy food and supplements in those group instead of that vitamin C in group B is also decrease but still around normal level than in group A as a result the patients were cured in a significant number than those of group A with less pain , now the very important question is why, the answer is the role of vitamin C in skin health (19,20) reducing pain (21) increasing of immunity (15) and anti-oxidants agents (14) all these roles are effective factors to patients with Herpes Zoster (2).

After addition of vitamin C supplements 1500 mg /day recommended dose for adults (22) for about two weeks to the group A only the results is curing of all patients without pain but only two patients were cured from group B these results are attributed to the concentration of vitamin C that was significantly increased in group A rather than group as in tables 2 and 5 these results were identical with the results of Sung H. 2011 (1), Levin M. 2010 (2) and M in S. 2016 (23).

Finally, this study show the effect of vitamin C in treatment the patients with Herpes Zoster and pain was more effectively controlled in the vitamin C treatment group than in the other group.

CONCLUSION
The final conclusion from this study was shown that vitamin C has an important role in treatment of shingles disease that caused by Herpes Zoster, it must be used in concomitant with antiviral and pain killer drugs for those patients to increase immunity, accelerate the healing and reducing the pain.

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