[Acute upper respiratory tract infection and its treatment with vitamin C]
[Article in German]

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http://www.mv.helsinki.fi/home/hemila
http://www.mv.helsinki.fi/home/hemila/VitC_colds.htm
http://www.mv.helsinki.fi/home/hemila/CC.htm (Cochrane review)
http://www.mv.helsinki.fi/home/hemila/CC (Cochrane review references)

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Acute upper respiratory tract infection and its treatment with vitamin C

By H. Miegl

Colds, acute upper respiratory tract infections and the flu have always caused especially high losses of work time and subjective well-being, however, their incidence has increased significantly over the last years.

The economic significance of these diseases is insistently emphasised by Topping’s report according to which the costs caused by the common cold amount to USD 1 billion per year in the USA. In the West-German industrial region North Rhine Westphalia, the flu was clearly on top of all types of sicknesses recorded, with costs of DM 441 million in 1953 and 1.5 million sick days (with inclusion of complications even 3.25 million) and was only topped by the group of occupational accidents (Mikfelder). The worldwide occurrence is clearly indicated in reports of the flu epidemic this year originating from Japan and China.

We ourselves are not faced with any other disease as frequently as with the common cold and its consequences in our everyday life. In the event of which, the doctor first has to determine if it is an infectious, vasomotor or allergic form or a combination of these possible forms. A clear differentiation between an actual flu and a common acute infection of the airways is barely possible within a short time at the beginning of the symptoms and also not necessary in consideration of the treatment to be described. As the etiological clarification of common colds still has not yet been achieved even after the differentiation of influenza despite intensive efforts (e.g. English research institute for colds in Salisbury under Andrews) and a causal treatment is not possible for the time being, prophylaxis and therapy must increase the resilience of the cells in the respiratory tract.

A quick curtailing of the disease appears to be necessary even more than before in our fast moving time with its occupational struggles, in consideration of the often reduced resistance of the individual person, due to the possible complications and the broad ineffectiveness of all agents e.g. in fully developed common cold. A patient is nowadays rarely able to observe bed rest for a common cold or to undergo a sweating cure.

Sulphonamides and antibiotics are of little value for uncomplicated forms and only become an option in the event of bacterial complications (Lüscher, Putney). Antihistamines also did not meet the expectations placed upon them. The different analgesics, antipyretics and flu medicines relieve the symptoms but do not significantly affect the duration of the course or only provide a temporary freedom from symptoms. Flu medications containing quinine are thereby comparably effective but they also not completely safe drugs.
The traditional drinking of lemonade in the event of colds is not only based on the experience of generations with the favourable effect but is also experienced as beneficial by the individual based on pure instinct.

In regard to the important functions for the immune response, vitamin C is known to act as catalyst of the cellular respiration, to increase the complement content of the serum, it is vital for the formation of the intercellular substance and for the sealing of the vascular endothelium. Vitamin C increases the phagocytosis capability of the leucocytes, the resistance against toxins and even develops a certain virucidal effect. Furthermore, it prevents the oxidative decomposition of adrenaline and therewith increases its positive effect on the vascular tone, which is especially important during the flu, which can trigger hypotension of the peripheral circulation. Therefore, and because the human body practically cannot form vitamin C itself and because the reserves are only small, a body affected by the flu requires greater amounts of ascorbic acid. In addition, the vitamin requirement strongly increases under any type of stress, accordingly also in the event of infectious diseases, fever, elevated physical and mental stress (according to Cuels, patients with acute diseases exhibit vitamin C deficiencies three times as frequently as those with a chronic one) so that a positive balance cannot be maintained by the vitamin C provided by food in most cases; this increasingly applies during the spring months as the vitamin content in the food is then naturally low.

According to Curschmann, a prolonged exposure of the body surface to cold temperatures (cold baths, cold air, wet clothes, drafts, etc.), leads to an ascorbic acid deficit. In tests on rats, the supply of great amounts of ascorbic acid resulted in an increased resistance against cold temperatures (Brücke). The development of a cold can thus be primarily attributed to the loss of ascorbic acid. The role of vitamin C in the resistance against infections is not yet clarified in detail but the fact is that it clearly reduces the susceptibility to the known cold manifestations. Although the positive effect of vitamin C has long been known and is undisputed, the results of intravenous or generally insufficiently dosed oral administrations were disappointing so far; in particular, vitamin C administered intravenously has the shortest elimination period in comparison to the intramuscular and oral administration so that the concentration in the blood increases quickly but it is eliminated before the tissue could absorb a sufficient amount. This changed only after the dosage was changed to a respective minimum of 1,000 mg. We do know that vitamin C is the least stable and storable of all vitamins, which is why the highest dose is necessary and why only really high doses are able to remedy even a latent deficiency (Scheunert, McCormick, Markwell).

**Own experiences:** We used vitamin C at the 1st University Clinic for Ear, Nose and Laryngeal diseases (chairman: Prof Dr E. Schlender) in the time from February 1956 until June 1957 in form of “C-Vit fortissimum” tablets (1,000 mg each) of the company Wander in a total of 247 patients of both genders and all age groups with acute upper respiratory tract infections. We almost always observed excellent results in the event of flu, acute rhinitis, pharyngitis, tracheitis in the initial stage, which were also confirmed by 18 doctor patients. The treatment occurred on an outpatient bases in all cases without impairment of the professional activity of the patients. The effect of the agent was assessed at the time the subjective symptoms had disappeared and the local findings had improved objectively.

**Dosage:** At the first sign of a developing cold, but at least within 24 hours after the occurrence of the first symptoms (generally: exhaustion, unexplained fatigue, headache, aching limbs, elevated temperatures; locally: feeling wounded, dryness sensation; swelling, increasing redness and watery secretion with urge to sneeze and cough in the mucosa of the upper respiratory tract or conjunctival catarrh), one tablet “C-Vit-fortissimum” was administered three times on the first day in form of lemonade, respectively one tablet was administered twice a day on the second and third day. The product was taken gladly in almost all cases. In most cases the success manifested already after the administration of 2 g in form of a noticeable improvement of the general well-being, a feeling of being - decrease of the local symptoms as well as – objectively noticeable a bit later – the secretion, swelling and redness. The success was even more distinct after 24 hours and on the third day, the patients, who were often feeling healthy, had to be encouraged to take the remaining amount by pointing out the usefulness of the administration.

**The tolerability** of the product was excellent. We observed adverse reactions only in one patient who had taken more than 5 g vitamin C without sufficiently dissolving it in liquid and developed diarrhoea as result. Due to its very good tolerability as non-toxic medication, C-Vit fortissimum can largely also be recommended for children. Even under repeated administration in the same patient, the product was still as effective and tolerable (see table).

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number of cases</th>
<th>Free of symptoms</th>
<th>Improved</th>
<th>No effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Acute rhinitis</td>
<td>85</td>
<td>72</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>2 Flu</td>
<td>47</td>
<td>39</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>3 Acute rhinopharyngitis</td>
<td>19</td>
<td>14</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4 Acute Pharyngitis</td>
<td>22</td>
<td>14</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>5 Acute tracheitis</td>
<td>15</td>
<td>9</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>6 Acute tonsillitis</td>
<td>26</td>
<td>7</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>7 Acute Laryngitis</td>
<td>19</td>
<td>5</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>8 Acute sinusitis</td>
<td>14</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>247</td>
<td>163</td>
<td>44</td>
<td>40</td>
</tr>
</tbody>
</table>

**Results:** As the table shows, vitamin C administered orally in high doses is excellently effective against acute inflammatory affections of the upper respiratory tract, however under the condition that the treatment starts within 24 hours after the occurrence of the first symptoms.

The treatment with vitamin C alone was not sufficient in the event of chronic inflammations, but the agent proved to be a very recommendable adjuvant due to its anti-inflammatory and tissue-sealing effect and the positive effect in the natural resistance.

The following was observed in particular:

1. Acute rhinitis was treated with C-Vit fortissimum in 85 cases, among them 11 doctors, in the usual dosage (first day three x one tablet, second and third day two x one tablet). If administered in time during the irritated state with sneezing, shifting of the air passage, burning, nasal secretion, a surprisingly good success could be observed in 72 patients. Subjectively, an unexpected rapid subsiding of the catarrhalic symptoms with an increasing general feeling of recovery was reported usually after the administration of one to 2 g vitamin C after only a few hours, otherwise after a maximum of 24 hours.
Case 2. A 26-year-old colleague, hospital physician, experienced a severe urge to sneeze, burning and mild secretion of the conjunctiva, increasing shifting of the nasal breathing and onset of watery nasal secretion. Rhinoscopy: Redness and swelling of the nasal mucosa with serous secretion. Immediate start of the treatment with 1 tablet C-Vit fortissimum three times during that day. 10 hours later, in the late afternoon, after the administration of 3 g vitamin C, the nurse was free of symptoms without any other therapy or interruption of her work. Objectively, the nasal mucosa appeared significantly paler and only moderately swollen; the secretion had stopped. Nevertheless, 1 g vitamin C was administered twice per day on the following two days.

Objectively, the swelling and paling of the nasal mucosa, which occurred with a delay in comparison to the subjective symptoms, could be well observed even in the event of acute graft inflammation under vasomotor rhinitis.

A clear improvement could be observed in nine cold patients but no curtailment, they became free of symptoms only after two to four days. Four of the 85 cases in total remained unaffected, similar to those persons affected not listed here, who were treated more than one day after the onset of the cold symptoms. A reduction of the symptoms can be expected in such cases but no sudden success and rarely a significant reduction of the duration of the disease.

The special advantages of the general treatment of acute cold symptoms with vitamin C are – aside from the pleasant, time-saving dosage form – the quick and rather certain elimination of local and general symptoms, the prevention of otherwise common complications such as sinusitis, catarrrhal inflammation of the Eustachian tube, otitis media. Furthermore, the adverse reactions often occurring under the usual local treatment such as reactive hyperaemia and drying out of the mucosa fail to appear. In any case, the general treatment of the common cold is clearly superior to the purely symptomatic local treatment. As, according to J. Mayer, all cases of rhinitis and rhinopathy present an abnormal vascular reaction of the upper airways to various noxious agents.

G. Duhamel’s [statement that] “The common cold cannot be avoided, that is clear” or similar resigning formulations as presentation of the popular opinion appear outdated under the conditions stated. The same applies for the treatment with room or bed rest, sweating cure and the purely symptomatic local treatment. When Lüscher describes the common cold in his text book as barely influenceable in regard to its duration, then this applies only for the fully developed form existing for more than a day.

Vitamin C (250 mg) combined with vitamin A (250 IU) in form of Ultren sugar-coated tablets (company Wander) in dosages of two sugar-coated tablets two to three times per day, incidentally, led to the same excellent results as C-Vit fortissimum in a smaller comparison group and is especially recommendable for e.g. patients suffering from gastritis and those with a tendency for mucosal atrophy due to the additional vitamin A effect favourable for the mucosa.

2. Aside from rhinitis, the flu was an especially gratifying area of application for C-Vit fortissimum and equally for Ultren. The start of the treatment during the initial stage was also decisive for the success here. Of 47 patients, among them seven doctors and several nurses, 39 responded surprisingly quickly and were free of symptoms within 24 to 36 hours without relapse. Five more improved and only three remained unaffected. It may be pointed out here based on our own experience, how extraordinarily gratifying the quick disappearance of the especially unpleasant general symptoms such as fatigue, exhaustion, headaches and aching limbs, elevated temperature including local catarrh is. Such a successful treatment shall be briefly described here:

Case 2. A 26-year-old colleague, hospital physician, experienced heavy fatigue, chills, headaches, 38.4° fever. After sleeping for 10 hours the symptoms were worse at the start of work in the morning, plus conjunctivitis and rhinitis with a temperature of 37.8°. Start of the treatment with one tablet C-Vit fortissimum three times a day. In the afternoon, after an eight-hour shift and administration of 2 g vitamin C, clearly improved general well-being, the local symptoms subsiding, temperature of 36.8°. On the next morning, so 24 hours after the beginning of the treatment, complete feeling of well-being without any symptoms whatsoever. No subsequent relapse after a total of 7 g vitamin C.

Incidentally, we achieved the same results with two Ultren sugar-coated tablets three times a day, the first time on the following day. The general treatment with vitamin C is especially effective in event of the flu by promoting the cellular respiration, increasing the complement content in the blood, via inactivation of toxins and virucidal effects and the elimination of the adynamia the natural way via the adrenal gland.

3. In the event of acute catarrh of the entire upper respiratory tract (rhinopharyngitis), C-Vit fortissimum proved excellently effective in 14 of 19 cases, had an improving effect in three and was ineffective in only two cases.

4. In the event of acute pharyngitis, 14 of 22 cases showed a very good response, three a less obvious response and five no response at all.

5. The result was even better for acute tracheitis with 15: 9: 2: 4.

6. In the event of angina tonsillitis, Meher determined a direct connection between the immune function of the palatal tonsils and the vitamin C content. According to Goto, the vitamin C content in inflamed palatal tonsils is reduced by 50%. In 26 cases of uncomplicated tonsillitis, we observed an effect accelerating the subsiding of the inflammatory symptoms significantly with concomitant local measures (e.g. gargling, spotting) without antibiotics being necessary. However, the effect of vitamin C (26: 7: 11: 8) was here not nearly as impressive as in the event of rhinitis or flu. We did not expect such strong effect from vitamin C alone here as for the other diseases and used it by itself only in individual cases.

7. In the event of acute laryngitis, the effect of vitamin C was also not nearly as good as for rhinitis and the flu, which similarly to 8. acute sinusitis can be attributed to the fact that the medical specialist was seen later, on the one hand, and on the other hand to the comparably less extensive blood circulation in these areas.

Finally, a word regarding prophylaxis. Generally, a good prophylactic effect is also expected from a good therapeutic product. Schwemmllein observed a reduction of morbidity by 50% in March and April in comparison to the previous year after a prophylactic administration of 100 mg vitamin C daily during the flu season from January until April. Mikfelder’s studies in the same direction indicated a reduction of the sickness rate by 37%. According to experience, a successful prophylaxis is not practically feasible as such efforts generally fail due to laziness and costs. In our case however, the prophylaxis can be limited to the spreading of the knowledge of the necessity to start the treatment immediately at the first sign of the disease in order to achieve maximum efficacy, especially in the event of the common cold and the flu.

In summary, freedom of symptoms could be achieved surprisingly quickly in 163 of 247 patients with acute upper respiratory tract infections via a timely oral use of high doses of vitamin C. A clear improvement could be achieved in 44 others. We have a largely reliable agent available with C-Vit fortissimum and Ultren, especially against the common cold and the flu.
Here, 111 out of 132 patients became symptom-free within one day.

**Literature**

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