Consensus document VITAMIN C infusion therapy in times of COVID 19

Authors[13]
L. Brendinger, R. Kleef, R. Poglitsch, C. Pröll, M. Selim

Especially at the beginning of an infection, large amounts of vitamin C are needed for the defense against the infection so that the immune system can react appropriately to pathogens such as viruses.

The vitamin C concentrations in the immune cells therefore decrease by about half within hours.
If vitamin C is not replenished in sufficient quantities, this can lead to an acute deficiency with a negative effect on the body's defenses, as vitamin C is essential for the functioning of the immune system.[1-6]

It is essential to administer vitamin C intravenously (IV infusion) **in a sufficiently high dose right at the beginning of an infection**[7]**.**

Parenteral application of vitamin C is crucial to achieve high pharmacological concentrations in plasma!

In several clinics in China and USA, high-dose vitamin C IV (10 - 20 g/infusion) was successfully administered to patients suffering from Covid-19 [8-12].

The outcome was discussed at an international expert conference. In Austria, leading experts [13] in the field of parenteral vitamin C therapy advocate the timely use of high-dose vitamin C infusions for patients infected and ill with Covid-19. The analogy to the successful treatment of other viral diseases with high-dose vitamin C IV results in the following MINIMUM doses, which can be sensibly exceeded in individual cases of off-label use (e.g. doubling of dose).

Infusion recommendation with vitamin C Injektopas 7.5 g based on data available for acute infections:
(adults and adolescents 12 years and older)

Recommendation	Dosage
Early stage with mild symptoms	On 3 consecutive days: 7.5 g IV once a day. Continuation of therapy on day 5 + day 7: 7.5 g IV once a day.
Medium to severe symptoms	On 3-5 consecutive days: 7.5 g IV twice a day. Continuation of therapy on day 5 + day 7: 7.5 g IV once a day.
Life-threatening symptoms/ intensive care [14-19]	30 g daily, if possible, added via perfusor to carrier solution (e.g. 0.9% sodium chloride injection) 24/7, reduce slowly, dosage depends on the clinic, do not stop abruptly, do not stop too early.
Convalescence	7.5 g IV twice a week.
Prevention (vulnerable populations)	Preparing the immune system for a virus infection to counteract an existing vitamin C deficiency: 7.5 g IV twice a week.

Contraindications, Cautions and Warnings	
Patients with pre-existing conditions (e.g. pulmonary, rheumatic diseases)	Patients treated with glucocorticoids, immunosuppressants and other drugs that suppress the immune system have an increased risk of viral and bacterial infections due to their reduced immune response. These therapeutic approaches should be considered critically in the light of the current COVID 19 pandemic and used very restrictively.
Special note for diabetics	High concentrations of vitamin C in the blood can lead to false increase in glucose meter readings, resulting in misdiagnosis. We recommend measuring the blood sugar level before parenteral administration.
Drug Interactions	Ascorbic acid may affect the effectiveness of anticoagulants.

This therapy suggestion is only a general therapy recommendation of the authors. Please read the Prescribing Information before administering VitC Injektopas 7.5 g.

It goes without saying that you as the treating physician decide on the individual dosage and frequency of the treatment depending on the individual condition of the patient.

Errors and omissions excepted.

Also relevant for an immunocompetent reaction of the organism: [20]

A high-normal supply of vitamin D3, selenium and zinc must be ensured as a preventative measure – it is vital to also take interactions and the patient‘s clinical situation into account. Laboratory tests are obligatory before starting the therapy!

References and other sources helpful for further information

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6. Hume, R. and E. Weyers, Changes in leucocyte ascorbic acid during the common cold. Scott Med J, 1973. 18(1): p. 3-7
7. The Japanese College of Intravenous Therapy (JCIT) recommends intravenous vitamin C (IVC) 12.5/25g (12,500 - 25,000 mg) for acute viral infections (influenza, herpes zoster, common cold, rubella, mumps, etc.) and virus mimetic infections (idiopathic sudden hearing loss, Bell's palsy). In adults, IVC 12.5g is given for early stage illness with mild symptoms, and IVC 25g for moderate to severe symptoms. IVC is usually administered once or twice a day for 2-5 continuous days, along with or without general treatments for viral infections.
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9. High-dose Vitamin C IV Therapy for COVID-19.
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11. Successful High-Dose Vitamin C Treatment of Patients with Serious and Critical COVID-19 Infection.
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    „The CITRIS-ALI study demonstrates once again that sepsis patients have a vitamin C deficiency that should be treated early on sepsis on the onset of sepsis. The significantly lower mortality rate in the vitamin C group indicates a clear benefit of high-dose intravenous vitamin C in acute lung failure (ARDS). „
20. Optimal Nutritional Status for a Well-Functioning Immune System is an Important Factor to Protect Against Viral Infections
    https://www.preprints.org/manuscript/202003.0199/v1
    International scientists, like us, point to an optimal supply of micronutrients to support the immune system.