

High Dose IV/IM Vitamin C with Bacterial and Viral Infections: A Case Report on Sepsis by MRSA and Dengue Virus (DENV-1)

Sengly Kheng

Lecturer of Applied Pharmacology & Clinical Pharmacy at Faculty of Pharmacy, University of Health Sciences, Cambodia

Introduction:

MRSA: Methicillin-Resistant *Staphylococcus aureus* (MRSA) alludes to a gathering of Gram-positive microscopic organisms that are hereditarily unmistakable from different strains of *Staphylococcus aureus*. MRSA is answerable for a few hard to-treat diseases in people. MRSA is any strain of *S. aureus* that has created, through flat quality exchange and common determination, various medication protection from beta-lactam antimicrobials. Beta-lactam (β -lactam) anti-infection agents are a wide range bunch that incorporate some penams (penicillin subsidiaries, for example, methicillin and oxacillin) and cepheims, for example, the cephalosporins. Strains unfit to oppose these anti-toxins are named methicillin-vulnerable *S. aureus*, or MSSA.

Dengue Virus: Dengue infection (DENV) is the reason for dengue fever. It is a mosquito-borne, single positive-abandoned RNA infection of the family Flaviviridae; sort Flavivirus. Five serotypes of the infection have been found, all of which can cause the full range of disease. Nevertheless, researchers' comprehension of dengue infection might be oversimplified, as instead of particular antigenic gatherings, a continuum appears to exist. This equivalent investigation recognized 47 strains of dengue virus. Additionally, coinfection with and absence of quick tests for Zika infection and chikungunya entangle matters in genuine world infections.

Sepsis: Sepsis is a hazardous condition that emerges when the body's reaction to disease makes injury its tissues and organs. This underlying stage is trailed by concealment of the invulnerable system. Common signs and indications incorporate fever, expanded pulse, expanded breathing rate, and confusion. There may likewise be side effects identified with a particular contamination, for example, a hack with pneumonia, or excruciating pee with a kidney infection. The exceptionally youthful, old, and individuals with a debilitated insusceptible framework may have no side effects of a particular contamination, and the internal heat level might be low or ordinary as opposed to having a fever. Severe sepsis will be sepsis causing poor organ capacity or blood flow. The nearness of low circulatory strain, high blood lactate, or low pee yield may recommend poor blood flow. Septic stun is low circulatory strain because of sepsis that doesn't improve after liquid substitution.

Vitamin C: Vitamin C, otherwise called ascorbic corrosive and ascorbate, is a nutrient found in different nourishments and sold as a dietary supplement. It is utilized to forestall and treat scurvy. Vitamin C is a basic supplement associated with the fix of tissue and the enzymatic creation of certain neurotransmitters. It is required for the working of a few catalysts and is significant for invulnerable framework function. It additionally works as a cell reinforcement. Vitamin C is commonly well tolerated. Large dosages may cause gastrointestinal inconvenience, cerebral pain, inconvenience resting, and flushing of the skin. Normal portions are sheltered during pregnancy. The United States Institute of Medicine

suggests against taking huge dosages.

Vitamin C Prevent Bacterial and Viral Infections:

Described in 1961, Methicillin-Resistant *Staphylococcus aureus* (MRSA) has now continued advancing to be one of the top life-threatening bacterial infection when it comes to sepsis. In Cambodia, there are left with only two antibiotics that are still sensitive to MRSA. They are intravenous Vancomycin for sepsis and Fusidic acid cream for skin-tissue infections. From an open 1 cm³ wound, MRSA can progress until it reaches the bloodstream in which the body will response by booming a flood of chemicals to fight the threat and will, overtime, widespread the inflammation resulting in slow blood flow and organs failure. As there is no vaccine available and we are now facing the extinction of antibiotics, immunotherapy could be a choice for this dilemma. This is a case report of a 23-year old Cambodian man infected by MRSA and Multi-resistant *Citrobacter freundii* via the wound on his right plantar foot on the midnight of Monday, 25th June 2018. He began to bleed everyday, especially after running or walking too much. His fever initiated on day 5 with the temperature 38.6°C while his discomfort feeling and shivering started at the night of the same day. The next day, he began to have serious trouble with breathing (RR = 40/min) and then the heart rate of 140 per minute. Without delaying, he was started with the intravenous 14 Grams of Vitamin C once in a day concomitantly with tramadol 600mg to cause urinary retention in order to prevent vitamin C from getting eliminated via urine. The symptoms started to go back to normal on day 2 of treatment then continue for 5 days more. Amazingly the open 1 cm³ wound was completely healed and the sepsis had been completely gone. On 5th August 2019, again, the same patient affected by the sepsis again with DENV-1 as there was an outbreak in Cambodia. The patient was presented with the 36.7°C hypothermia, skin rash, muscle pain, bleeding gum, severe and lighted headaches with inconsistent nausea and vomiting. The laboratory test was done by immediately showing WBCs 7350/mL and platelets was dramatically dropped in to 1.3 x 10⁵/mL. Vitamin C 20 Grams IV with Midazolam 10mg IV before bedtime was started (once in a day). On the day 3, the laboratory test again showed the skyrocket of WBCs up to 13500/mL and then the platelets counts increases up to 4.1 x 10⁵/mL. The patient was treated for 4 days with the full process of getting recovery and became normal.

Conclusion:

When facing the problem in living life and death, then it's proved the potential of intravenous high dose vitamin C against both the bacterial and viral infections with tremendous power despite its probability of causing kidney stones. However, further investigation in a large scale is needed. If in case that a large scale Randomized Clinical Trial cannot prove its remarkable efficacies, then at least there might be a creative chance to use this vitamin C as an adjunct.