

Saving Vision Due to Mucormycosis By Balancing Micronutrients

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WHO, on 12th February 2020 declared Covid-19 as global pandemic. Besides developing effective vaccine many treatment protocols were developed and being modified since then.

From very beginning zinc has been used along with other treatment protocols, and it has reasons for this inclusion.

Role of this trace elements in human physiology was found in 1961, since then much work has been done to find out its role as micro-nutrient in immunity, in ophthalmology and other areas.

Its role in combating SARS-COV-2 virus has been established *in vivo*, possible mechanism of actions are its role as immunomodulatory, effects and its role in combating inflammation.

Besides it is found to improve cilia functioning in nasal mucosa, improves structure of respiratory epithelial cells, it has a role with chloroquine as positive ionosphere, means chloroquine enhances zinc level in respiratory mucosa.

Zinc supplementation has an important role, low level of zinc has been found with low immunity, although severe zinc deficiency is uncommon but mild deficiency of this element occurs, zinc supplementations are easily available and affordable.

Another important trace element which was found very effective is copper, although it is required in very minuscule amounts, only 900 mcg daily or 9 mg is daily requirement.

But when its role was traced in combating SARS-COV-2 in April 2020 it was found that although virus survives for only 4 hours on copper surface as compared to plastic or stainless steel where it can survive for 72 hours but these results were only *in vitro*, this benefit was not shown *in vivo*.

Since there was no role of copper found *in vivo* against this virus so this was not included in treatment protocols.

Moreover, copper is essential but a toxic trace element, required in trace amounts and can easily be met with the normal dietary requirements.

But with advent of fungal infection, Mucormycosis in post Covid-19 patient or increase in cardiac involvement now let us inspect this occurrence.

Zinc has been fairly prescribed since this pandemic. It is being used in indoor patients as well as in out patients. This is being sold as over the counter drug.

But one consideration has been omitted here since prescribing zinc supplementation.

Copper is essential but normally it is rarely required in therapeutic doses as usually daily requirements are easily met from normal diet.

But there are several studies which indicate, when you are subjected to prolonged use of zinc as in present pandemic you are liable to develop copper deficiency.

Now if we see spectrum of complications in treated patients of Covid -19 this time as compared to last one year we are finding more chances of cardiac involvement, we are finding patients with deadly fungal infection mucormycosis now, so much so that many states in India have announced it as Pandemic. Previous studies have shown that an increase in fungal infection such as Candida in Copper deficiency occurs, although this fungal infection is different.

It is another fact that although this emergence of mucormycosis is being thought with administration of steroids here but they have been used since long.

Human body uses copper for energy production to cardiovascular health, so deficiency of copper in this scenario could have occurred, as it is found that prolonged use of zinc is associated with copper deficiency, in spite of the fact that various formulations are available here for copper supplementation, even then I feel no extra therapeutic supplementation of copper is required as copper rich diets are easily affordable and if administered in high doses, suffice for copper toxicity symptoms.

Dietary source of copper are many and includes nuts specifically cashew nuts, walnuts, sweet potatoes, spinach, sun flower seeds, broccoli, dark chocolates, mushrooms and oysters.

Health administration must have analysed this aspect in current pandemic and if by just changing diet pattern in patients on zinc supplementation if can bring down incidence of mucormycosis, it should be examined.

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