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Zinc Deficiency in Aged Residents and Lowered Serum-Zinc-Concentration As Population Level in the Same Rural Region

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Abstract:

Many aged-patients with zinc deficiency were found in our clinic in autumn of 2002, complaining of impaired taste, nausea, anorexia, delayed healing of decubitus, behavior abnormality, or others. The typical cases and their clinical features were presented. The reasons why we could find so many patients are not clear. To guess the reasons, we tried to survey the population level of serum zinc concentration (Zn) of the peoples living in the same rural region, called Kita-mimaki village. From April through November, 2003, we could examined Zn of 1431 peoples consisting of 590 males (average age: 44.8 year-old, range: 6-93) and 841 females (average: 47.2, range: 6-96). RESULTS: 1) Level of Zn showed the tendency to decrease gradually in a day. The average Zn of the subjects whose blood sampled in the morning was higher than that in the afternoon. 2) Mean value \pm SD of Zn in the adults of 20-39 year-old(yo), that of 60-69yo and that of 80-94yo were 81.5 ± 13.6 , 76.6 ± 9.3 and 65.0 ± 10.6 $\mu\text{g/dl}$ respectively. Significant decrease in Zn was found in the aged comparing with young adults. 3) Mean value of Zn in the young aged 20-39yo was significantly ($p < 0.01$) less in female than that in male. 4) In the adults aged 20-69yo and blood sampling done in the morning, mean value \pm SD of Zn was 78.9 ± 11.6 $\mu\text{g/dl}$. This value was 10 $\mu\text{g/dl}$ lower than a reported value of healthy adults, that is 87.5 ± 11.2 $\mu\text{g/dl}$. CONCLUSION: 1) Serum zinc concentration (Zn) seemed to show daily variation, depending on time of blood sampling and the interval between mealtime and sampling time. Zn also depends on age and gender of a subject. We must give a careful attention to "Lower value of Zn is not the same as zinc deficiency", because lots of factors affect the

concentration. 2) No mass examinations as a population level were not found except NHANES II which was published about 25 years ago. Comparing our results with the data about zinc in NHANES II, zinc deficiency is coming a more important clinical entity than before especially in an aged society. Zinc deficiency must be discussed nation-wide, because it might be derived from decreased zinc in soil, poorer zinc content of foods, additives in daily foods, medical drugs and so on.

Key words: serum zinc concentration, zinc deficiency, public health

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