

ICCN Poster Presentations

Clinical nutrition: diagnosis and management

Dietary intakes and plasma antioxidant vitamins levels in Korean elderly with diabetes

J-H Kim* and M-J Kim

*Department of Food and Nutrition, Seoul Women's University, #126 Kongnung 2-dong,
Nowon-gu, Seoul 139-774, Korea*

This study was done to compare the antioxidant status between Korean diabetes and healthy control elderly by determining dietary intakes of antioxidant vitamins, their plasma levels and total antioxidant status (TAS). Diabetic subjects were 122 elderly persons over 60 years, visiting public health center, and control subjects were 96 healthy elderly persons living in Ulsan metropolitan city of Korea. Subjects were matched by age, gender, smoking and drinking status. The subjects were interviewed to collect data on disease history, vitamin supplement use, diet therapy and health-related behaviors by means of questionnaires. Their dietary intakes were assessed by semi-quantitative food frequency questionnaires (SFFQ) and nutrient intakes were analyzed by FFQ computer program. Plasma vitamin C level was determined by spectrophotometric method while other antioxidant vitamins were determined by HPLC. Plasma biochemical indices were measured by automatic blood analyzer. Plasma TAS level measured with a Randox kit using the trolox equivalent antioxidant capacity method. Fasting plasma glucose and HbA1c levels were significantly higher in diabetes than in control subjects. Plasma total cholesterol level of diabetes was not significantly different from that of control subjects, however plasma HDL cholesterol level of diabetes was significantly lower than that of control group. The average vitamin A and β -carotene intakes of diabetes were significantly higher than those of control subjects. There was no significant difference in plasma vitamin C, β -carotene, TBARS levels between two groups, but plasma vitamin A, E and TAS levels were significantly higher in diabetes than in control group. However, when diabetic subjects were divided sub-groups according to the status of using diet therapy and vitamin supplement, there were no significant differences of energy-adjusted vitamins intakes and plasma vitamins levels between in diabetic subjects without diet therapy or vitamin supplement and in controls. Overall results might indicate that Korean diabetic patients had better antioxidant status compared to control subjects since they had higher interest on healthy eating for their health or prevention of diabetic complications and thereby consumed more antioxidant nutrients.

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Vitamin D deficiency in burned children: causes and consequences

GL Klein*¹, TC Chen², MF Holick², CB Langman³ and DN Herndon¹

¹*University of Texas Medical Branch and Shriners Burns Hospital, Galveston TX USA*

²*Boston University Medical Center, Boston MA USA*

³*Children's Memorial Hospital, Northwestern University Medical School, Chicago IL*

Children who sustain burn injury of at least 40% total body surface area are at risk to develop vitamin D deficiency. These children do not receive routine vitamin D supplementation on hospital discharge and by 14 months post-burn median serum level of 25-hydroxyvitamin D was 31 nmol/L, range 0-75, lower limit of normal 37 nmol/L (n=12). These levels remained low at 2 years post-burn (n=12, median 20 nmol/L, range 7-45) and at 7 years post-burn (n=11, median 25 nmol/L, range 12-37). Serum 1,25-dihydroxyvitamin D levels fell by 7 years post-burn and were below normal in half of the patients. Thus the vitamin D deficiency appears progressive. One cause of vitamin D deficiency is the failure of skin of burned patients to produce sufficient vitamin D to sustain normal levels of 25-hydroxyvitamin D in response to ultraviolet light. Thus burn scar is deficient in vitamin D precursor 7-dehydrocholesterol, having a mean of 774 ± 622 (SD) ng/cm² of skin compared to 1821 ± 970 ng/cm² in control subjects (p<0.016). While normal controls convert $25 \pm 10\%$ of 7-dehydrocholesterol to pre-vitamin D₃, both burn scar and adjacent normal-appearing skin convert only about 5% of 7-dehydrocholesterol to pre-vitamin D₃ (p< 0.004). Thus the failure to provide vitamin D supplements to burn patients following discharge puts them at risk for vitamin D deficiency. Furthermore, there is an inverse relationship between serum levels of 25-hydroxyvitamin D and lumbar spine bone mineral density Z-scores, as determined by dual energy x-ray absorptiometry using pediatric software, r=0.53, p<0.05, in 11 subjects seven years post-burn. Therefore, burned children should be followed prospectively for vitamin D deficiency and supplementation of 400 international units per day should be prescribed on discharge. Follow-up studies will be necessary to determine whether this amount of supplementation is sufficient to maintain normal serum levels of 25-hydroxyvitamin D.