COMMENTS AND RESPONSES

Seasonal Changes in Preprandial Glucose, A1C, and Blood Pressure in Diabetic Patients

Response to Honeyman et al.

I thank Honeyman, Elkassaby, and Harrison (1) for commenting on our article (2) that concerns possible mechanisms for seasonal changes in preprandial plasma glucose, A1C, blood pressure, and LDL levels. Honeyman, Elkassaby, and Harrison noted good correlations with serum 25-hydroxyvitamin D3 [25(OH)D3], A1C, insulin resistance, and mean monthly temperature. Low serum 25(OH)D3 was associated with glucose intolerance, as well as diabetes (3) and insulin resistance (4). A univariate analysis showed that total cholesterol, LDL cholesterol, and both apolipoprotein (apo)A-I and apoB concentrations correlated directly with serum 25(OH)D concentrations (5). Plasma 25(OH)D levels are inversely associated with incident hypertension, and 25(OH)D seemed to correlate with all parameters discussed in our article (6). However, in our study, we found that mean monthly temperature correlated with preprandial plasma glucose, A1C, blood pressure, and LDL but not HDL or triglyceride. We know that preprandial plasma glucose, A1C, blood pressure, HDL, and triglycerides are related to insulin resistance but not LDL. This implies that the insulin resistance change cannot fully explain the seasonal change found in the study. Several studies have shown that vitamin D3 supplements do not improve glucose and A1C levels, although a combination of vitamin D and calcium may improve fasting glycemia (7). Serum 25(OH)D3 concentration correlation with mean monthly temperature is a phenomenon similar to the metabolic parameters correlated with mean monthly temperature. Thus, in my opinion, metabolic parameters, serum 25(OH)D3 concentrations, and mean monthly temperature correlate with each other, but serum 25(OH)D3 concentrations are not the etiology of seasonal variation.

WEN WEI LIANG, MD

From the Department of Endocrinology and Metabolism, Da Chien Hospital, Miaoli, Taiwan.

Address correspondence to Wen Wei Liang, MA, No. 72-1 Fusing Rd., Tongluo Shiang Miaoli County, Taiwan, ROC. E-mail: l6105180@cm1.hinet.net.

DOI: 10.2337/dc07-1502

References

1. Honeyman MC, Elkassaby S, LC Harrison: Seasonal changes in preprandial glucose, A1C, and blood pressure in diabetic patients: response to Liang (Letter). *Diabetes Care* 30:e118, 2007. DOI: 10.2337/dc07-1405
2. Liang WW: Seasonal changes in preprandial glucose, A1C, and blood pressure in diabetic patients. *Diabetes Care* 30:2501–2502, 2007
3. Scragg R, Holdaway I, Singh V, Metcalf P, Baker J, Dryson E: Serum 25-hydroxyvitamin D3 levels decreased in impaired glucose tolerance and diabetes mellitus. *Diabetes Res Clin Pract* 27:181–188, 1995
4. Chiu KC, Chu A, Go VL, Saad MF: Hypovitaminosis D is associated with insulin resistance and beta cell dysfunction. *Am J Clin Nutr* 79:820–825, 2004
5. John WG: Hypovitaminosis D is associated with reductions in serum apolipoprotein A-I but not with fasting lipids in British Bangladeshis. *Am J Clin Nutr* 82:517–522, 2005
6. Forman JP: Plasma 25-hydroxyvitamin D levels and risk of incident hypertension. *Hypertension* 49:1063–1069, 2007
7. Pitas AG, Lau J, Hu FB, Dawson-Hughes B: The role of vitamin D and calcium in type 2 diabetes: a systematic review and meta-analysis. *J Clin Endocrinol Metab* 92:2017–2029, 2007