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Glycemic effect of post-meal walking compared to one prandial insulin injection in type 2 diabetic patients treated with basal insulin: a randomized controlled cross-over study

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ABSTRACT

Studies demonstrate that post-meal walking decreases postprandial hyperglycemia in type 2 diabetic patients but it has never been tested with the active treatment comparator. The objective of this study was to determine the effect of post-meal walking on glycemic control compared with one prandial insulin in type 2 diabetic patients who failed basal insulin. A randomized controlled cross-over study of post-meal walking or one prandial insulin was done in type 2 diabetic patients who were being treated with basal insulin between May 2017 and March 2018. In post-meal walking group, patients walked after meal for 15-20 minutes one meal a day every day for 6 weeks. In prandial insulin (basal plus) group, one prandial insulin was injected before breakfast or main meal with rapid-acting insulin. The primary outcome was a difference in HbA1c reduction in post-meal walking compared with basal plus groups. Fourteen patients completed the study. By intention-to-treat analysis, HbA1c was reduced by -0.05(range:-1.08 to 0.74) and -0.19(range:-0.8 to 0.56) % in post-meal walking and basal plus groups respectively. By per-protocol analysis, post-meal walking and basal plus groups decreased HbA1c by 0.13(range:-0.74 to 1.08) and 0.2(range:-0.56 to 0.8) %, respectively. There was no significant differences in HbA1c reduction from baseline in each group and between groups in both intention-to-treat and per-protocol analysis. Fructosamine levels were decreased by 17.5(-59 to 43) and 10(-15 to 40) µmol/L, respectively at 3 and 6 weeks in post-meal walking group whereas the respective changes in basal plus group were 12.5(-17 to 64) and 17.5(-28 to 38) µmol/L and there was no significant difference between groups. In conclusion, although post-meal walking might be as effective as one prandial insulin to improve glycemic control in type 2 diabetic patients who failed basal insulin but the magnitude of reduction was small. A longer-term study with a larger sample size or with a different walking protocol is required.

EXTERNAL LINK

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THIS PROTOCOL ACCOMPANIES THE FOLLOWING PUBLICATION

1. American Diabetes Association. Pharmacologic approaches to glycemic treatment: Standards of medical care in diabete. Diabetes Care 2018; 41(Suppl 1): S73-S85. 2. Davies MJ, D'Alessio DA, Fradkin J, Kernan WN, Mathieu C, Mingrone G, et al. Management of hyperglycaemia in type 2 diabetes. A consensus report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). Diabetologia 2018; 61: 2461-2498. 3. American Diabetes Association. Lifestyle management: Standards of medical care in diabetes—2018. Diabetes Care 2018;41(Suppl 1): S38-S50. 4. Colberg SR, Sigal RJ, Yardley JE, Riddell MC, Dunstan DW, Dempsey PC, et al. Physical activity/exercise and diabetes: a position statement of the American Diabetes Association. Diabetes Care 2016; 39: 2065-2079. 5. DiPietro L, Gribok A, Stevens MS, Hamm LF, Rumpler W. Three 15-min bouts of moderate postmeal walking significantly improves 24-h glycemic control in older people at risk for impaired glucose tolerance. Diabetes Care. 2013; 36: 3262-3268. 6. Erickson ML, Little JP, Gay JL, McCully KK, Jenkins NT. Postmeal exercise blunts postprandial glucose excursions in people on metformin monotherapy. Journal of App Physiol. 2017; 123: 444-450. 7. Erickson ML, Little JP, Gay JL, McCully KK, Jenkins NT. Effects of postmeal exercise on postprandial glucose excursions in people with type 2 diabetes treated with add-on hypoglycemic agents. Diabetes Res Clin Pract 2017; 126: 240-247. 8. Pahra D, Sharma N, Ghai S, Hajela A, Bhansali S, Bhansali A. Impact of post-meal and one-time daily exercise in patient with type 2 diabetes mellitus: a randomized crossover study. Diabetol Metab Syn 2017; 9: 64. 9. Reynolds AN, Mann JI, Williams S, Venn BJ. Advice to walk after meals is more

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ATTACHMENTS

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