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Preventing Diabetes With Lifestyle Interventions and Medication

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10-Year Follow-up of Diabetes Incidence and Weight Loss in the Diabetes Prevention Program Outcomes Study

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Study Summary

The Diabetes Prevention Program (DPP), a randomized clinical trial, demonstrated that intensive lifestyle intervention or metformin prevented or delayed development of type 2 diabetes in high-risk adults compared with placebo. The current article is the first report of the Diabetes Prevention Program Outcomes Study (DPPOS), a long-term follow-up of the DPP designed to determine whether the delay in diabetes seen during the DPP can be sustained.

After being informed of the main DPP results, patients in the metformin and placebo groups entered a 1- to 2-week drug washout phase. All participants were offered a group-administered version of the 16-session lifestyle curriculum as a bridge protocol. Once the DPPOS follow-up began, all participants were offered a lifestyle session every 3 months. The DPP lifestyle group participants were also offered 4 group sessions per year. Those in the metformin group continued to receive metformin (850 mg twice daily). As in the DPP, the primary outcome was development of diabetes. Median follow-up from original DPP randomization was 10 years.

In the original DPP, diabetes incidence was reduced by 58% with intensive lifestyle and by 31% with metformin compared with placebo. During DPPOS, diabetes incidence rates were not significantly different between groups. Incidence rates were stable in the lifestyle group, but decreased in the placebo and metformin groups during the DPPOS. During the combined DPP, bridge, and DPPOS periods, the incidence was decreased by 34% (95% confidence interval [CI], 24%-42%) in the lifestyle group and by 18% (95% CI, 7%-28%) in the metformin group compared with placebo.

The delay in median time to diabetes diagnosis was previously estimated from DPP results to be 11 years for the lifestyle group and 3 years for the metformin group. However, the current study estimated the delay to be about 4 years by lifestyle intervention and 2 years by metformin. Attendance at the quarterly lifestyle session averaged 18% for the original lifestyle group, 15% for the metformin group, and 14% for the placebo group.

Viewpoint

The main finding of this study -- that the prevention or delay of diabetes with lifestyle intervention or metformin can persist for at least 10 years -- is indeed good news. In fact, the incidence rate in the lifestyle group was remarkably stable, and the lowering of the relative risk reduction (from 58% to 34%) was due to a falling incidence rate in the placebo group rather than a loss of benefit in the lifestyle group. This may have occurred because the placebo group was offered some lifestyle intervention during DPPOS, although attendance was fairly poor. It is also possible,

however, that placebo participants who were most prone to diabetes converted quickly (during DPP), leaving those less prone to produce a lower incidence rate.

Studies have suggested such a phenomenon,^[1,2] but the Finnish Diabetes Prevention Study reported a similar diabetes incidence rate among its placebo group during the trial and long-term follow-up phases.^[3] It is also important to note that the metformin group experienced a lower incidence rate during the DPPOS than the DPP. This finding suggests that adding modest lifestyle change (even if poorly attended) to metformin may enhance the drug's effect.

Not all the news was good, however. The substantial shortening of the median time to diabetes changes the cost-benefit ratio of the interventions. What remains to be seen is whether lifestyle or metformin intervention reduces the debilitating (and costly) microvascular and macrovascular complications associated with diabetes. Until that is known, regardless of whether the results of the current study were due to early intensive lifestyle intervention (during the DPP) or the addition of lifestyle to all groups (during the DPPOS), there remains little doubt that patients who can make positive lifestyle changes should do so.

References

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