

Cardiovascular Disease in Type 2 Diabetes: A “Package” Intervention

This discussion of the Steno-2 trial highlights the benefits “package” intervention offers to patients with Type 2 diabetes who are at high risk of cardiovascular disease.

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Steno-2 study

Steno-2, a randomized clinical trial, compared the effect of structured, targeted, intensified, multifactorial intervention with conventional treatment for modifiable risk factors of cardiovascular disease in individuals with Type 2 diabetes and microalbuminuria. In accordance with national guidelines, 80 patients were randomly assigned to receive conventional treatment and 80 to receive intensive treatment.

In a stepwise manner, implementation of behaviour modification and pharmacologic therapy was undertaken. The therapy targeted hyperglycemia, hypertension, dyslipidemia and microalbuminuria, along with secondary prevention of cardiovascular disease with acetylsalicylic acid (ASA).

Baseline population and results

The mean age of the patients was 55.1 years and the mean followup was 7.8 years. The decline in glycosylated hemoglobin values, systolic and diastolic blood pressure, serum cholesterol and triglyceride levels (measured after an overnight fast), as well as urinary albumin excretion rate were all significantly greater in the intensive-therapy group than in the conventional-therapy group.

Patients receiving intensive therapy also had a 50% lower risk of developing cardiovascular disease, which included a composite of death from cardiovascular causes, nonfatal heart attacks, nonfatal stroke, revascularization and amputation.

In the Steno-2 trial, patients receiving intensive therapy had a 50% lower risk of developing cardiovascular disease.

The Steno-2 trial confirms the benefit of a “package” of interventions in high-risk patients with Type 2 diabetes.

Other diabetic complications were also lowered, including:

- nephropathy,
- retinopathy and
- autonomic neuropathy.

Physician comment

The Steno-2 trial confirms the benefit of a “package” of interventions in a high-risk group of patients with Type 2 diabetes.

The study has changed the way I practise; I now attempt to modify as many risk factors as possible. This is a difficult challenge, as many of these individual patients find it extremely challenging to lose weight, add significant activity to their daily lives and closely monitor their blood sugar, cholesterol and blood pressures values.

In applying this new “package” intervention philosophy, most patients will be asked to take multiple medications, with increasing doses and drugs over time. For those who are willing to work hard at it, the results are extremely impressive.

A small limitation of this type of management strategy is that the strength of the effect of particular elements of the “package” remain unclear.


My personal priority is blood pressure management. At first, I aim for a value < 130/80 mmHg using agents that block the renin-angiotensin system. I then move on to aggressive lipid interventions, the use of antiplatelet agents and, finally, tight blood sugar control. The results clearly underscore the importance of multifactorial approach to preventing diabetic complications.

About the author...

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The Steno-2 trial was well-designed and performed. Although the number of individuals in this trial was relatively small, the risk reductions in the intervention group were consistent and large, (*i.e.*, about 50% for most outcome variables).

Sugar diabetes is a lethal and chronic illness that deserves multiple interventions. 

Suggested reading

1. Gaede P, Vedel P, Larsen N, et al: Multifactorial intervention and cardiovascular disease in patients with Type 2 diabetes. *N Engl J Med* 2003 30: 348(5):383-93.

The intervention group risk reductions were about 50% for most outcome variables in Steno-2.



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