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Review Article

PROVIDING THE BEST PREVENTION AND TREATMENT FOR DIABETES PATIENTS

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Abstract

Diabetes is one of the main threats to human health in this century. The drastic increase in incidence of diabetes worldwide has been attributed to distinct changes in human behavior and lifestyle during the last century. To prevent the personal and socio-economic burden of diabetes effort to prevent the disease needs to start before the onset of diabetes and address all susceptibility factors. Four recent studies have shown that prevention of type 2 diabetes is possible and that reinforced lifestyle interventions / modification can significantly reduce the onset of the disease. The studies repeatedly showed that for about 60% of the persons with increased diabetes risk, compared to a control group, the diabetes was prevented from developing. Early pharmacologic preventive strategies have yielded 25-30%. These studies have convincingly demonstrated that the primary aim in prevention of type 2 diabetes is the stabilization of glucose tolerance due to improvement of insulin resistance. Based on the studies intervention protocol focuses on achieving 5 core goals. With respect to the world wide burden of diabetes this studies offer a compelling evidence-base for the important translation of the research findings into community-based prevention strategies a development of a National Diabetes Prevention Program.

Key words: Diabetes Mellitus, Treatment, Prevention

Introduction

Diabetes is a metabolic disorder characterized by a chronic hyperglycemia (too high blood sugar levels) linked to deficiency, either in insulin secretion, or in the action of insulin, or of both.[1] Eventually carrier of micro and macro vascular complications severe and disabling in certain target organs such as the heart (heart failure, myocardial infarction), the central nervous system (stroke) and peripheral (neuropathy), the kidney(chronic kidney disease, kidney failure), eye (retinopathy) and foot(foot ulceration, diabetic foot).[2] It is a major health problem public by its significant and increasing prevalence on the one hand, and its socio-economic impact on the other hand.[3] As a result, diabetes constitutes currently one of the most worrying pathologies in both countries industrialized than in developing countries. In the world, World Health Organization (WHO) talks about global epidemic (all types of diabetes combined). In 2014 the global prevalence was estimated at 9% in adults over 18 years. In 2012, diabetes was responsible for 1.5 million deaths worldwide and type 2 represented just over 90% of cases and 80% of these deaths occur in countries low or middle income.[4]

Diabetes prevention: 5 tips for taking control

Changing your lifestyle could be a big step toward diabetes prevention — and it's never too late to start. Consider these tips.

When it comes to type 2 diabetes — the most common type of diabetes — prevention is very important. It's especially important to make diabetes prevention a priority if you're at increased risk of diabetes, such as if you're overweight or you have a family history of the disease or you have been diagnosed with prediabetes (also known as impaired fasting glucose).

Diabetes prevention is as basic as eating more healthfully, becoming more physically active and losing a few extra pounds. It's never too late to start. Making a few simple changes in your lifestyle now may help you avoid the serious health complications of diabetes in the future, such as nerve, kidney and heart damage. Consider these diabetes prevention tips from the American Diabetes Association.

1. Get more physical activity

There are many benefits to regular physical activity. Exercise can help you:

Lose weight

Lower your blood sugar

Boost your sensitivity to insulin — which helps keep your blood sugar within a normal range

Research shows that aerobic exercise and resistance training can help control diabetes. The greatest benefit comes from a fitness program that includes both.

2. Get plenty of fiber

Fiber may help you:

Reduce your risk of diabetes by improving your blood sugar control

Lower your risk of heart disease

Promote weight loss by helping you feel full

Foods high in fiber include fruits, vegetables, beans, whole grains and nuts.

3. Go for whole grains

It's not clear why, but whole grains may reduce your risk of diabetes and help maintain blood sugar levels. Try to make at least half your grains whole grains.

Many foods made from whole grains come ready to eat, including various breads, pasta products and cereals. Look for the word "whole" on the package and among the first few items in the ingredient list.

4. Lose extra weight

If you're overweight, diabetes prevention may hinge on weight loss. Every pound you lose can improve your health, and you may be surprised by how much. Participants in one large study who lost a modest amount of weight — around 7 percent of initial body weight — and exercised regularly reduced the risk of developing diabetes by almost 60 percent.

5. Skip fad diets and just make healthier choices

Low-carb diets, the glycemic index diet or other fad diets may help you lose weight at first. But their effectiveness at preventing diabetes and their long-term effects aren't known. And by excluding or strictly limiting a particular food group, you may be giving up essential nutrients and often craving such foods. Instead, make variety and portion control part of your healthy-eating plan.

When to see your doctor

The American Diabetes Association recommends blood glucose screening if:

You're age 45 or older

You're an overweight adult of any age, with one or more additional risk factors for diabetes, such as a family history of diabetes, a personal history of prediabetes or an inactive lifestyle

After age 45, your doctor will likely recommend screening every three years.

Share your concerns about diabetes prevention with your doctor. He or she will appreciate your efforts to prevent diabetes and may offer additional suggestions based on your medical history or other factors.

Method

Scientific article that linked to the present topic were obtained using an online searching process. The searching process included different scientific websites, such as; Google Scholar and PubMed, using several keywords such as; New modifying models, life style change, providing better treatment ,diabetes mellitus. We obtained 10 articles that matched with the current subject and written in English. Of those 10 articles, 3 were excluded as they published before 2000, or mayn't focusing on the present topic, or written in a language other than English; therefore, only 12 papers were included, and they were published till 2020.

Results

The results of several large international studies[5] provide initial answers and provide high evidence that the prevention of diabetes mellitus with lifestyle intervention or the early use of medication is possible and effective in people at risk.[15] In the studies mentioned, it was repeatedly shown that lifestyle intervention in the early stages of the disease could successfully prevent or delay the onset of diabetes for almost 60% of those affected, and early drug intervention for about a quarter of those at risk.

In the Chinese Da Quing Diabetes Prevention Study,[6] the effect of a "lifestyle modification" on the conversion from the IGT stage to T2DM was examined. The study included 577 people with impaired glucose tolerance who were randomly included in control and intervention groups. The cumulative incidence of diabetes after 6 years in the control group was 67.7% (95% CI, 59.8-75.2) compared to the "lifestyle group" with 41.1% (95% CI, 33.4-49.4). For example, through intensive diet training and exercise programs in Chinese patients with impaired glucose tolerance, a diabetes risk reduction of 46% was achieved.[7]

In the Finnish Diabetes Prevention Study (DPS),[8] in which subjects with impaired glucose tolerance were also examined (n = 522), the incidence rate in a three-year follow-up was 22.9 through "lifestyle modification" % can be reduced to 10.2%, which corresponds to a diabetes risk reduction of 58%

The test persons in the "lifestyle group" were able to reduce their body weight by 5.6 kg during the observation period. Subjects treated with metformin had a weight reduction of 2.1 kg and the control group 0.1 kg. The incidence of diabetes was 4.8 people per 100 patient-years in the lifestyle group compared to 7.8 in the metformin-treated group and 11.0 people in the untreated control group. In this study, too, the lifestyle modification proved to be a very effective treatment measure with a "number needed to treat" of 6.9 people. 14 subjects had to be treated with metformin to prevent diabetes.[9]

Another pharmacopreventive study, the STOP-NIDDM study,[10] evaluated the effectiveness of acarbose in preventing the occurrence of overt diabetes in people with IGT. It could be shown that in this study the regular intake of acarbose led to a relative risk reduction of 25%. However, the preventive effect ceased after acarbose was discontinued.[12] Pre-defined endpoints as secondary outcomes were also reduced under acarbose namely 49% fewer cardiovascular events and 34% fewer new hypertension cases. On the one hand, this indicates the

particular importance of correcting postprandial hyperglycemia. On the other hand, it is the first evidence that treating IGT not only delays diabetes, but can also significantly reduce cardiovascular risk.

As a result of these studies, target values were formulated, particularly for lifestyle intervention, the implementation of which is crucial for preventing or delaying diabetes. These include:

- 7% weight reduction
- 150 minutes of physical activity / week
- 5g fiber-containing fiber / 1000 kcal food intake
- a maximum of 30% fat in daily food as well
- a maximum of 10% saturated fatty acids in the daily diet.

It is interesting here that retrospectively the implementation of one of the target values had almost no preventive effect, but with the continuous implementation of each further target value the effect in the prevention of diabetes increased and with the continuous implementation of four and all five target values over the study period almost 100% prevention of diabetes was achieved.[11]

The studies prove the possibility of primary diabetes prevention through a successful change in lifestyle, in particular diet and exercise. As a second effect it could be shown convincingly that an early intake of metformin or acarbose can prevent or delay the occurrence of overt diabetes in people with IGT. Especially with regard to the transferability of the effort made in the study to the actual clinical routine, regular pharmacoprevention can represent an important alternative in a future prevention program for a substantial number of people at risk or “non-responders” of lifestyle prevention. [12]

Discussion

The lifestyle modification included individual nutritional advice appointments and individual advice on physical activity. Compared to the untreated control group, patients with lifestyle modification lost 4.2 kg in weight, increased their exercise behavior, lowered blood pressure and improved lipid metabolism. 8 people had to be "treated" to prevent diabetes. Subjects who lost more than 5% of their body weight had a 70% reduction in the risk of diabetes compared to people without a corresponding weight reduction. In addition to increased physical activity, weight reduction thus proved to be a decisive effect variable.[13]

The aim of the American Diabetes Primary Prevention Trial (DPP) was to examine the effect of a “lifestyle modification” and early metformin treatment compared to a placebo group in subjects with IGT on conversion to manifest type 2 diabetes mellitus . The results show that with a mean observation period of 2.8 years, the risk can be reduced by early metformin treatment by 31%, but by lifestyle modification by 58% compared to placebo. The management of type 2 diabetic patients must be comprehensive, with the objective of preventing micro and macro vascular complications of disease and ensure a good quality of life. The objective of this study was to study the role of physical activity in the balance of type 2 diabetes.

Conclusion

To meet the challenge of chronic diseases, especially diabetes, studies have shown that the most effective strategies are those based on the quality of the care services offered, but also, and to the same degree on preventive actions targeting behavior, and first of all, therapeutic education and in particular the promotion of the activity physical. The diabetes therapeutic education program, currently in preparation, is an opportunity that must be encouraged, and to ensure all the success factors.

References

1. Grimaldi A. Treatise on diabetology, 2nd edition. Ed. Medicine Sciences, Flammarion, accessed January 2009.
2. Morel A, Lecoq G, Menninger J. Assessment of the management of diabetes volume I. General Inspectorate of Social Affairs 2012;33.
3. Massi-Benedetti M, The Cost of Diabetes Type II in Europe: The CODE- Study. Diabetologia 2002; 45.
4. World Health Organization / Diabetes; memory aid N ° 312, January 2015. Available at http: //www.who .int / mediacentre / factsheets / fs312 / fr / Accessed on: 02/05/2015.
5. Farouqil A, A.Harti M, Nejjari C. Management of diabetes in Morocco: results of the International Diabetes Management Practices Study (IDMPS) - Wave 2. Medicine for Metabolic Diseases Vol 4, N ° 6 - December 2010; 704-711.
6. S. Hassoune, S. Badri, S. Nani, L. Belhadi, A. Maaroufi. Assessment of treatment of diabetics by the general practitioner in theKhouribga province (Morocco) EMHJ • 2013; 19(1).
7. Haffner, S.M., et al., Les sujets prédiabétiques insulino-résistants présentent plus de facteurs de risque athérogènes que les sujets prédiabétiques insulino-sensibles: implications pour la prévention des maladies coronariennes pendant l'état prédiabétique. Circulation, 2000; 101 (9): 975-80.
8. Fontbonne, A., et al., Répartition de la graisse corporelle et mortalité par maladie coronarienne chez les sujets présentant une tolérance au glucose altérée ou un diabète sucré: étude prospective de Paris, suivi de 15 ans.PG - 464-8. Diabetologia, 1992; 35(5).
9. Pal, D.K., et al., Caractéristiques phénotypiques des crises fébriles familiales: étude cas-témoins. Neurologie, 2003; 60 (3): 410-4.
10. Knowler, W.C., et al., Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. N Engl J Med, 2002; 346 (6): 393-403.
11. Tuomilehto, J., et al., Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. N Engl J Med, 2001;344 (18):1343-50.
12. Chiasson, J.L., et al., Acarbose for prevention of type 2 diabetes mellitus: the STOP-NIDDM randomized trial.PG - 2072-7. Lancet, 2002; 359.
13. Pan, X.R., et al., Effects of diet and exercise in preventing NIDDM in people with impaired glucose tolerance. The Da Qing IGT and Diabetes Study. Diabetes Care, 1997; 20 (4):537-44.