Development of Consensus Algorithms for the Treatment of Type 2 Diabetes Recommended by the American Diabetes Association and the European Association for the Study of Diabetes

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Abstract

Diabetes as a health problem needs a complex management in order a better quality of life for the patients to be achieved. There are various organizations, and clinicians who have created guidelines for proper treatment of the disease. In some extent, there are controversial and this fact leads to confusion. Considering these different approaches for treatment of diabetes and the various point of views for management of the disease, the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) developed recommendations for antihyperglycemic therapy in nonpregnant adults with type 2 diabetes. The aim of this study is to compare the two consensuses of ADA’s and EASD’s in order to be emphasized the main approaches.

Keywords: Diabetes, management, consensus for treatment

1 Introduction

Diabetes is a health problem that causes blood glucose to increase out of regular range. This situation can lead to hyperglycemia. Type 2 diabetes (T2DM) is the most common form of diabetes -75% from all cases are due to this T2DM. Unfortunately the cases of type 2 diabetes are increasing worldwide. The statistics proves that over the past fifty years, the patients with diagnosis diabetes mellitus have doubled globally, thus making the disease one of the most important global public health problems.

Very disturbing fact is that type 2 diabetes mellitus is widely spread among children, adolescents and younger adults. Statistically type 2 diabetes is increasing worldwide, particularly in developing countries, in conjunction with increased obesity rates and industrializations of life. The causes of the epidemic of T2DM are complex including genetic and epigenetic factors that interact together and determines behavior and environmental influences. Management of T2DM is an everyday task and includes the activity of all healthcare providers in order to be improved the patient’s situation.

Currently several guidelines have been developed in order to be generalized an approach for general management of T2DM⁵. The most active associations in this area are the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD).

2 Brief historic overview

ADA founded by 26 physicians when it got underway 75 years ago. It remained an organization for health care professionals during its first 30 years. In 1970, the association welcomed general members. Consequently, it form a network of more than 1 million volunteers. Yet diabetes has proven a stubborn foe. One of the first attempts of ADA was to outline the main steps for classification and diagnosis of T2DM and other categories of glucose intolerance⁶.

The first annual meeting of the EASD took place at the same time with papers in French, German and English, it was not until 1970-1971 that English was adopted as the single language. Obviously, the association has grown enormously since that time with more than 8000 members, a monthly journal with a high and rising impact factor, and a vast annual meeting. The annual meeting remains the highlight of the European diabetes calendar⁷.
3 Essence of the guidelines

Taking in mind the distinctive approaches for treatment of diabetes and the different point of view for management of the disease, the ADA and the EASD developed recommendations for antihyperglycemic therapy in nonpregnant adults with type 2 diabetes.

The first consensus algorithm for diabetes treatment of ADA and EASD was arisen in 2006. The objective of this consensus were active diabetes control, maintenance of glycated haemoglobin (HbA1c) <7% and offering of different therapeutic alternatives for effectiveness, price and safety point of view. The key moments in the consensus algorithm ADA / EASD 2006 include:

- Recommendation for addition of metformin at the first step after diagnosis, together with changes in lifestyle and diet
- Shortage of target values of HbA1c < 7.0% offered three options for the second step:
  1. The most effective - adding basal insulin
  2. The most inexpensive - add sulphanyl urea product
  3. The most safe in terms of hypoglycaemia
- Adding glitazone

In inability to reach HbA1c < 7.0% consensual algorithm ADA/EASD 2006 offers various options for further steps like the application of the so called triple per os, drug therapy or intensification of insulin therapy. These approaches are recommended due to the increased efficiency proven and smaller costs for therapy.

HbA1c is recommended to be monitored every three months up to approach the target value, and then once every six months.

The second consensus algorithm of ADA and EASD was commenced in 2008. The main characteristics were: active control of diabetes and supply of two groups of drug therapy, one of well-established and widely used medicines, and another of the not so well proven therapies using new drugs groups.

The key moments in the consensus algorithm ADA / EASD 2008 included following changes:

- Only metformin, sulfonylurea and insulin are released as well proven drugs;
- Entering new group of medicines like GLP-1 analogues and adding them to metformin only if it is proven that they do not cause hypoglycemia, leading to weight loss, but can cause nausea and vomiting;
- Pioglitazone - the representative of the thiazolidinediones remains therapy leader to hypoglycemia, as added to metformin, but its application can cause bone loss and heart failure.

In 2012 was issued the new ADA/EASD guidance for the treatment of type 2 diabetes mellitus. The reasons for the creation of a new guideline include:

- Increase in the number and types of antihyperglycaemic medicinal products;
- New data from cost-effectiveness studies, comparing the benefits against the risks of tight glycemic control;
- Increasing in the research on personalized approach to treatment and care oriented patient

Individualized approach, concerning the goals of the glycemic control include: HbA1c < 7.0%; in young patients without complications HbA1c is targeted to 6.0 - 6.5%; in adults and comorbid patients prone to hypoglycemia HbA1C has to be in the range 7.5 - 8.0%.

In determining glycemic control for each patient is taken into account the behavior of the patient and his motivation for adherence, the expected risk of potential hypoglycemia and other adverse reactions, duration of diabetes, life expectancy, comorbidities, established vascular complications and other.

The key moments in the 2012 ADA/EASD treatment recommendations for type 2 diabetes include:

- Glycemic targets and glucose lowering therapy should be individualized;
- Diet, exercise and training are the foundation of any therapeutic program;
- If there are no contraindications metformin has to be accepted as medicinal product for the first choice
- If metformin does not lead to achievement of the targeted goals, a combination therapy with 1-2 oral and / or injectable product is recommended with a strict monitor for side effects.

Diabetes is a progressive disease and most patients require insulin, either alone or in combination with another antihyperglycemic medicinal product in order to maintain the levels of blood sugar rate. All treatment decisions should be taken with the active participation of the patient, focusing on the preferences, needs and value. A major focus on anti-hyperglycaemic therapy should be to reduce cardiovascular risk.
ADA/EASD Consensus Algorithm for Hyperglycemia Management in T2DM

Fig 1: The 2006 ADA/ EASD algorithm

Fig 2: Elements of decision making according to 2008 ADA/ EASD algorithm
4 Conclusions

For the achievement of good treatment or management for patients with T2DM, it is very important to assess the positive and negative elements of the standardized guidelines. That is why the changes in the ADA/EASD guidelines show such kind of approach for optimization the drug and diet regimen. The key issues in the creation of subsequent ADA/EASD consensus recommendations for the treatment of type 2 diabetes mellitus are:

I. The impact of major research studying the relationship between incretin therapy and cardiovascular diseases
II. The location of the new classes of drugs to treat T2DM, for example SGLT-2 inhibitors
III. The application of anti-obesity drugs and bariatric surgery (weight loss surgery) for improvement patients’ condition.

5 Competing interests

No conflict of interests is evident.

6 Author’s contributions

Nikola Kolev: data collection; Valentina Petkova: work idea, manuscripts preparation and submission; Kalina Andreevska and Milen Dimitrov: manuscript preparation, Guenka Petrova: general supervision.

7 References