EDITORIAL

Diabetes Management

Does our understanding of blood pressure targets in diabetics need rethinking?

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"It can be argued that conventional blood pressure measurement has a poorer prognostic significance compared with other strategies that provide information on blood pressure variability during a certain period of time."

For many years the main strategy in the treatment of arterial hypertension has been based on blood pressure targets. Those targets are the levels of blood pressure considered as the goals to be achieved with therapy because they are thought to represent the values below which the greatest clinical benefit of antihypertensive treatment is obtained.

During recent years the traditional target of less than 140/90 mmHg was modified by 'the lower, the better' strategy, based on recommendations from many clinical guidelines suggesting that blood pressure should be decreased as much as tolerated. The intensified treatment approach was especially recommended for people with diabetes, in whom a stricter target of less than 130/80 mmHg was usually defined based on the idea that the combination of both conditions will possibly hasten the development and progression of complications [1]. However, all of these targets were based on observational or indirect data, and supported by scant evidence from prospective randomized trials [2].

Besides some concerns regarding the possibility of a J-curve phenomenon [3], 'the lower, the better' strategy was formally questioned in a Cochrane meta-analysis of randomized trials that showed no clinical benefits in mortality or cardiovascular morbidity when a lower blood pressure target was compared with the traditional target in the general population of individuals with hypertension [4]. Similar results have been obtained when the comparison was restricted to individuals with diabetes, with the only exceptions of a significant but quantitatively small reduction in strokes and a significant increase in other serious adverse events associated with a lower systolic target [4–7].

Although not designed to test outcomes associated with different blood pressure targets, the results of some randomized trials including people with diabetes or

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prediabetes are in line with the previously mentioned data, because achieving a lower blood pressure was not associated with a reduction in cardiovascular outcomes [8,9]. Finally, an observational analysis did not show any difference in cardiovascular outcomes when systolic blood pressure was maintained below 130 mmHg in patients with diabetes and coronary artery disease [10].

It can be argued that conventional blood pressure measurement has a poorer prognostic significance compared with other strategies that provide information on blood pressure variability during a certain period of time. Unfortunately, there is no available evidence from randomized outcome studies evaluating blood pressure targets with ambulatory blood pressure measurements.

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On the other hand, some trials have shown further benefits in clinical outcomes in normotensive high-risk patients, including diabetics, treated with antihypertensive drugs at fixed dosages without adjustments to achieve a specific blood pressure target [11–14]. From that perspective, when antihypertensive therapy is only guided to achieve a predefined target we are probably over-treating many people while under-treating some high-risk patients. For that reason, several groups have recommended to use blood pressure-lowering drugs based on the global cardiovascular risk and not just on the blood pressure itself [15,16]. Although very logical from an epidemiological perspective, this interesting alternative approach has the well-known important limitations of all methods used to estimate future risk. Furthermore, the appropriateness of a fixed dose strategy has never been compared with the traditional approach of aiming for a predefined blood pressure target.

Another interesting consideration relates to the fact that elevated blood pressure can be considered as a marker of vascular disease. Given the complexity of the functional and anatomical changes that occur at the vascular level during the atherosclerotic process, an aggressive reduction in blood pressure does not imply that the already established vascular abnormalities will be reversed. As a consequence, a very strict blood pressure control may not decrease the risk of cardiovascular or cerebrovascular events once the vascular and organ damage disease is advanced. For those reasons, it has been suggested an early start of antihypertensive treatment as an alternative approach to a strategy guided by predefined blood pressure targets [17]. In order to be effective, practical and affordable, this interesting alternative strategy would necessarily require at least two essential complements. In first place, it will need a therapeutic resource proven to delay the development of the vascular atherosclerotic lesions from the early stages of the process, independently of the blood pressure. It will also need a very sensitive method to detect which of those individuals are at high risk, based not only on epidemiological factors but also on early markers of subclinical organ damage. Unfortunately, most of the available markers of asymptomatic organ damage are limited by cost, availability or lack of evidence on prognostic value of changes [15].

In summary, it is necessary to evaluate several concepts related to blood pressure targets, both for people with and without diabetes, because after several decades of clinical use we still do not know many basic practical principles about them. We do not know what the optimal blood pressure target is. It is not known whether a lower target is appropriate in people at high risk of stroke. Given that systolic blood pressure seems to have a greater prognostic value, it has not been defined if a diastolic target is also needed. Furthermore, it is not even known if therapy should be guided by blood pressure targets or by an alternative approach. There is even the possibility of a combined approach: a general target at the population level plus a fixed dose strategy in selected patients clearly defined as high risk.

The most important contribution of this controversy has probably been the general recognition that the simplistic approach of just treating to a lower blood pressure target does not seem to be the best strategy. Therefore, a great amount of properly planned research is needed in order to obtain adequate recommendations supported by solid scientific evidence, not by assumptions, even if they seem logical. In the meantime, based on the best available evidence, with the exception of the frail elderly, it seems reasonable to use a blood pressure target of less than 140/90 mmHg.

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