

The results of the clinical trials in hypertension: unquestionable benefits and limits

Abstract

Lowering blood pressure is the main target to achieve for reducing cardiovascular complications in hypertensive patients. Large-scale trials have been conducted to identify the best way to do it by using drugs and preventive measures. Although these studies give some benefits in term of control of the elevated blood pressure, some limits still exist because a very effective treatment useful for all individuals has been not found.

Keywords: clinical trials, hypertension, hypertension-related disorders, cardiovascular complications

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Aurelio Leone^{1,2,3}
¹Fellow of the American Society of Hypertension (FASH), USA

²Fellow of the Royal Society for Promotion of Health (FRSPH), UK

³Editor-in-Chief, Journal Cardiology & Current Research, USA

Correspondence: Aurelio Leone, Via Provinciale 27, 19030 Castelnuovo Magra, Italy, Email: reliol@libero.it

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Introduction

Current opinion is the main trials analyzing the results obtained in the treatment of hypertension by administering different anti-hypertensive drugs and preventive measures show no unanimous conclusion with regards to the behavior to be followed. It is worth noting that hypertension is a clearly established major cardiovascular risk factor^{1,2} and some clinical trials have shown the benefits obtained by lowering blood pressure below 140/90mmHg³ or more. In addition, there would be evidence that no control of the elevated blood pressure is the open-door to the development of cardiovascular disorders, often accompanied to organ damage.³⁻⁵

Starting from this assumption, there is evidence that blood pressure control is the main target of anti-hypertensive measures to prevent and, otherwise, reduce the cardiovascular complications of the hypertensive individuals.

Large-scale trials and obtained results

Large-scale trials to achieve a satisfactory control of blood pressure are continuously in progress and the large majority of them include both hypertension and hypertension-related disorders,⁴ which have been analyzed isolated or together. However, the discussion of all the trials, indeed, very numerous, is not the purpose of this review, whose target is to emphasize some results obtained and, also, the existing limits in their estimate. Essential hypertension, coronary artery disease in both hypertensive subjects and subjects without hypertension, rate and characteristics of stroke of the hypertensive individuals affected, and kidney alteration due to elevated blood pressure, including malignant hypertension are the main topics investigated by large-scale clinical trials.

With regards to the clinical trials analyzing the outcome of hypertension and possible development of heart failure, and among these COPENICUS⁶ seems to be one of the most emphasized, the unanimous conclusion is as major is blood pressure lowering anyway obtained as minor is the adverse effects of elevated blood pressure to determine cardiac complications. Generally, these trials investigated subjects, in a large majority, with hypertension, but also individuals with cardiovascular risk where elevated blood pressure did not show to be a determinant factor. The evidence clearly showed a major incidence of complications often accompanied with heart failure development in the hypertensive individuals.

PROGRESS⁷ is one of the most significant trial, which analyzed the relationship between hypertension and stroke. The study individuals enrolled were more than 6,000, a largest number for a statistically reliable estimate. Obtained results recommended, in this case too, a significant reduction in blood pressure to control the outcome of cerebrovascular disorders. Coronary heart disease, including post-myocardial infarction, and hypertension have been widely investigated primarily by some trials.^{6,8-12} However, evidence indicated that also these trials enrolled hypertensive or no patients in the protocol study. The control of blood pressure was responsible of reduced cardiovascular events.

A great enthusiasm caused a very recent antihypertensive trial¹³ known as SPRINT, which analyzed a very intensive treatment of elevated values of blood pressure versus a standard approach to control this parameter. SPRINT In conclusion, targeting a systolic blood pressure of less than 120mm Hg, as compared with less than 140mm Hg, in patients at high risk for cardiovascular events, but without diabetes resulted in lower rates of fatal and nonfatal major cardiovascular events and death from any cause. However, some adverse events occurred significantly more frequently with the lower target.

Conclusion

In conclusion, did the antihypertensive clinical trials show benefits and/or limits? A double approach can be documented. It is worth noting that among the benefits identified by analyzing the antihypertensive trials undoubtedly a clear concept emerges: lowering blood pressure is the major target to be reached, and blood pressure values of 120/80mmHg or below should be maintained, if possible, particularly when other cardiovascular risk factors, primarily diabetes mellitus, affect the hypertensive individuals. Therefore, lowering blood pressure, anyway obtained, is the major determinant to achieve for reducing the rate of cardio- and cerebrovascular complications resulting from hypertension.¹⁵⁻¹⁸

On the contrary, the more evident limit hasn't found a drug able to lowering blood pressure in all the individuals treated since each subject can respond differently to the tested drug. Therefore, a personalized therapy, often difficult to establish, is to give to the hypertensive patient. As aforesaid, a large majority of large-scale trials does not identify a common drug lowering blood pressure significantly in all

individuals. Therefore, the hypertensive patient needs to be addressed towards the most effective antihypertensive drug for himself and, then, use the same continuously at the time, even if the cost of the treatment could be markedly more elevated when compared to other antihypertensive substances at a less cost, but unable or scarcely effective to reduce blood pressure.^{19–22}

Based on this assumption, my personal opinion is the large-scale trials enrolling the largest number of hypertensive individuals still need to establish how to control blood pressure independently by the cost-benefit ratio, which is a parameter carefully taken into account in the public health programs.²³

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Conflicts of interest

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