Doctor

PEARLS

Practical Evidence About Real Life Situations

Beta-blockers and thiazides are effective but have different blood pressure lowering patterns

Clinical question

How effective are beta-blockers as second-line therapy for primary hypertension?

Bottom line

Addition of a beta-blocker to diuretics or calcium-channel blockers reduced blood pressure (BP) by 6/4 and 8/6mmHg at doses of 1 and 2 times the manufacturer's recommended starting dose. Beta-blockers (at 1 to 2 times) the starting dose reduced heart rate by 10 beats/min. When the BP lowering effect of beta-blockers in this review was compared to that of thiazide diuretics from a previous review,[1] second-line beta-blockers reduced systolic BP to the same extent as second-line thiazide diuretics, but reduced diastolic BP to a greater degree.

Caveat

There was not a statistically significant increase in withdrawals due to adverse effects shown for beta-blocker use but this was likely due to the lack of reporting of this outcome in 35% of the included randomised controlled trials. The duration of the trials was short, ranging from 3 to 12 weeks, with an average of 7 weeks.

Context

The different effect on diastolic BP means beta-blockers have little or no effect on pulse pressure, whereas thiazides cause a significant dose-related decrease in pulse pressure. This difference in the pattern of BP lowering with beta-blockers as compared with thiazides might be the explanation for the fact that beta-blockers appear to be less effective at reducing adverse cardiovascular outcomes than thiazide diuretics, particularly in older individuals. Although factors independent of BP lowering may contribute to the reduction in mortality and morbidity associated with antihypertensive drugs, BP lowering ability remains an important factor. By combining antihypertensive agents that possess different mechanisms of action, each component drug can potentially neutralise or minimise counter-regulatory mechanisms triggered by the other, and thus help to further lower BP.

Cochrane Systematic Review

Chen JMH et al. Blood pressure lowering efficacy of beta-blockers as second-line therapy for primary hypertension. Cochrane Reviews 2010, Issue 1. Article No. CD007185. DOI: 10.1002/14651858.CD007185.pub2.
This review contains 20 studies involving 3744 participants

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Further references

1. Chen JMH et al. Cochrane Reviews 2009, Issue 4. Article No. CD007187. DOI:10.1002/14651858.CD007187.pub2.

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