Reappearance of the J-Shaped Curve

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o soon after we believed that the issue had been resolved concerning the existence of a J-shaped curve relationship between myocardial infarction mortality and the level of blood pressure associated with antihypertensive therapy, this “curve” phenomenon has reappeared. The relationship was said to exist when a higher mortality rate from myocardial infarction was found in hypertensive patients with diastolic pressures \(<85 \text{ mm Hg}\) which appeared to be greater than in those patients whose diastolic pressures were between 85 and 90 mm Hg. The steeper and higher aspect of the J-curve was demonstrated when pretreatment pressures exceeded 90 mm Hg. This report was confirmed by subsequent retrospective analyses. However, the issue seemed to have been resolved until several reports appeared indicating that hypertensive or normotensive patients who were elderly or who had ischemic heart disease failed to demonstrate such a J-shaped curve with treatment even if diastolic pressure was \(<90 \text{ mm Hg}\). Antihypertensive treatment. The investigators had excluded patients under treatment than in those patients with whom pressure was of the lower stratum, stroke incidence was greater. However, we do not know whether the low pressures were actually induced by antihypertensive treatment. The investigators had excluded isolated systolic hypertension as one explanation, but they did not totally exclude the possibility of selection bias or low pressures resulting from interim occult cardiovascular damage which could have predisposed those patients to stroke. It would have been helpful to see whether the excess of strokes at the lowest stratum of arterial pressure persisted in those patients under treatment than in those patients with whom other coexistent cardiovascular diseases were excluded. It is clear that the only way to resolve this important question is to conduct a prospective trial in which arterial pressure is lowered by treatment to different goal values in those patients with and without other cardiovascular conditions which could predispose them to stroke. Nevertheless, the authors have presented a very important consideration that merits publication, subsequent discussion, and further study.

Furthermore, this issue raises a very important concern for the practicing physician: given the identification and evaluation of a patient with hypertension as defined by the criteria stated in the Sixth Joint National Committee (JNC-6) report, particularly in those patients who may be predisposed to stroke, what should be the therapeutic goals? Perhaps this question has already been answered in JNC-6 and in the recent guidelines of the World Health Organization/International Society of Hypertension with their respective recommended therapeutic goal pressures. However, still demanding more clear-cut criteria is the issue of the immediate treatment of the hypertensive patients who present clinically with alarmingly high blood pressures and an acute stroke. JNC-6 cogently recommends that “Patients with acute ischemic stroke who are treated with fibrinolytic agents require careful blood pressure monitoring, especially over the first 24 hours after starting treatment.” The report goes on to say that those patients with systolic or diastolic pressures of 180 and 105 mm Hg or greater, respectively, “may be controlled with intravenous agents with careful monitoring for worsening of neurological status.” However, these recommendations are not concordant with the overall recommendation of reducing blood pressure in patients with hypertension whose pressures are \(>140 \text{ mm Hg}\) or \(90 \text{ mm Hg}\) with less definite symptoms of stroke. Moreover, the recommendations are at some variance from those advanced in the neurological literature, American Heart Association (AHA) advisories, and in the package insert approved by the Food and Drug Administration for thrombolytic agents. These reports identify the levels of pressure at which antihypertensive therapy should be initiated in the patient with stroke (eg, systolic and diastolic pressures \(>220\) and \(130 \text{ mm Hg}\), respectively, in the AHA advisory). The recommended levels avoid the inconsistencies of the potential J-shaped curve; but they are less clear in defining the safest lower level of pressure elevation that requires therapeutic reduction or how aggressively arterial pressure should be lowered in this acute situation.

It is apparent that treatment of hypertension has been dramatically effective in preventing stroke. It is likewise clear that careful identification, evaluation, and treatment of patients with hypertension need intensive emphasis in order to reverse the recent decrease in national statistics for identifying and effectively treating patients with hypertension and to prevent severe disease outcomes including stroke. The present report in this journal brings to our attention the...
necessity of identifying the lower levels of blood pressure elevation that demand treatment in order to prevent stroke. If the answer is not available, then the time is at hand for us to learn these levels so that the clinician is not confused by a critical therapeutic pitfall. Nevertheless, these considerations should not deter physicians from seeking out and treating patients with hypertension to prevent strokes in elderly patients who predominantly have isolated systolic hypertension. This condition has been shown to be benefited by treatment in several prospective and randomized trials.4,11–14

References

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