Letter

Dosage Guidelines for Pediatric Hypertension

The comprehensive review of the clinical aspects of pediatric hypertension by Lieberman in the November 1994 issue of the Mayo Clinic Proceedings (pages 1098 to 1107) contains some dosage guidelines for medications used in the treatment of hypertensive emergencies that bear analysis, specifically those for diazoxide and labetalol hydrochloride. The risks associated with bolus diazoxide therapy have been well described.1 The efficacy of "minibolus" doses (1 to 3 mg/kg) was first demonstrated in 1979,2 although the use of smaller doses in children was described by Boerth and Long in 1977.3 The dogma about the need for rapid bolus administration has been undermined by the demonstration of anti-hypertensive efficacy, even when the drug is administered as a continuous infusion.45 Several reviews on the management of hypertensive crises in adults mention only continuous infusion or frequent minibolus regimens.67 The data are convincing enough that the labeling in the Physicians' Desk Reference has been changed to reflect such information.

Experience with children is of course more limited. In a recent review of 110 children with hypertensive crisis treated at the Hospital for Sick Children in London between 1975 and 1980, 13 of 57 who had their blood pressure levels lowered rapidly (predominantly by using 3- to 5-mg/kg boluses of diazoxide) had hypotensive complications. In contrast, a group of 53 children treated with infusions of labetalol or nitroprusside experienced a gradual lowering of their blood pressure, and no hypotensive episodes occurred.8 Minibolus doses have also been advocated in a recent text on pediatric and adolescent hypertension.9

Labetalol, in either small boluses of 20 mg or a low-dose continuous infusion, has been shown to be effective in adults with hypertensive emergencies.10-11 Pediatric data are far more limited. In children, initial doses of labetalol as low as 0.25 mg/kg have been shown to be effective, although such patients subsequently received continuous infusions of doses ranging from 0.25 to 1.5 mg/kg per hour.11 The doses listed in the report from the Hospital for Sick Children were in the range of 1 to 3 mg/kg per hour.8 Our limited experience with labetalol in hypertensive neonates demonstrates that 0.15 mg/kg doses can be effective at decreasing blood pressure levels.12

Readers would be well advised to initiate antihypertensive therapy with use of the lower doses. The risks of hypotensive complications will be decreased, and the decline in blood pressure will be slower and more controlled.

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REFERENCES

The author replies

The letter from Dr. Morgenstern about emergency management of hypertensive crises in children provides useful comments and is appreciated.

The major point, which my article did not emphasize, is that, if a child is thought to have malignant hypertension, a physician with expertise in managing such a patient needs to be involved. With that caveat, the next major point is that the lowering of blood pressure should occur in a stepwise fashion. My goal is to achieve an asymptomatic state (from both hypertension and its treatment) within 4 to 6 hours (roughly a one-third decrease in both systolic and diastolic pressure). Unlike the British experience reported by Deal and colleagues,1 attaining a normal blood pressure level within 24 hours (during the period of 1975 to 1980) or 96 hours (during the period of 1980 to 1985) must be weighed in terms of risks and benefits. Because of early clinical experience at Childrens Hospital Los Angeles in combination with an awareness of complications in adults, my colleagues and I