Effects of Barbiturates on Blood Pressure in Lidocaine Hydrochloride Injected SHR

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A study was made of changes in blood pressure following administration of lidocaine HCl with or without barbiturates in spontaneously hypertensive rats (SHR) and a closely related strain of Kyoto normotensive Wistar rats (NWR), 15–25-week-old, weighing 250–350 Gm in males and 200–300 Gm in females. Systolic blood pressure was measured with the plethysmographic tail method indirectly. It evidently increased after i.p. administration of lidocaine HCl at a dose over 50 mg/Kg of body weight in SHR and NWR. Influences of 9 kinds of barbiturates (barbital, phenobarbital, mephobarbital, amobarbital, pentobarbital, secobarbital, hexobarbital, thiopental, and thiamylal) orally pre-medicated were studied for 8 hours after administration of lidocaine HCl. Dosage of the derivatives was within a limit which does not develop lethargy. Phenobarbital and mephobarbital proved to be most effective. Hexobarbital and thiopental were effective within 3 hours after administration of lidocaine HCl. Amobarbital and secobarbital were slightly effective. Barbital, pentobarbital and thiamylal were not effective in resisting an increase of blood pressure. Primidone used as an anticonvulsant clearly inhibited a systolic blood pressure increase and convulsion following administration of lidocaine HCl. These effects were not different in SHR and NWR. An investigation was also performed on lethargic and anticonvulsive actions of these barbiturates in male mice, 5-week-old, weighing ca. 20 Gm. Phenobarbital and mephobarbital showed higher ED₅₀ of lethargic action and more effective anticonvulsive action to lidocaine HCl than the other 7 kinds of barbiturate. It was concluded that barbiturates with lower lethargic and higher anticonvulsive action were effective to prevent an increase of blood pressure with lidocaine in SHR and NWR.