Blood Pressure Monitoring

2.2 Reverse Dipping Blood Pressure Pattern is Characterized by a Marked Adrenergic Overdrive

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Introduction. Hypertensive patients display an increased sympathetic drive, whose magnitude is similar in dippers and non-dippers. No information exists, however, as to whether this is the case in reverse dipping hypertensive patients.

Methods. In 10 untreated essential hypertensive patients (age: 48.8 ± 2.9 years, mean $\pm$ SEM) which at 24-hour ambulatory blood pressure (BP) monitoring were characterized by a 0% decrease in nocturnal BP and by a ratio of the mean night-time to day-time BP and thus classified as reverse dippers, we measured muscle sympathetic nerve traffic (MSNA, microneurography), heart rate (HR, EKG) and beat-to-beat arterial BP (Finapres) at rest and during baroreceptor deactivation and stimulation (vasoactive technique). The same measurements were performed in 16 normotensive subjects, 28 dippers, 13 extreme dippers and 16 non-dippers classified according to standard criteria. All patients displayed reproducible BP patterns at 2 different ambulatory BP sessions.

Results. The 4 groups of hypertensive patients, which did not differ by gender, 24-hour or daytime BP, body mass index and metabolic variables, displayed, as expected, significantly different nocturnal BP profiles. Reverse dippers were characterized by resting MSNA values significantly greater than those seen not only in normotensive controls (69.7 ± 3.1 vs 43.7 ± 3.0 bs/100hb, $P < 0.01$) but also in non-dippers, dippers and extreme dipper hypertensive patients as well (69.7 ± 3.1 vs 56.9 ± 2.8 , 52.5 ± 2.2 and 48.4 ± 2.8 bs/100hb respectively, $P < 0.01$ for all). Compared with normotensive subjects, baroreflex HR control was similarly impaired in all the 4 hypertensive states, while baroreflex-MSNA control was superimposable.

Conclusions. Thus the reverse dipping phenomenon is characterized by a sympathetic activation greater for magnitude than that seen in the other conditions characterized by an abnormality in night-time BP profile. It is likely that central rather than reflex factors are responsible for the adrenergic over-activation.