Failure to decrease blood pressure (BP) normally during nighttime (non-dipping) in hypertension is associated with higher cardiovascular morbidity and mortality. In addition, non-dipping BP is associated with increased platelet activity and inflammatory response; however, there has been no study to evaluate the relationship of non-dipping BP to indices of platelet activity and inflammation in uncontrolled hypertensive patients. In the present study, hypertensive subjects with uncontrolled office BP were firstly divided into three groups: 84 subjects with white coat effect and 365 subjects with true uncontrolled hypertension. Then, true uncontrolled hypertensive patients were divided into two groups: 158 patients with dipping and 207 patients with non-dipping. Mean platelet volume (MPV), uric acid (UA), γ-glutamyltransferase (GGT), C-reactive protein (CRP), and high-sensitivity CRP (hs-CRP) levels were studied. The general characteristics and risk factors for coronary artery disease (CAD) of the study population were similar among the groups. MPV, UA, GGT, CRP, and hs-CRP levels were significantly higher in non-dipper group than both dipper and white coat effect groups, and were significantly higher in dipper group than in white coat effect group (MPV: 9.1 ± 1.3, 8.7 ± 1.1, and 8.0 ± 0.9 fl; UA: 6.9 ± 1.2, 5.9 ± 1.4, and 4.1 ± 0.8 mg/dL; GGT: 38.9 ± 11.1, 33.6 ± 14.9, and 25.2 ± 9.2 U/L; CRP: 7.1 ± 2.4, 6.2 ± 1.9, and 3.9 ± 0.8 mg/dL; hs-CRP: 3.8 ± 1.5, 3.3 ± 1.2, and 2.0 ± 0.6, non-dipper, dipper, and white coat effect groups, respectively, all p values <0.01). All study parameters strongly correlated with each other. In conclusion, in hypertensive patients with uncontrolled office BP, presence of non-dipping BP is associated with increased platelet activity and inflammation, which can be one of the underlying plausible mechanisms of non-dipping BP status.