The aim of the study was to evaluate the effect of estrogen replacement therapy (ERT) on blood pressure (BP) assessed by both office and 24-h ambulatory blood pressure monitoring (ABPM). Moreover, we studied variations in biochemical and hormonal parameters that may represent possible mechanisms responsible for the BP effect.

Thirty-five postmenopausal (mean age: 55 ± 4 years) stage I hypertensive women not receiving antihypertensive treatment were studied. Patients were randomized to ERT (estradiol 50 mg plus medroxyprogesterone 5 mg) or no treatment (control group) for a 12-week period. At both baseline and at the end of treatment period we measured BP in the office and by 24-hour ABPM, biochemical parameters, plasma renin activity (PRA), plasma aldosterone and norepinephrine, as well as intracellular sodium concentration [Nai] and intra platelet free calcium concentration [Ca2+].

The main results showed that ERT significantly (p<0.05) decreased 24-hour, but not office systolic and diastolic BP. ERT also decreased plasma aldosterone levels and intrathyrocyte sodium concentration.

In conclusion, treatment with ERT in hypertensive postmenopausal women significantly decreases BP, assessed by 24-hour ABPM. A decrease in RAS activity and in intracellular sodium concentration may represent possible responsible mechanisms.

Key Words: Progesterone, Nitric oxide, Membrane fluidity