

PERBEDAAN HASIL SYMPATHETIC SKIN RESPONSE ANTARA PASIEN HIPERTENSI DAN TANPA HIPERTENSI SERTA HUBUNGANNYA DENGAN HIPERTENSI

Dasitya Kurnia Rachman*, Jimmy Eko Budi Hartono, M. I. Widiastuti, Endang Kustiowati, Herlina Suryawati, Rahmi Ardhini

*Residen Neurologi, Fakultas Kedokteran Universitas Diponegoro / RSUP Dr. Kariadi Semarang

**Departemen Neurologi, Fakultas Kedokteran, Universitas Diponegoro/RSUP Dr. Kariadi, Semarang, Indonesia

ABSTRAK

Pendahuluan: Hipertensi berhubungan dengan perubahan regulasi sistem saraf otonom. *Sympathetic Skin Response* (SSR) merupakan pemeriksaan neurofisiologi noninvasif yang merefleksikan respons sudomotor simpatis. Penelitian ini bertujuan membandingkan hasil SSR pada pasien hipertensi dan tanpa hipertensi serta menganalisis hubungannya dengan status hipertensi.

Metode: Penelitian observasional analitik dengan desain potong lintang dilakukan pada 100 pasien yang menjalani pemeriksaan elektromiografi di Clinical Diagnostic Center RSUP Dr. Kariadi Semarang pada Maret–Juni 2026. Parameter SSR berupa latensi dan amplitudo tangan serta kaki dianalisis menggunakan uji Mann–Whitney, korelasi Spearman, dan korelasi parsial dengan pengendalian tinggi badan, berat badan, tekanan darah sistolik, dan diastolik.

Hasil: Kelompok hipertensi menunjukkan latensi kaki dan tangan lebih panjang dibandingkan kelompok tanpa hipertensi ($830,38 \pm 603,59$ vs $449,92 \pm 525,25$ ms dan $1028,06 \pm 595,41$ vs $661,53 \pm 588,40$ ms), serta amplitudo kaki dan tangan lebih tinggi ($130,79 \pm 114,78$ vs $72,08 \pm 102,72$ μ V dan $278,09 \pm 166,64$ vs $153,73 \pm 125,02$ μ V). Seluruh parameter berbeda bermakna ($p < 0,05$). Status hipertensi berkorelasi dengan seluruh parameter SSR ($\rho = 0,254 - 0,487$; $p < 0,05$). Setelah pengendalian faktor perancu, sebagian hubungan tetap bermakna.

Diskusi: Hipertensi berhubungan dengan perubahan respons sudomotor yang tercermin pada parameter SSR tangan dan kaki. Variasi hubungan setelah pengendalian faktor antropometri dan hemodinamik menunjukkan bahwa respons SSR dipengaruhi oleh berbagai faktor dan tidak merepresentasikan aktivitas simpatis kardiovaskular secara langsung.

Kata kunci: hipertensi; *sympathetic skin response*; sistem saraf simpatis; latensi; amplitudo.

DIFFERENCES IN SYMPATHETIC SKIN RESPONSE BETWEEN PATIENTS WITH AND WITHOUT HYPERTENSION AND ITS ASSOCIATION WITH HYPERTENSION

Dasitya Kurnia Rachman*, Jimmy Eko Budi Hartono, M. I. Widiastuti, Endang Kustiowati, Herlina Suryawati, Rahmi Ardhini

*Neurology Resident, Faculty of Medicine, Diponegoro University/Dr. Kariadi General Hospital, Semarang, Indonesia

**Department of Neurology, Faculty of Medicine, Diponegoro University/Dr. Kariadi General Hospital, Semarang, Indonesia

ABSTRACT

Introduction: Hypertension is associated with alterations in autonomic nervous system regulation. Sympathetic Skin Response (SSR) is a non-invasive neurophysiological test that reflects sympathetic sudomotor function. This study aimed to compare SSR findings between patients with and without hypertension and to analyze the association between hypertension status and SSR parameters.

Methods: An analytical observational study with a cross-sectional design was conducted in 100 patients undergoing electromyography at the Clinical Diagnostic Center, Dr. Kariadi General Hospital, Semarang, from March to June 2026. Hand and foot SSR were assessed using latency and amplitude parameters. Data were analyzed using the Mann–Whitney test, Spearman correlation, and partial correlation controlling for height, body weight, systolic blood pressure, and diastolic blood pressure.

Results: The hypertensive group had longer foot and hand latencies than the non-hypertensive group (830.38 ± 603.59 vs 449.92 ± 525.25 ms and 1028.06 ± 595.41 vs 661.53 ± 588.40 ms, respectively), as well as higher foot and hand amplitudes (130.79 ± 114.78 vs 72.08 ± 102.72 μ V and 278.09 ± 166.64 vs 153.73 ± 125.02 μ V, respectively). All parameters differed significantly ($p < 0.05$). Hypertension status was significantly correlated with all SSR parameters. After adjustment for potential confounders, several associations remained significant.

Discussion: Hypertension is associated with altered sudomotor responses as reflected by hand and foot SSR parameters. The variation in these associations after adjustment for anthropometric and hemodynamic factors suggests that SSR is influenced by multiple factors and does not directly represent overall cardiovascular sympathetic activity.

Keywords: hypertension; sympathetic skin response; sympathetic nervous system; latency; amplitude.