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Renal Failure and Hypertension

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座長：吉原 史樹 (国立循環器病研究センター 高血圧・腎臓科)

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Arterial Pressure Volume Index Predicts the Presence and Progression of Renal Insufficiency

中島 啓介<sup>1</sup>、山田 亘<sup>1</sup>、河合 慧<sup>1</sup>、眞壁 英仁<sup>1</sup>、五十嵐 巖<sup>1</sup>、  
吉野 利尋<sup>1</sup>、芦田 和博<sup>1</sup>

1:聖隷横浜病院 心臓血管センター内科

Backgrounds : Blood pressure monitoring system (NAS-1000®) provides faster, easier and non-invasive measurement of vascular stiffness, compared to conventional methods. It was reported that arterial velocity pulse index (AVI) and arterial pressure volume index (API) reflect the central and peripheral vascular stiffness respectively. Renal vascular resistance (resistive index [RI]) measured by Doppler ultrasonography is a good predictor for the presence and progression of renal insufficiency. Whereas, it requires sonographic skill for the measurement. The aim of this study was to assess whether those new vascular indices could predict renal vascular resistance. Methods : From Apr 2016 to Sep 2016, 65 consecutive patients who had suspected renal artery disease were evaluated by Doppler ultrasonography to measure RI. The patients with renal artery stenosis were excluded. AVI and API were measured using NAS-1000® in sitting position. Results : RI was positively correlated with API ( $r=0.48$ ,  $p<0.001$ ), age ( $r=0.44$ ,  $p=0.001$ ) and eGFR ( $r=0.38$ ,  $p=0.005$ ). Multivariate regression analysis showed that API was an independent predictor for RI ( $p=0.006$ ). Conclusion : A new vascular stiffness index, API could predict renal vascular resistance.

[Keywords] renal circulation / atherosclerosis