

## Impacts of hypertension and diabetes mellitus on arterial stiffness

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**Background and Objectives :** Arterial stiffness measured by pulse wave velocity (PWV) is known as a surrogate marker of atherosclerosis. The aim of this study was to investigate the impacts of hypertension (HT) and diabetes mellitus (DM) on arterial stiffness. **Methods :** A total of 451 patients without history of atherosclerotic coronary artery disease or peripheral vascular disease were divided into 4 groups: group I (Control group: 142 patients, 53.87±13.00 years old, 78 males), group II (HT group: 179 patients, 58.35±10.90 years old, 94 males), group III (DM group: 89 patients, 58.80±9.91 years old, 53 males), and group IV (HT and DM group: 41 patients, 62.14±9.48 years old, 26 males). PWV were measured using VP-2000 (Colins, Japan) and analyzed among the groups. **Results :** Heart-femoral PWV (hfPWV) were 899.65±200.35msec in group I, 977.11±199.16msec in group II, 915.25±233.79msec in group III, 1086.07±228.79msec in group IV. Brachial-ankle PWV (baPWV) were 1439.94±387.63msec in group I, 1546.59±468.10msec in group II, 1518.71±334.2msec in group III, 1601.34±366.25msec in group IV. hfPWV were significantly increased in group II or IV than in group I ( $P<0.001$ ), and group IV than in group II ( $p=0.003$ ) or group III ( $p=0.006$ ). However, PWV were not different between group I and III ( $p=0.71$ ), and group II and III ( $p=0.08$ ). BaPWV were significantly increased in group II than in group I ( $p=0.025$ ), and group IV than in group I ( $p<0.001$ ). However, baPWV were not different between group I and III ( $p=0.78$ ), group II and III ( $p=0.46$ ), and group II and IV ( $p=0.25$ ), and group III and IV ( $p=0.12$ ). **Conclusion** Our results suggested that HT more adversely affect on arterial stiffness than DM. HT and DM showed synergistic role in the deterioration of arterial function.

## Hypertensive Response to Exercise is associated with increased Arterial Stiffness in non-diabetic normotensive subjects.

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**Background :** In many previous studies hypertensive response to exercise (HRE) is associated with an increased incidence of chronic hypertension during follow-up. Recent studies revealed HRE is associated with hypertensive end-organ damage, cardiovascular morbidity and mortality and an exercise-induced acute cardiovascular event. However, few studies elucidated the cause of HRE might be related to arterial stiffness. so, We evaluate the relationship of HRE to arterial stiffness by pulse wave velocity. **Method :** The patients population includes 151 consecutive patients who are randomly selected with undergoing treadmill stress tesing between April 2000 to March 2005. Hypertensive response to exercise (HRE group:  $>210$  mmHg in males and  $>190$ mmHg in female) included 32 patients and normal response (control group) were 119 patients. We also assessed brachial BP and arterial stiffness by brachial-ankle PWV(ba PWV : VP-2000 pulse wave unit, Nippon Colin Ltd, Komaki City, Japan) **Results :** Table1. There was a significant positive correlation between in HRE and baPWV ( $R^2 = 0.29$ ,  $p = 0.001$ ) after adjusting for age, sex, systolic pressure and BMI. **Conclusion :** Hypertensive response to exercise is independently associated with increased arterial stiffness in patients with essential hypertension. Further studies to determine the prognostic significance of this finding is warranted **Acknowledgment:** This work was supported by a grant of Ministry of Health and Welfare, Republic of Korea (00-PJ6-PG5-23-0001)

	Control (N=119)	HRE (N=32)	P value
Age (years)	53.8±8.6	58.4±8.2	0.01
Sex (M/F)	58/61	16/16	NS
Peak SBP	215.7±17.4	174.9±18.6	<0.001
Peak DBP	96.5±15.6	93.4±10.6	0.03
Pulse rate	66.4±14.6	64.7±7.5	NS
BMI	25.4±2.8	25.8±2.9	NS
METs	12.7 ± 1.6	11.6 ± 1.7	NS
Ba PWV	1434±26	1606±34	0.004