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PLASMA LEVELS OF B-TYPE NATRIURETIC PEPTIDE IN PATIENTS WITH ESSENTIAL HYPERTENSION ARE INFLUENCED BY LEFT VENTRICULAR MASS AND DIASTOLIC FUNCTION

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Plasma B-type natriuretic peptide (BNP) levels are raised in patients with essential hypertension and normal systolic function. We hypothesised that this may be due to left ventricular hypertrophy or diastolic dysfunction, both of which commonly occur in hypertension.

Echocardiography was performed on 44 hypertensive patients without any symptoms of heart failure (25 men, 19 women; 50±14 years; diastolic pressure, 94.7±8.7 mmHg; left ventricular ejection fraction, 62±9%). Plasma BNP concentration at the time of echocardiography correlated with systolic blood pressure ($r=0.31$, $p=0.04$), diastolic blood pressure ($r=0.36$, $p=0.01$) and left ventricular mass index (LVMI)($r=0.34$, $p=0.03$). Half of the patients had abnormal Doppler transmitral flow ($E/A<1$) and a higher median plasma BNP concentration compared to those with $E/A \geq 1$ (12.9 vs 5.9 pmol/L, $p=0.006$). Plasma BNP level correlated with E/A ratio ($r=-0.46$, $p=0.009$) and isovolumic relaxation time ($r=0.48$, $p=0.04$). Multiple regression analysis showed that E/A ratio and LVMI accounted for 44% of the variance in plasma BNP, independent of age and blood pressure.

Our results suggest that the plasma BNP level in hypertension is influenced by left ventricular mass and diastolic function independently, and asymptomatic diastolic dysfunction may increase the plasma BNP level.

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HpaII POLYMORPHISM IN THE ATRIAL NATRIURETIC PEPTIDE GENE IN PATIENTS WITH ESSENTIAL HYPERTENSION

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A two-allele polymorphism in intron 2 of the human atrial natriuretic peptide gene identified by the restriction enzyme HpaII has been reported to be associated with hypertension in African Americans. We investigated if there is a similar association in Hong Kong Chinese. We recruited 93 subjects, 43 of whom were patients with essential hypertension and 50 were normal healthy controls. DNA was extracted from peripheral blood leucocytes and amplified by polymerase chain reaction with specific primers. PCR products were digested with HpaII and analysed using polyacrylamide gel electrophoresis. The H1 (mutant) allele and the H2 (wild type) allele are characterised by the absence and presence of an HpaII site respectively. The frequencies of H1H1, H1H2 and H2H2 genotypes were as follows:

	n	H1H1	H1H2	H2H2
normal controls	50	0%	18%	82%
hypertensive patients	43	2%	16%	81%

The genotypic frequencies did not differ significantly between hypertensive patients and controls. The H1H1 genotype is present in only 2% of hypertensive patients (95% CI: 0% - 7%). This polymorphism is unlikely to be associated with a gene causing hypertension in the majority of hypertensive patients in Hong Kong.