EFFECT OF VITAMIN C ON AMBULATORY BLOOD PRESSURE (BP) IN OLDER HYPERTENSIVE AND NORMOTENSIVE PERSONS

M.D. FOTHERBY, J. WILLIAMS AND G. FERNS

University Department of Medicine for the Elderly and Chemical Pathology, The Glenfield Hospital, Leicester

Introduction

Epidemiological studies have shown an inverse association between vitamin C intake and BP although intervention studies have failed to confirm a hypotensive effect of vitamin C supplementation. Such studies have assessed BP changes on casual measurements only, which poorly reflect 'usual' BP levels and are highly variable. Study aim was to assess the effect of vitamin C supplementation on ambulatory BP in normotensive and hypertensive older subjects.

Methods

Newly diagnosed untreated HT and NT persons entered a double blind randomised cross-over trial of vitamin C 500 mg daily v placebo each for 3 months separated by a 1 week wash out period. BP monitoring and vitamin C levels was taken at baseline and the end of each phase.

Results

37 subjects (16 HT, 21 NT) completed the study. There was no significant period effect (p>0.3) or treatment period interaction (p>0.2). Daytime BP and vit C levels during placebo and vit C phases are shown below. (* p=0.025, † p=0.08, ‡ p<0.001)

<table>
<thead>
<tr>
<th>Placebo</th>
<th>Vit C</th>
<th>Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td>HT SBP</td>
<td>150±11</td>
<td>145±10</td>
</tr>
<tr>
<td>HT DBP</td>
<td>83±8</td>
<td>81±7</td>
</tr>
<tr>
<td>NT SBP</td>
<td>125±8</td>
<td>125±9</td>
</tr>
<tr>
<td>NT DBP</td>
<td>76±5</td>
<td>76±4</td>
</tr>
</tbody>
</table>

All Vit C μmol/l 50±15 88±23 32±21††

Night-time BP did not change between periods. Casual BP was similar during vit C v placebo phase: HT (149±14/88±10 v 152±15/87±10 mmHg); NT (135±14/85±6 v 135±12/86±7 mmHg).

Conclusion

Vitamin C supplementation sufficient to modestly elevate serum levels reduces daytime BP in elderly HT persons.

VITAMIN C SUPPLEMENTATION MAY INCREASE ORTHOSTATIC BLOOD PRESSURE (BP) FALLS IN ELDERLY PERSONS

S. EVANS, J. WILLIAMS*, G. FERNS* and MD FOTHERBY

University Department of Medicine for the Elderly and *Chemical Pathology, The Glenfield Hospital, Leicester LE3 9QP

Introduction

Vitamin C may lower BP but as with other antihypertensive therapy there is a consequent risk of increasing orthostatic BP fall. Study aim was to determine the effect of high dose vitamin C supplementation on orthostatic BP falls in elderly persons.

Methods

37 subjects aged 65-80 y both normotensive and hypertensive on no therapy took part in a double blind randomised controlled trial of vitamin C 500 mg daily versus placebo each for 3 months. Supine BP was taken 4 times and standing BP at 1,2,3 and 4 mins. Orthostatic BP was defined as supine minus the mean of standing BP at 1+2 minutes and 3+4 minutes and the lowest standing BP.

Results

37 subjects with baseline supine BP 149±15/86±10 mmHg completed the study. Vitamin C increased 38 μmol/l (p<0.001) following supplementation. Analysis of the crossover study revealed no treatment period interaction but there was a significantly greater 2 minutes and maximum orthostatic SBP fall following vitamin C versus placebo; 18±14 vs 13±13 mmHg, p=.03 and 22±14 vs 17±13 mmHg, p=.04, although the change at 4 minutes was not significant (15±15 vs 11±13, p=.07). Orthostatic changes in DBP were not significant.

Conclusions

High dose vitamin C supplementation may increase orthostatic systolic blood pressure falls in elderly persons.

SERUM CREATININE IN THE ELDERLY HYPERTENSIVE PATIENT (RESULTS FROM THE PILOT PHASE OF THE HYPERTENSION IN THE VERY ELDERLY TRIAL (HYVET))

C. RAJKUMAR, M. CONNOR, AE FLETCHER AND CJ BULPITT ON BEHALF OF THE HYVET INVESTIGATORS

Division of Geriatric Medicine, Royal Postgraduate Medical School, Hammersmith Hospital, London

Introduction

The benefit : risk comparison for the treatment of hypertension in patients over 80 years needs to be determined, including any adverse renal consequences.

Methodology

477 patients have been randomised in the HYVET trial to no treatment, treatment based on low dose diuretic, or treatment based on low dose ACE therapy (the actively treated groups may also receive a calcium channel blocker if necessary). Systolic blood pressure (SBP) ranged from 160-217 mmHg (mean = 181 ± 11.8) and diastolic (DBP) from 92-114 mmHg (mean = 100 ± 3.3). Serum creatinine in 177 men ranged from 66-144 μmol/litre (mean = 101 ± 13.9) and in 300 women from 57-140 μmol/litre (mean = 95.4 ± 15.5). Subjects were excluded from the trial with a serum creatinine ≥ 150 μmol/litre.

Results

The average serum creatinine in the men was higher than in women (P<0.001) and this was independent of age, systolic pressure and weight. However, in women creatinine tended to increase with diastolic pressure (creatinine = 0.45* DBP +51, P=0.11) so that over a DBP of 100 mmHg there was no important difference between the sexes (difference 2 μmol/litre, 95% CI -2, 6).

Serum creatinine was related to body weight in women (creatinine = 0.20* WT +83, P<0.05) but the gender difference persisted with a weight over 70KG (difference 5 μmol/litre, 95% CI 1, 9).

Conclusion

In hypertensive patients over the age of 80 the factors associated with an above average serum creatinine were, independently, being male and increased body weight. Gender differences were not apparent with DBP ≥ 100 mmHg.