

HIV positive outpatients with treated hypertension: failure to achieve blood pressure targets

Shanti Narayanasamy¹, Tuan Le², Luxshimi Lal³, Kerrie Watson¹, Sunil Anujar¹, Sharon Lewin¹, Jennifer Hoy^{1,4}, Edwina Wright^{3,5}

¹ Department of Infectious Diseases, Alfred Health, Melbourne, Australia, ² University of Texas Health Sciences Centre, San Antonio, USA, ³ Burnet Institute, Melbourne, Australia, ⁴ Department of Infectious Diseases, Monash University, Melbourne, Australia



Background

- 45% of heart disease deaths and 51% of stroke deaths are attributable to hypertension (WHO 2013)
- Prevalence of hypertension in Australia
 - 32% (4.6 million) of adults aged >18yo (2011/2012 Australian Heart Foundation)
 - > 2/3 of cases (68%) uncontrolled or unmanaged (not taking antihypertensives)
- Hypertension in Australian HIV cohort
 - 20-28% (Trevillyan 2012, Chan 2013)
- Prevalence of hypertension in international HIV cohorts
 - 25-35% (Nuesch 2013, Mateen 2013)
- Hypertensive HIV patients
 - Higher risk of AMI than age-matched non-HIV hypertensive cohort (Armah 2013)
 - Poorer neurocognitive performance (Wright, 2008)
- Evaluation of blood pressure control in HIV+ patients in Australia has not been undertaken as yet



Methods

- **Study site**
 - Alfred Hospital, Melbourne: state-wide referral centre for HIV+ people
 - Approximately 740 people attend for regular follow-up yearly
- **Study design**
 - Cross-sectional, retrospective study of HIV+ patients regularly attending the Alfred Hospital Infectious Diseases Outpatient Clinic
- **Study period**
 - 10 March 2010 – 31 March 2013
- **Inclusion Criteria**
 - HIV+ outpatients who attended the Alfred Hospital for regular care (> 2 visits/annum)
 - and
 - had a diagnosis of HT in the Alfred HIV database
 - and/or
 - had script for anti-HT agents on Alfred pharmacy database in past 3 years
 - and
 - BP reading documented in the last 12 months of audit period



Methods

Data collected

- HIV viral load and CD4+ cell count
- Most recently recorded systolic and diastolic BP measurements
- Record of anti-HT medications in OPD notes, scripts, medication reconciliations, or inpatient notes received during past 12 months
- Documentation in notes of proteinuria > 1gm/day, CKD, CHD, CVA/TIA, DM, proteinuria > 300mg/day
- Whether patient was reviewed by Alfred Hospital cardiology/renal OPD during past 12 months, yes/no
- Start date of HT medications: not ascertainable



Methods

- **Study definitions**
 - Regular attendance: >2 more clinic visits per annum
 - Hypertension: diagnosis noted in patient's record
 - Blood Pressure targets: as per the Heart Foundation, 2010
- **Statistical analyses**
 - Univariate and multivariate analyses



Heart Foundation Guide (2010): Blood pressure treatment targets

Patient Group	Target BP (mmHg)
Proteinuria > 1g daily	< 125/75
Associated conditions /end-organ damage	< 130/80
<ul style="list-style-type: none"> • Coronary heart disease • Diabetes • Chronic Kidney Disease • Proteinuria > 300mg daily • Stroke / TIA 	
None of the above	< 140/90



Guide to Management of Hypertension, National Heart Foundation Australia, 2010 update



Heart Foundation Guide (2010): Recommended Treatment

- First choice, low dose
 - ACE/ARB or Ca+ channel blocker or thiazide diuretic (age >65yo)
- If target BP not reached: add a second agent
 - ACE/ARB *plus* Ca+ channel blocker
 - ACE/ARB *plus* thiazide diuretic
- If target BP not reached:
 - Increase dose of one agent to maximum, then increase dose of second agent
- If target BP not reached:
 - ACE/ARB *plus* Ca+ channel blocker *plus* thiazide diuretic
- Referral to a specialist

Results n=69

Gender, male	67 (97%)
Age (avg), yrs	55 (R: 27 – 75)
Smoking status, n	
Smoker	17 (25%)
Ex-smoker	23 (33%)
Non-smoker	29 (42%)
CD4+ count (avg), (cells/μL)	616 (R: 64 – 1907)
CD4+ nadir (avg) (cells/μL)	164 (R: 0 - 555)
AIDS defining illness, n	29 (42%)
Plasma HIV viral load undetectable	59 (85%)

Results

- **Target BP achieved**
 - N=33/69 (48%)
- **End-organ disease profile**
 - End-organ disease present: n=41 (59%)
 - CHD, CKD, DM, CVA/TIA, Protein > 300mg/day
 - Proteinuria > 1gm/day: n=1
 - None: n=27 (39%)

Results

- **Treatment**
 - ACE inhibitors: n=39
 - AIIIRB: n=12
 - AIIIRB + thiazide: n=7
 - Calcium channel blocker: n=16
 - Thiazide diuretic alone : 0
 - Beta blocker: 20

Results

- **Number of antihypertensive drugs used**
 - 1 drug only: 48 patients (70%)
 - > 1 drug: 21 patients (30%)
 - 17 were on two anti-HT drugs
 - 4 were on three anti-HT drugs
- **Specialist referral to cardiology or renal OPD clinics at The Alfred Hospital in previous 12 months**
 - Overall 34/66 (51%) evaluable patients referred
 - 28/41 (68%) patients with end-organ damage referred
 - 10/34 (30%) patients seeing specialists were on 2 or more anti-HT agents

Results

Association between BP control and baseline variables

- **Univariate analysis**
 - Age \geq 55 years (OR 2.66 (1.00-7.09; p 0.05))
 - HIV viral load < 20 copies/ml (OR 5.25 (1.00-27.45, p 0.05))
 - CV disease history (OR 2.44 (0.90-6.66, p 0.08))
- **Multivariate analysis**
 - Specialist referral (OR 4.44 (1.09-18.07, p 0.04))

Summary and Discussion

- **48% patients have achieved BP control**
 - Concern because increased risk of CVD in HIV+ people
- **59% have significant end-organ disease**
 - 68% of those received specialist referral
 - Referral rates should increase
- **HT medication drug choices accorded fairly well with Heart Foundation Guidelines**
 - No inappropriate prescription of thiazide diuretics or older agents
 - Use of beta-blockers likely related to heart failure or previous Acute Coronary Syndrome

Discussion

- **Poor uptake of Heart Foundation advice to use dual or triple anti-HT treatment to manage refractory hypertension**
 - Only 30% patients on 2 or more anti-HT medications
 - This may reflect inexperience and reluctance of ID physicians and general practitioners to manage refractory hypertension and/or add to the patient's pill burden
- **Specialist referral was significantly associated with better BP control**
 - May reflect more appropriate doses of single agents, closer BP monitoring and greater ease in commencing dual or triple therapy
- **Hypertension better controlled in older patients**
 - Doesn't reflect Australian data where uncontrolled hypertension increases with age (Australian Heart Foundation 2011/2012)
 - However, ARV adherence better in older patients living in high-income countries (Langebeek, 2014). Perhaps a carry over effect to other medications?
- **Virologically suppressed patients have better BP control**
 - May reflect better medication adherence overall
 - Health literacy / ownership

Limitations

- Small sample size, retrospective study design
- Impact on ARVs on hypertension – data under analysis
- Single measurement of BP readings recorded only
- Did not/could not measure duration of antihypertensive therapy
- Did not measure lipid profiles or all modifiable factors including alcohol intake, exercise and diet

Thank You