What is the evidence for treating hypertension in older people with dementia? A Systematic Review.

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Introduction

Hypertension is a prevalent condition in older people (~50%), the treatment of which significantly reduces cardio/cerebrovascular mortality[1]. However, lowering blood pressure in the frail population with concomitant dementia could worsen cognitive outcomes[2], increase falls[3] and even mortality[4]. Certainly, current NICE guidelines fail to discuss hypertension in patients with dementia[5].

Aims

There is a paucity of research into the management of hypertension in the frail older population with dementia. The aim of this review is to assess this evidence gap.

Methods

Four databases were screened from inception until August 2011, (Medline 1966-2011, EMBASE 1988-2011 week 41, Cochrane Library, National research register archives) with individual search strategies and limits applied. A total of 1178 abstracts were screened by one reviewer and 23 papers were selected (Figure 1). These were assessed independently by 2 reviewers using the Van Tulder Score. 7 studies were suitable for inclusion (Table 1).

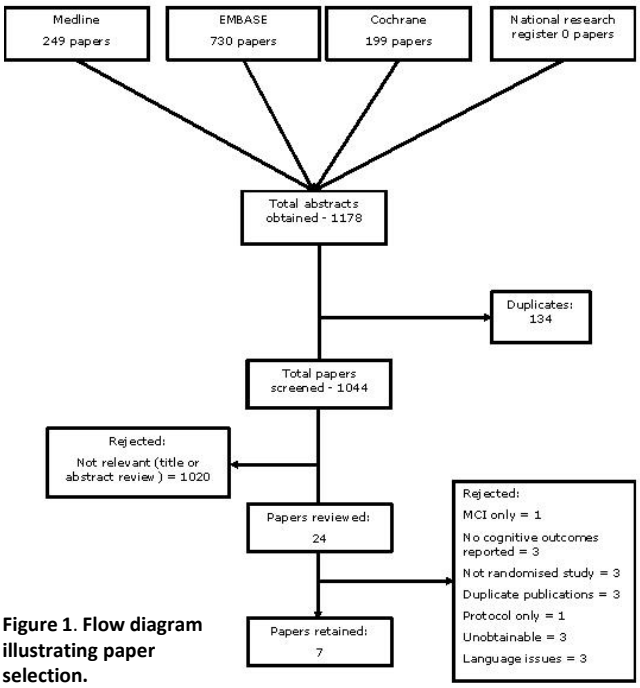

Figure 1. Flow diagram illustrating paper selection.

Inclusion Criteria	Exclusion Criteria
Age > 65 years	Poor trial quality (Van Tulder score <9/19)
Randomised control trial	Mild cognitive impairment
Diagnosis of dementia (cognitive decline for at least 6 months affecting daily function).	Cognition intact, assessment of prevention of cognitive decline
Hypertension present (>140/90 mmHg)	Non-antihypertensives for treatment of dementia with blood pressure lowering effects
Study used validated tools for cognitive outcomes	Insufficient English language content

Table 1. Inclusion and exclusion criteria for the review.

Results

- Mean trial quality was high (mean Van Tulder score 13.3/16).
- All studies were RCTs and included patients with mild to moderate dementia (Table 2).
- Only one study included patients from a care home setting[6], the majority of participants were community dwelling[2-7].
- There were extensive exclusion criteria for many major co-morbidities (E.g. Heart failure)[1-7].
- All trials reported baseline and follow up MMSE, however not all reported blood pressure changes at follow up (Table 2).

Author/ year	Dementia type	Intervention	Follow period months	Sample size	Fall in blood pressure	Cognitive decline at follow up
Kume 2011	Probable Alzheimer's	Telmisartan 40mg vs. Amlodipine 5mg	6	20	Yes	Yes
Pantoni 2005	Vascular	Nimodipine 90mg vs. placebo	12	230	No	Yes
Richard 2009	Probable Alzheimer's	Beta blocker +/- Calcium channel blocker (not specified) vs. placebo	24	123	Yes	Yes
Ohrui 2004	Mild-moderate Alzheimer's Disease	Perindopril/Captopril vs. Enalapril/Imidapril/Nifedipine or Nivaldipine	12	162	Not stated	Yes
PROGRESS 2003	Mixed vascular dementia	Perindopril 4, Indapamide 2.5 vs. placebo	47	6105 964*	Not stated	Yes
Sze 1998	Probable vascular	Nimodipine 90mg vs. placebo	3	86	No*	Yes**
Morich 1996	Alzheimer's Disease	Nimodipine 90/180mg vs. placebo	7	1605	Yes	Yes

Table 2. Individual study characteristics[1-7]. *Not at follow up. ** Only in the more severely disabled group.

- Ohrui[6] - brain penetrating ACEi provided a lower decline in MMSE, unrelated to blood pressure lowering.
- Kume[7] - telmisartan conferred a positive effect on cognition over amlodipine.
- Sze[8] and Morich[9] - beneficial effects of nimodipine on cognition, with greater effect in those with poorer cognition at baseline.
- PROGRESS[1] - the largest and most prominent study included in this review. There is a clear reduction in incident dementia, but not seen in patients with existing dementia.
- Pantoni[10] - some benefit of antihypertensive.
- Richard[11] - no statistically significant changes.

Discussion

- There was considerable heterogeneity between studies, making comparisons difficult.
- The benefits seen with specific antihypertensive may not occur through blood pressure lowering effects, but through neuroprotection[1,2].
- The studies evaluated in this review had small sample sizes, the participants were mainly community dwelling, had limited co-morbidities and milder forms of dementia. This fails to reflect the frail, older population where management decisions may have different priorities.
- The outcomes studied were often limited and fail to consider the broader issues within this area. This review emphasises the need for further research into the frail older population.

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