Neuroepidemiology 2008;31:67

DOI: 10.1159/000140097

Cardiovascular Risk Factors in Vascular Dementia and Ischaemic StrokeRahul Potluri^a, Ammar Natalwala^a, Hardeep Uppal^b,
Reinhard Heun^b^aThe Medical School, University of Birmingham, and^bDepartment of Old Age Psychiatry,

Queen Elizabeth Psychiatric Hospital, Birmingham, UK

Vascular or multi-infarct dementia is the second most common type of dementia, and ischaemic stroke is widely recognised as the most common aetiological factor [1]. The risk factors for ischaemic stroke are well documented and the most common include age, male gender, hypertension, diabetes mellitus, atrial fibrillation and hyperlipidaemia [2]. Given the aetiological link between ischaemic stroke and vascular dementia, we envisaged a similar risk factor profile amongst vascular dementia patients in a large multi-ethnic inner-city patient population admitted to a teaching hospital in Birmingham, UK, during the period 2000–2006.

Vascular dementia, ischaemic stroke diagnoses and associated risk factors were anonymously traced using the International Classification of Diseases version 10 (ICD-10) criteria, which did not change during this study period. Similar methods have been previously used and are described by Gunaratne et al. [3, 4]. Care was taken to exclude patients with Alzheimer's disease and mixed dementia. Binomial logistic regression was used to determine the risk

factors for the development of vascular dementia using a step-wise forward conditional model. Only variables that significantly improved the model fit ($p < 0.05$) were included in the final model.

Between 2000 and 2006 there were 440 patients diagnosed with vascular dementia and 2,575 diagnosed with ischaemic stroke. The mean age and gender distribution are described in table 1. Mean age was not significantly different between vascular dementia and stroke patients. Surprisingly, the prevalence of common cardiovascular risk factors was significantly lower in vascular dementia patients compared to ischaemic stroke patients, and is shown in table 1. Regression analysis revealed that only age (OR = 1.04; 95% CI = 1.03–1.05; $p < 0.001$) and stroke (OR = 583.9; 95% CI = 360.2–946.2; $p < 0.001$) were significant risk factors for the development of vascular dementia. However age (OR = 1.06; 95% CI = 1.05–1.07; $p < 0.001$), male gender (OR = 1.15; 95% CI = 1.08–1.22; $p < 0.001$), atrial fibrillation (OR = 1.43; 95% CI = 1.27–1.61; $p < 0.001$), hypertension (OR = 1.47; 95% CI = 1.34–1.60; $p < 0.001$) and diabetes mellitus (OR = 1.28; 95% CI = 1.16–1.41; $p < 0.001$) were significant risk factors for the development of ischaemic stroke.

The disparity in risk factors for the development of vascular dementia in comparison to ischaemic stroke is surprising given that ischaemic stroke is by far the biggest risk factor for the development of vascular dementia [5]. It seems the vascular dementia patients are healthier in terms of the number of cardiovascular risk factors. Could it be that patients with more cardiovascular risk factors die earlier because of cardiovascular diseases associated with a high rate of mortality, before the development of vascular dementia?

References

- 1 Lobo A, Launer LJ, Fratiglioni L, Andersen K, Di Carlo A, Breteler MM, Copeland JR, Dartigues JF, Jagger C, Martinez-Lage J, Soininen H, Hofman A: Prevalence of dementia and major subtypes in Europe: a collaborative study of population-based cohorts. Neurologic Diseases in the Elderly Research Group. *Neurology* 2000;54(suppl 5):S4–S9.
- 2 Meyer JS, McClintic KL, Rogers RL, Sims P, Mortel KF: Aetiological considerations and risk factors for multi-infarct dementia. *J Neurol Neurosurg Psychiatry* 1988;51:1489–1497.
- 3 Gunaratne A, Patel JV, Potluri R, Gammon B, Jessani S, Hughes EA, Lip GY: Secular trends in the cardiovascular risk profile and mortality of stroke admissions in an inner city, multiethnic population in the United Kingdom (1997–2005). *J Human Hypertens* 2008;22:18–23.
- 4 Gunaratne A, Patel JV, Potluri R, Gammon B, Jessani S, Hughes EA, Lip GY: Increased 5-year mortality in the migrant South Asian stroke patients with diabetes mellitus in the United Kingdom: The West Birmingham Stroke Project. *Int J Clin Pract* 2008;62:197–201.
- 5 Loeb C, Gandolfo C, Croce R, Conti M: Dementia associated with lacunar infarction. *Stroke* 1992;23:1225–1229.

Prof. Reinhard Heun
Division of Neuroscience, Department of Psychiatry
Queen Elizabeth Psychiatric Hospital, Mindelsohn Way
Edgbaston, Birmingham B15 2QZ (United Kingdom)
Tel. +44 121 678 2360, Fax +44 121 678 2351
E-Mail r.heun@bham.ac.uk

Table 1. Demographics and cardiovascular risk factor profiles amongst vascular dementia and ischaemic stroke patients between 2000 and 2006

	Vascular dementia	Ischaemic stroke	p value
Demographics			
Number of patients	440	2,575	
Mean age $\pm$ SD, years	83.1 $\pm$ 8.9	80.7 $\pm$ 15.0	0.158
Male, n (%)	227 (51.6)	1,205 (53.2)	
Cardiovascular risk factors, %			
Hypertension	20.6	28.9	<0.001*
Diabetes mellitus	13.9	23.6	<0.001*
Atrial fibrillation	13.0	18.9	<0.001*
Hyperlipidaemia	1.4	4.4	0.005*
Stroke	95.9	100.0	0.092

* $p < 0.05$.