

Does co-existing chronic kidney disease influence haemorrhagic stroke outcomes?



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Introduction

Stroke remains a major cause of morbidity and mortality. The adverse effect of chronic kidney disease (CKD) on ischaemic stroke outcomes is well established but its prognostic significance in haemorrhagic stroke less well understood. Data is conflicting as to the clinical significance of CKD plays haemorrhagic stroke outcomes. Some North American studies have estimated that CKD is present in approximately a third of patients hospitalised with haemorrhagic strokes and a GFR <60ml/min⁻¹ was associated with greater in-hospital mortality [1]. However, Chinese studies have failed to demonstrate this association [2].

This study aims to establish the prevalence of CKD in patients presenting with haemorrhagic stroke and what effect if any it has on their functional outcomes.

Methods

We analysed 16 months (1st May 2013 – 30th September 2014) of stroke data from a large Foundation Trust operating three sites in the West Midlands. Patients with haemorrhagic stroke which had been verified by the hospital's stroke team were eligible for inclusion in the study. Functional outcome was defined by using the modified Rankin Scale status on discharge. Data which had been uploaded to the Sentinel Stroke National Audit Programme (SSNAP) was used for the analysis. Chronic kidney disease was defined as a glomerular filtration rate <60ml/min/1.73m² using the MDRD equation. Data was analysed using Microsoft Excel 2010.

Results

During the study period, a total of 1347 patients were admitted with stroke (both ischaemic and haemorrhagic) across the three hospital sites. Of these, 141 patients had a confirmed haemorrhagic stroke (10.5% of all strokes). 16.3% (23/141) patients had known CKD at the time of presentation with their haemorrhagic stroke. The baseline demographics of patients presenting with haemorrhagic strokes are presented in Table 1.

	CKD Cohort (n=23)	Non-CKD Cohort (n=118)
Mean Age (Years)	76	73
Range	29-89	29-97
Males : Females	13 : 10	67 : 51
<i>Comorbidities (%)</i>		
Congestive Cardiac Failure	0	5 (4.2)
Hypertension	16 (69.5)	52 (44.1)
Atrial fibrillation	7 (30.4)	15 (12.7)
Diabetes Mellitus	7 (30.4)	13 (11.0)
Previous stroke/TIA	8 (34.8)	31 (26.3)
Anticoagulation	5 (21.7)	10 (8.5)
<i>NIHSS Score at Presentation (% of total group)</i>		
<10	16 (70.0)	79 (67.0)
10-20	4 (17.0)	20 (17.0)
>20	3 (13.0)	19 (16.0)

Table 1. Patient demographics co-morbidities and NIHSS score at presentation. NIHSS – National Institutes of Health Stroke Scale

The data demonstrates that approximately one third of patients included in this study die during the acute hospital admission. A similar proportion are discharged to their own home. Only a minority of patients were referred for ongoing rehabilitation. Discharge data is displayed in Table 2.

Discharge Destination (% of total group)	CKD Cohort (n=23)	Non-CKD Cohort (n=118)
Died in hospital	8 (34.8)	38 (32.2)
Discharged to Own Home	9 (39.1)	44 (37.3)
Discharged to Care Home (Nursing/Residential)	0	22 (18.6)
Transferred to a Rehabilitation Facility	6 (26.1)	6 (5.1)
Transferred to another Hospital/Neurosurgical Team	0	6 (5.1)
Discharged Home with Early Supported Discharge	0	2 (1.7)

Table 2. Discharge destination for each patient cohort.

Functional status in this study was assessed using the modified Rankin Scale (mRS) with a score of 0 representing perfect health and a score of 6 representing death. This study has shown that in both the CKD and non-CKD cohorts approximately 70% of patients have an increase in their mRS of at least ≥3 points which represents a significant deterioration in their health. Data assessing the change in functional status from admission to discharge is presented in Table 3.

Change in modified Rankin Score at time of discharge (% of total group)	CKD Cohort (n=23)	Non-CKD Cohort (n=118)
0	4 (17.4)	21 (17.8)
+1	0	18 (15.3)
+2	3 (13.0)	18 (15.3)
+3	4 (17.4)	14 (11.9)
+4	5 (21.7)	16 (13.6)
+5	2 (8.7)	12 (10.2)
+6	4 (17.4)	14 (11.7)
Data unavailable	1 (4.4)	5 (4.2)

Table 3. Change in modified Rankin Score at time of discharge

Conclusions

This study has shown that overall the prevalence of CKD in patients presenting with acute stroke is comparable with previous studies[3]. The presence of CKD in patients presenting with haemorrhagic stroke does not appear to adversely affect functional outcomes on discharge. Further study with a larger cohort of patients with haemorrhagic stroke and chronic kidney disease is needed to confirm this finding.

References

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