ETHNICITY

Ethnic variations in the management of patients with acute stroke

J Bourke, R Sylvester, P Sharma

Background: There is increasing interest in the management of stroke in ethnic minorities but few studies have considered this issue. This study investigated if differences in acute stroke management exist between a white European and Bangladeshi populations living in London, England.

Methods: All stroke surviving patients discharged over a five year period in a major London teaching hospital based in an ethnically diverse area of inner city London were recruited. Cerebrovascular risk factors, their management, and investigation for acute stroke syndromes were recorded and comparison between white and Bangladeshis cohorts was made. Categorical data were analysed using Fisher's exact test.

Results: Measurement of cholesterol concentrations are undertaken less often in those from a Bangladeshi background (25%) compared with white Europeans (76%) (p<0.0001). Statin therapy tends to be given less often to Bangladeshi. However, neuroimaging (p<0.05) and echocardiography (p<0.0001) is performed more often in Bangladeshis compared with white Europeans.

Conclusion: There are variations in the management of acute stroke because of ethnicity and these variations could have substantial consequences on secondary rates of cerebrovascular and cardiovascular disease. Whether the reasons for this disparity are attributable to inequity or iniquity of care need to be further investigated perhaps along with the development of ethnicity specific protocols. Overall the management of stroke and its risk factors in either racial group remains lamentable.

METHODS

A single large teaching hospital based in the inner city with a dense surrounding multicultural population was purposely chosen. The Royal London Hospital, one of the largest hospital trusts in the UK with over 1100 beds serving a catchment population of around 500 000 people, was chosen as a suitable centre for study. All patients from the UK Bangladeshis and white (English, Scottish, Welsh) communities with a diagnosis of discharge of ischaemic stroke over a five year period (1997–2002) were recruited. Deaths from any cause were excluded. Although a stroke unit exists at this site we did not specify admission to that unit as part of the inclusion criteria.

Demographic details of age, sex, and self reported ethnicity were recorded as were comorbidity, other vascular risk factors, and discharge outcomes. Stroke was classified according to the Oxford Community subclassification system. Type of investigations undertaken, surgical treatment, and record of drugs on discharge were also noted. Categorical data were analysed using Fisher's exact test. A p<0.05 was taken as significant throughout.

RESULTS

A total of 265 patients met the inclusion criteria with 186 of white (English, Scottish, or Welsh; mean age of stroke onset 66 years) and the remainder of Bangladeshi ancestry (mean age of stroke onset 62 years). About 60% of stroke patients are treated in the stroke unit, although we did not analyse data separately for that group.

A greater proportion of men from the Bangladeshi community suffered a stroke compared with white men. There were few differences in the frequency of ischaemic stroke between the two groups (89% white, 86% Bangladeshis), although haemorrhagic stroke was twice as common in the white cohort (9% compared with 4% in the Bangladeshis). There were no statistically significant differences in vascular risk factors of angina or cardiovascular disease history between the two groups, although diabetes was more common and ECG or echo diagnosed atrial fibrillation less common in Bangladeshis compared with white subjects (table 1). There were no significant differences in the various types of ischaemic stroke between the two groups (table 2).

Measurement of total cholesterol concentrations was much more likely to be performed in white Europeans (76%)

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These investigators found 117 (63) 38 (48) and Neither cohort was investigated. Differences in stroke between UK white European and UK Bangladeshi populations has been noted discrepancy of treatments received between white groups and Bangladeshis. The fact that some investigations (neuroimaging and echocardiography) were performed more often in the Bangladeshi population may be the result of several explanations. Firstly, physicians may be more likely to perform investigations in the absence of a reasonably reliable history. Certainly, the difficulty in using or even obtaining interpreters has been well reported. Secondly, it is possible that clinicians are more suspicious of rarer causes of focal neurological deficits in those from ethnic minorities. Notwithstanding either of these explanations, the fact that only 73% of the entire cohort presenting with stroke were imaged is at odds with current recommendations and previous clinical guidelines.

Nearly two thirds of our total stroke cohort was under the age of 70 years (mean age of onset 62 years in Bangladeshis and 66 years in Europeans). Although the definition of young stroke varies, the consensus view is that such patients should be extensively investigated. Neither cohort was investigated to such an extent (for example, neuroimaging or cholesterol measurement) nor adequately treated with statin (33%) or antiplatelet (75%) therapy despite the considerable support of evidence. The overall management of stroke remains poor. There was no observed diagnostic difference in hypertension but diabetes was, as predicted, more prevalent in the Bangladeshi cohort (table 1) and there was a trend for increase in ischaemic heart disease in Bangladeshis, consistent with other studies.

Few studies addressing the question of ethnicity and stroke exist. Previous studies have focused on Afro-Caribbean groups and comparison with their white counterparts. Although ethnic comparisons in mortality rates exist, to the best of our knowledge only one study has been conducted in the UK that has examined trends involving stroke management in groups from the Indian subcontinent. Their important finding was that South Asian stroke patients were not admitted acutely to hospital compared with their white counterparts. The study similar to many involving ethnicity, made no attempt to further sub-define the South Asian population. This paucity of definition is important because of emerging data that subgroups within the South Asian population, for example, Bangladeshis, have differing risk profile in terms of vascular disease compared with other Asians.

There are a number of limitations to this study that should be noted. We decided to look at patients who were eventually discharged from hospital. Patients who died in hospital were excluded on the basis that they would not allow us to

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Differences in stroke between UK white European and UK Bangladeshi populations</th>
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<tbody>
<tr>
<td></td>
<td>European n = 186 (%)</td>
</tr>
<tr>
<td>Male</td>
<td>105 (56)</td>
</tr>
<tr>
<td>Ischaemic/haemorrhagic</td>
<td>165 (9) (89/5)</td>
</tr>
<tr>
<td>Previous CVD</td>
<td>117 (63)</td>
</tr>
<tr>
<td>Hypertensive</td>
<td>111 (60)</td>
</tr>
<tr>
<td>Diabetic</td>
<td>20 (11)</td>
</tr>
<tr>
<td>Atrial fibrillation</td>
<td>23 (13)</td>
</tr>
<tr>
<td>Smoker</td>
<td>68 (37)</td>
</tr>
<tr>
<td>CT/MRI brain imaging</td>
<td>129 (69)</td>
</tr>
<tr>
<td>Echocardiography</td>
<td>69 (37)</td>
</tr>
<tr>
<td>Cholesterol measurement</td>
<td>141 (76)</td>
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<tr>
<td>Antplatelet therapy</td>
<td>129 (69)</td>
</tr>
<tr>
<td>Statin therapy</td>
<td>67 (36)</td>
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</tbody>
</table>

*Previous angina, stroke, coronary artery bypass, peripheral vascular disease, myocardial infarction, or congestive cardiac disease. †p<0.05; ‡p<0.0001.

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<th>Table 2</th>
<th>Ischaemic stroke frequency by arterial classification</th>
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<tr>
<td></td>
<td>European (169)*</td>
</tr>
<tr>
<td>TACS</td>
<td>29</td>
</tr>
<tr>
<td>PACS</td>
<td>78</td>
</tr>
<tr>
<td>POCS</td>
<td>19</td>
</tr>
<tr>
<td>LACS</td>
<td>43</td>
</tr>
</tbody>
</table>

*Numbers in whom classification was possible. p<0.05 across all groups. TACS, total anterior circulation stroke; PACS, partial anterior circulation stroke; POCS, posterior circulation stroke; LACS, lacunar anterior circulation stroke.
We chose to study only one late presentation of disease, differences in case mix, and cultural misunderstanding rather than wilful differential treatment. We have found disparities in management between ethnic groups. Our data suggest that the management of stroke in a comparatively young Bangladeshi cohort is not ideal. Furthermore, it would seem that where data do exist to guide ethnicity specific management of stroke it is not used appropriately. In a society that is increasingly multicultural these findings highlight a potential problem in applying standardised protocols based upon the indigenous population to local ethnic communities. A further study investigating the underlying reasons for the differences found would be useful. Clearly such a study would be better placed to ask whether our findings were a result of inequity or iniquity of care. Our study suggests clinical stroke practice across all patient groups is lamentable.

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