Incidence of Stroke in an African City: Results from the Stroke Registry at Ibadan, Nigeria, 1973–1975

B.O. OSUNTOKUN, O. BADEMOSI, O.O. AKINKUGBE, A.B.O. OYEDIRAN, AND R. CARLISLE

SUMMARY Studies based on hospital populations reported from negro communities in several countries in Africa suggest that cerebrovascular disease (CBVD) shows increasing mortality and morbidity in Africans although 2 decades ago CBVD was believed to be uncommon. We report the first study in the African to determine the incidence of stroke in an urban area, Ibadan, Nigeria.

A STROKE REGISTER (which included subarachnoid hemorrhage (SAH), intracerebral hemorrhage (CH), cerebral infarction (CI), but excluded transient ischemic attacks, (TIA) and subdural hematoma) was operated for Ibadan, Nigeria, from April 1, 1973 to March 30, 1975 as part of the international multicentric program of the Cardiovascular Diseases Unit of the World Health Organization. Its purpose was to study the incidence of stroke in several communities. Total coverage of Ibadan was obtained by notification to hospitals, general practitioners, private nursing homes, coroner’s office (for cases of sudden death), and the office of the Medical Officer of Health for the city. Case finding of stroke patients was based on availability of case histories and results of available investigations, where possible, was done by 2 neurologists (B.O.O. and O.B.) In others, the diagnosis was based on the case histories and results of available investigations. Follow up after discharge from the hospitals was difficult, for in addition to shortage of personnel, incorrect addresses given by patients made tracing an uphill task and many patients did not return to the clinics for evaluation. The population data for Ibadan, provided by the Ministry of Economic Planning, Western State of Nigeria, were based on projection of the 1963 census.

Table 1 shows that the male to female ratio is 5 to 2 compared with a male to female ratio of 1.3 to 1 in the population. The peak age-specific incidence in the male is in the eighth decade and in the female in the 7th decade, with higher incidence rates in males than in females in almost all age groups and generally low incidence rates in those below the age of 40 years. The apparently low incidence rates in 8th and 9th decades were seen in hospitals and nursing homes.

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From the Department of Medicine and Department of Preventive and Social Medicine (Dr. Oyediran), University College Hospital, Ibadan, Nigeria.
TABLE 1 Stroke Registry in Ibadan 1973-75 Incidence Rates

<table>
<thead>
<tr>
<th>Age in yrs</th>
<th>Males</th>
<th></th>
<th></th>
<th>Females</th>
<th></th>
<th></th>
<th>Total incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>No. of patients</td>
<td>Incidence per 1,000</td>
<td></td>
<td>No. of patients</td>
<td>Incidence per 1,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-19</td>
<td>4</td>
<td>0.03</td>
<td></td>
<td>1</td>
<td>0.01</td>
<td></td>
<td>0.02</td>
</tr>
<tr>
<td>20-29</td>
<td>5</td>
<td>0.01</td>
<td></td>
<td>3</td>
<td>0.01</td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>30-39</td>
<td>18</td>
<td>0.12</td>
<td></td>
<td>8</td>
<td>0.08</td>
<td></td>
<td>0.11</td>
</tr>
<tr>
<td>40-49</td>
<td>54</td>
<td>0.9</td>
<td></td>
<td>18</td>
<td>0.4</td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>50-59</td>
<td>55</td>
<td>2.5</td>
<td></td>
<td>25</td>
<td>1.4</td>
<td></td>
<td>2.02</td>
</tr>
<tr>
<td>60-69</td>
<td>60</td>
<td>5.4</td>
<td></td>
<td>27</td>
<td>2.9</td>
<td></td>
<td>4.4</td>
</tr>
<tr>
<td>70-79</td>
<td>28</td>
<td>7.8</td>
<td></td>
<td>4</td>
<td>1.3</td>
<td></td>
<td>4.6</td>
</tr>
<tr>
<td>80</td>
<td>5</td>
<td>2.0</td>
<td></td>
<td>5</td>
<td>2.1</td>
<td></td>
<td>2.1</td>
</tr>
<tr>
<td>Total</td>
<td>229</td>
<td>0.25</td>
<td></td>
<td>89</td>
<td>0.13</td>
<td></td>
<td>0.26</td>
</tr>
</tbody>
</table>

Discussion

Results of this study show that stroke in the Nigerian Africans is commoner in males, its incidence rises with age, and the major predisposing factors are hypertension and diabetes mellitus. In contrast to previously held opinion, based on hospital data, stroke is not unusually frequent in young Nigerians. The fall in the incidence rates in males in the 9th decade and in females in the 8th and 9th decades is probably due to under-reporting. The higher incidence rate of stroke in Nigerian males, compared with females, may be due to Nigerian females' better toleration of hypertension. Acheson (1960) showed that in Ireland there was a strong correlation in males between coronary artery disease and hypertension and between hypertension and cerebrovascular disease; in females there was no such association.

Attempts to obtain the natural history of stroke in Nigerians were blocked by insurmountable difficulties which prevented adequate follow up. The mortality at 3 weeks found in this study confirms that in Nigerians the better prognosis of non-embolic CI compared with other types and the mortality rates are similar to those reported in other Africans. In the University College Hospital in Ibadan, tetanus, meningitis and CBVD are the major diseases of the nervous system causing death. The annual mortality rate from CBVD, unlike meningitis, analyzed for the period 1960-1973, showed a continuous rise in Ibadan. The frequency of CBVD as a cause of death in University College Hospital, Ibadan, is 4.5%; the other major causes of deaths in the medical wards of the hospital are liver
diseases (12%) tetanus (9%) hypertensive heart disease (8%) renal failure (6%) and meningitis (4%).

An association between high blood pressure and an increased incidence of cerebrovascular disease has been established for both CH and CI. Reduction in blood pressure of hypertensive patients by medical treatment lowers the incidence of future strokes or recurrence of strokes. Of the 27 patients in this community study who suffered from stroke and have been treated with antihypertensive drugs for more than one year, none has suffered a recurrence.

Stroke in hypertensives is frequently due to disease of small intracerebral vessels rather than to atheroma. Hypertension is the major predisposing factor to stroke in the Nigerians as found in this study and by others. In view of the several studies that have indicated that hypertension (and not cerebral atherosclerosis or elevated serum lipids) is the major predisposing cause of CBVD in the African negroes, in whom coronary artery disease is very uncommon, early detection and treatment of hypertension should be beneficial. This may help prevent the rising mortality and morbidity of stroke in some African communities.

Acknowledgment

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References


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