Vascular Aphasiases

Main Characteristics of Patients Hospitalized in Acute Stroke Units

O. Godefroy, MD, PhD; C. Dubois; B. Debachy; M. Leclerc; A. Kreisler, MD; for the Lille Stroke Program

Background and Purpose—Aphasia is frequent in stroke patients and is associated with poor prognosis. However, characteristics and determinants of vascular aphasias remain controversial. The aim of this study was to evaluate aphasia characteristics at the acute stage in patients admitted to a stroke unit.

Methods—The study was performed in 308 patients consecutively assessed with a standardized aphasia battery.

Results—Aphasia was observed in 207 patients; global and nonclassified aphasias accounted for 50% of aphasic syndromes at the acute stage, whereas classic aphasias (Wernicke’s, Broca’s, transcortical, and subcortical aphasias) were less frequent. Age differed across aphasic syndromes in ischemic stroke patients only; patients with conduction aphasia were younger, and patients with subcortical aphasia were older. Sex did not significantly differ across aphasic syndromes. The presence of a previous stroke was more frequent in nonclassified aphasia.

Conclusions—This study shows (1) that vascular aphasias are frequently severe or nonclassic at the acute stage, a finding explained in part by the presence of a previous stroke; (2) that the age effect is due mainly to its influence on infarct location; and (3) that the main determinant of aphasia characteristics is lesion location. (Stroke. 2002;33:702-705.)

Key Words: aphasia • neuropsychology

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troke is the leading cause of disability in western countries, and dependent living is related mainly to motor and cognitive deficits.1 Among cognitive deficits, aphasia is observed with a frequency ranging from 21% to 38% at the acute stage,2–4 and stroke accounts for ≈80 000 new cases of aphasia annually in the United States.3 The presence of aphasia is an index of poor prognosis, with more severe motor, cognitive, and social disability1,3,6 and higher mortality.3,4 Finally, aphasia outcome remains poor: 32% to 50% of aphasics still suffer from aphasia 6 months after stroke.3,4 Consequently, the need to evaluate and treat poststroke aphasia has been underlined.7

However, characteristics of vascular aphasias remain partly unknown for 3 main reasons. First, previous studies were performed before the stroke unit era, and characteristics of aphasia in patients admitted to acute stroke units have not been reported. Second, studies focusing on vascular aphasia have included either selected samples with extensive evaluation of language1,8,9 or large series of consecutive patients examined with shortened testing.2–10 Although the latter studies provide important findings, they usually focus on oral expression and do not determine the type of language disorder. This leads to confounding of very different disorders such as dysarthria and aphasia, or Broca’s and global aphasias, which have different severities and outcomes. Third, factors determining the occurrence and severity of vascular aphasia remain a subject of controversy. Lesion location has long been regarded as the major determinant of aphasia characteristics. However, several CT-based studies have shown that an unexpectedly large proportion of aphasias deviate from classic clinical-anatomic correlations.11–14 This suggests that other factors influence clinical outcome. A few studies have suggested age and sex, with a higher frequency of nonfluent aphasia in young patients,10,15–17 a lower frequency of aphasia in women,2,18 and a better outcome in young patients.17,19,20 These results have been obtained in series of selected patients and were not replicated in other studies.5,8,21

The goal of the present study was to determine aphasia characteristics at the acute stage and the influence of general factors. The role of lesion location is examined in another study of a subgroup of 107 patients examined with MRI.22

Subjects and Methods

The study was performed in patients admitted to the Lille acute stroke unit between May 1994 and August 1997. This department usually admits 2 types of stroke patients: those living in Lille-Metropole and admitted directly as emergency cases and those referred from other hospitals in the region. Patients of both types were included in the study provided that they were examined for language disorders. Modalities of admission and care have previously been reported.23 All patients suffering from language difficulties were referred to the speech therapist. During this 39-month period, 365 consecutive patients were examined by a speech therapist for language disorders, corresponding to 14% of patients admitted for acute stroke. Fifty-seven patients were excluded because of insufficient assessment, mainly because of premature discharge or death. The remaining 308 patients were characterized...

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Results

Among the 308 patients (Table 1), 50 no longer had language disorder at the time of examination, 22 had a pure dysarthria disorder, 207 had aphasia, 16 had isolated word-finding difficulties, and 13 had various disorders (pure word deafness, n = 1; agraphia and alexia, n = 4; visual agnosia, n = 3; frontal syndrome, n = 2; dementia, n = 3).

Global and nonclassified aphasias accounted for 50% of all aphasic syndromes. Nonclassified aphasia included 37 patients (17.9%) with language disorders close to anomic aphasia associated with other impairments (“anomic-plus aphasia”). The remaining 18 patients (8.7%) had various combinations of impairments that did not correspond to a clearly established aphasic syndrome. Wer-
TABLE 3. Mean (SD) Scores on Aphasia Assessment According to Aphasic Syndrome

<table>
<thead>
<tr>
<th>Aphasic Syndrome</th>
<th>Oral Expression</th>
<th>Oral Comprehension</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fluency (2)</td>
<td>Jargon-Aphasia n</td>
</tr>
<tr>
<td>No aphasia</td>
<td>2 (0)</td>
<td>0</td>
</tr>
<tr>
<td>Global</td>
<td>0.2* (0.4)</td>
<td>17*</td>
</tr>
<tr>
<td>Broca’s</td>
<td>0.5* (0.5)</td>
<td>8*</td>
</tr>
<tr>
<td>TC motor</td>
<td>1.4* (0.5)</td>
<td>0</td>
</tr>
<tr>
<td>Subcortical</td>
<td>1.2* (0.4)</td>
<td>0</td>
</tr>
<tr>
<td>Wernicke’s</td>
<td>1.9 (0.3)</td>
<td>8*</td>
</tr>
<tr>
<td>Conduction</td>
<td>2 (0)</td>
<td>0</td>
</tr>
<tr>
<td>TC sensory</td>
<td>1.7 (0.5)</td>
<td>0</td>
</tr>
<tr>
<td>Anomic</td>
<td>2 (0)</td>
<td>0</td>
</tr>
</tbody>
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<table>
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<th></th>
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<tbody>
<tr>
<td>No aphasia</td>
<td>9 (0)</td>
<td>29.5 (1.4)</td>
<td>29.9 (0.2)</td>
<td>12.7 (0.7)</td>
<td>14.7 (0.5)</td>
</tr>
<tr>
<td>Global</td>
<td>1.4* (2.2)</td>
<td>3.1* (5.2)</td>
<td>2.9* (8)</td>
<td>3.6* (3.2)</td>
<td>4* (3.7)</td>
</tr>
<tr>
<td>Broca’s</td>
<td>4.5* (3.3)</td>
<td>11.5* (11)</td>
<td>22* (9.4)</td>
<td>9.9* (2)</td>
<td>11.8 (2.3)</td>
</tr>
<tr>
<td>TC motor</td>
<td>19.4* (8.6)</td>
<td>29.2 (1)</td>
<td>11.2 (1.7)</td>
<td>14.2 (1.6)</td>
<td></td>
</tr>
<tr>
<td>Subcortical</td>
<td>22.7* (3.2)</td>
<td>28.8 (2)</td>
<td>11.5 (1.1)</td>
<td>13.5 (0.9)</td>
<td></td>
</tr>
<tr>
<td>Wernicke’s</td>
<td>8.9* (8.4)</td>
<td>15.3* (12)</td>
<td>7.3* (2.9)</td>
<td>7* (3.9)</td>
<td></td>
</tr>
<tr>
<td>Conduction</td>
<td>20.3 (9.8)</td>
<td>16.7* (12)</td>
<td>12.5 (0.5)</td>
<td>13.5 (0.9)</td>
<td></td>
</tr>
<tr>
<td>TC sensory</td>
<td>13.9* (7.8)</td>
<td>29.4 (0.8)</td>
<td>6.6* (4.1)</td>
<td>5.8* (4.2)</td>
<td></td>
</tr>
<tr>
<td>Anomic</td>
<td>15.8* (15)</td>
<td>29.8 (0.4)</td>
<td>11.4 (4.2)</td>
<td>13.8 (0.9)</td>
<td></td>
</tr>
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</table>

TC indicates transcortical. Values in parentheses are maximum scores. *P<0.0001.

The absence of an age effect on the aphasic syndrome contrasted with findings from some previous reports, and was reexamined according to the 3 methods previously reported. First, age was compared across aphasic syndromes separately in men and women. No difference was observed in men (P=0.8) and women (P=0.5). Second, age was compared according to spontaneous verbal fluency (mutism or expression restricted to stereotyped utterances, n=51; nonfluuent aphasia, n=59; fluent aphasia, n=97). Age did not differ (P=0.6) according to fluency (mutism, 61.2±17; nonfluuent, 61±16; fluent, 63.7±15). Third, age was compared across aphasic syndromes separately in ischemic and hemorrhagic stroke patients by use of an ANOVA with the Ryan Einot Gabriel Welsch test as a posthoc test. Age differed across syndromes in ischemic stroke (P=0.04) but not in hemorrhagic stroke (P=0.5). In ischemic stroke, patients with a conduction aphasia were younger (mean age, 50±15 years), and patients with subcortical aphasia were older (mean age, 50±25 years). Age did not differ (P=0.04) across aphasic syndromes because the direct comparison with a test reached significance (P=0.05).

Discussion

The results showed (1) that global, “anomic-plus” and nonclassified aphasias were the most frequent syndromes at the acute stage of stroke, whereas Wernicke’s, Broca’s, and subcortical and transcortical motor aphasias were less frequent; (2) that the frequency of fluent and nonfluent aphasias was similar; (3) that age differed across aphasic syndromes in ischemic stroke only; (4) that sex did not influence the aphasic syndrome at the acute stage; and (5) that a previous stroke was more frequent in nonclassified aphasia.

The study was not designed to assess the frequency of aphasia in stroke. Thus, the finding of language disorder in 114% of patients at the acute stage may have underestimated the frequency of aphasia, reported in 16% to 25% of stroke patients. Because our primary aim was to examine aphasia characteristics encountered in daily practice, all stroke patients, including those with a previous stroke, were analyzed.

The first result of this study was that classic syndromes that represent the core of aphasiology such as Wernicke’s, Broca’s, conduction, pure anomic, and transcortical aphasias accounted for only 40% of aphasias. Global aphasia accounted for a quarter of aphasic syndromes within the first weeks after stroke, indicating that stroke practitioners are more frequently confronted with severe or nonclassic disorders. The prominence of global
aphasia, the most severe aphasic syndrome, has already been reported in series using an aphasic battery and is frequently underestimated on clinical grounds or shortened testing. This finding argues for the use of formal assessment of aphasia. In previous studies, the frequency of nonclassified aphasias varied from 0% to 45%, and depended mainly on patient selection, the delay of assessment, and criteria of aphasic syndromes. In the present study, 25% of aphasia was not classifiable, which is explained by the use of restrictive criteria of anomic aphasia and by the inclusion of patients with previous stroke. If less restrictive criteria were used, 37 patients would have been classified as having anomic-plus aphasia, which represents a very important proportion of aphasics. From a practical point of view, the separation of pure anoma from anomic-plus aphasia is unclear and deserves further study. Nonclassified aphasia was more frequent in patients with previous stroke. This is likely a result of the unusual combination of language disorders in patients with several lesions.

Finally, this study supports an age effect on the aphasic syndrome in ischemic stroke only; patients with conduction aphasia were younger, and patients with subcortical aphasia were older. In addition, patients with Broca’s aphasia were younger than those with Wernicke’s aphasia, but the difference did not reach significance after correction for multiple analyses. This result is consistent with studies suggesting a higher frequency of nonfluent aphasia, particularly Broca’s, in young patients. The age effect might be due to its influence on patterns of recovery, the cerebral organization of language areas, and infarct locations. The influence of age on patterns of recovery has been documented primarily after 3 months from onset, and this is unlikely to account for our findings that concerned the first month after stroke. Age-related changes in the organization of language areas predict different frequencies of aphasic syndromes regardless of brain pathology. This prediction was not matched by our findings of an age influence specific to ischemic stroke. Thus, our results strongly suggest that the age effect on aphasic syndromes at the acute stage is related to its influence on the vascular pathology and consequently on infarct locations. Such an interpretation is supported by the previous finding of a relation between age and the anterior-posterior location of infarcts in Broca’s and Wernicke’s aphasias. These data and those obtained in the clinical-anatomical correlation study converge to support the finding that the main determinant of aphasia type is lesion location.

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