



Aphasia in the Bengali Language: Excerpts from the Kolkata Aphasia Study

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Introduction: The knowledge of aphasia incidence and profile in different languages is important towards understanding the cross-linguistic diversity in brain representation of language. Here we attempt to elaborate various aspects of aphasia in speakers of Bengali language from eastern India. In addition to usual aphasia incidence, symptomatology, severity and recovery, our study encompassed crossed aphasia and lesion aphasia discordance as well.

Methods: Between 2016 and 2018, cases of aphasia following first-ever stroke were collected from a tertiary care stroke unit in Kolkata (India). Bengali version of Western Aphasia Battery was used for language assessment in study participants. Thorough demographic data of each recruited patient was recorded that included age, gender, handedness, bilingual status, and educational background. Lesion localization was done by using magnetic resonance imaging (3T) for ischemic stroke (if not contraindicated) and computed tomography for hemorrhagic stroke. Among 515 screened cases of first-ever acute stroke, 208 presented with aphasia. Language assessment was done between 7 and 14 days in all study participants and was repeated between 90 and 100 days in the available patients for follow-up. Appropriate statistical tests were used for analysis of the collected data.

Notable idiosyncratic features of Bengali language are, by and large, related to its vowel duration as well as intonational pattern. Bengali uses a phonological writing system—a so-called abugida—whereby vowels are represented as diacritics rather than independent letters. Bengali is written from left to right and lacks distinct letter cases.

Results: The incidence of post-stroke aphasia in our sample was 40.39% with Broca's aphasia being the commonest type followed by global aphasia. Higher education was found to be an independent predictor of fluent aphasia occurrence. Majority (78.8%) of the participants showed very severe aphasia while the independent determinants of severity were hemorrhagic stroke,

higher lesion volume and non-fluent aphasia. Bilingualism was observed as a protecting factor as monolingual participants showed higher initial severity of post-stroke aphasia. The most important determinant of aphasia recovery in our sample was initial aphasia severity followed by type of aphasia. Lesion-aphasia discordance was observed in 14.92% of participants with aphasia and discordance favored non-fluent aphasia type. Patients with hemorrhagic stroke, posterior peri-sylvian lesion and higher education were found more likely to display lesion-discordant aphasia. Recovery was also found to be better in lesion-discordant aphasia. Crossed aphasia incidence was found higher (6.73%) in Bengali-speakers than in other languages and the profile of crossed aphasia favored non-fluent type despite wide variation in lesion location.

Conclusion: To our knowledge, this is a first-time documentation of the epidemiological aspects of post-stroke aphasia in Bengali-speakers. An attempt was made to elaborate aphasia in the Bengali language in its totality (including uncrossed & crossed aphasias and lesion-aphasia discordance) which might help future studies to explore its representation in healthy brain.

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Disclosure:

Part of this research has already been published (Aphasiology; Journal of Neurolinguistics; Cognitive and Behavioral Neurology; Frontiers) and some of the remaining are in process at the moment.

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