Communicative Characteristics and Recovery in Thrombosis and Embolus Patients with no Hemiplegia

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The impetus for this study was two-fold. Over the past six years, we have had frequent exposure to patients in our clinic with central nervous system communicative deficits, and with no evidence of hemiplegia or hemiparesis. In fact, in retrospect, our professional curiosity was aroused by what seemed to be a trend within these patients' communicative behaviors toward marked verbal apraxic components, together with high-level aphasia. Adding fuel to the fire was the not uncommon statement by physicians that a particular patient would recover quickly from his speech and language deficits due to absence of, or early recovery from, hemiplegia.

The purpose of this investigation, therefore, was to determine if there were any significant similarities in the communicative deficits of adult thrombotic and embolic patients, one month post-onset, with no residual limb involvement, and to determine whether there were any common patterns of recovery for these patients.

The literature is essentially devoid of any extensive discussion of non-hemiplegic stroke patients. Alajouanine, in an extensive study of apraxia in 1956, stated that the relationships between the presence of hemiplegia and recovery from apraxia were largely unexplored. Daniel Boone, in 1960, presented the findings of a year-long investigation of progress in speech therapy related to progress in physical therapy. The only trend was that physically and communicatively severely involved patients tended to show little potential in any therapy setting. Boone's general impression was that it was not possible to predict by physical status alone how well a patient would do in speech and language recovery.

The patient sample for this study was derived from patient files from 1971 to 1976. Thirteen of fifteen patients had been discharged from treatment. Patient selection was based on the following criteria: (1) unequivocally diagnosed thrombotic and embolic etiology, (2) right hand dominance, (3) first CVA, (4) unilateral left hemisphere lesion, (5) no evidence of right upper or lower extremity weakness at one month post-onset, (6) evidence of a cortical-level communicative deficit based on standardized testing.

The files of fifteen patients, nine male and six female, were selected for close scrutiny (see graph #1). Seven patients were diagnosed as having embolic lesions, eight were thrombotic. The age range was from 39 to 84 years. Twelve patients exhibited no hemiplegia from the onset of the CVA, and four patients had residual paresis that varied from twenty-four hours to three weeks following onset. Comparisons of EEG reports indicated that there were no commonalities among group members in terms of location of brain lesion. Two EEG reports were "normal" while the others ranged from left temporal slowing to left temporal-parietal, occipital, and fronto-temporal slowing to entire left hemisphere involvement. Angiography was performed on seven of the fifteen patients. Results varied. Several patients exhibited left internal carotid artery and middle cerebral artery

disease, while others exhibited a variety of diagnoses, extending to subclavian and alternate artery disease.

The Porch Index of Communicative Ability (PICA) and the Minnesota Test for Differential Diagnosis of Aphasia (MTDDA) were utilized for comparing the severity, range and characteristics of the patients' communicative deficits and recovery patterns. All patients had been tested with the PICA at one month post-onset. These one-month-post-onset tests were analyzed for similar characteristics, eliminating the effects of treatment on test results, by using tests gathered before treatment had begun.

A compilation of patients' modality responses one month post-onset revealed no significant general patterns of impairments in any modalities (see graph #2). At first, I was interested that no patient fell below a 9.0 on subtest X--identifying objects named--and wondered if this could represent an unusually high ability to process simple verbal commands, but percentile contours indicated that a 20th percentile patient could process the stimuli in Text X at a 9.0 level. The only significant finding regarding this graph is that there are no common communication patterns observable with regard to severity or modality.

In comparing the patients' recovery curves over time, findings were similar (see graph #3). At least half the patients exhibited fairly rapid recovery within the first few months of therapy. One might question if this is a characteristic common to non-hemiplegic patients, or is representative of the presence of an abundance of embolic lesions. Otherwise, the comparison of recovery curves suggested no similarities.

Two subtests, one verbal and one auditory, from the MTDDA were also drawn from the patients' files for purposes of comparison. The first subtest--identifying items named serially--revealed a range from: (1) total rejection, to (2) all complete and prompt responses. The verbal subtest--completing sentences--also showed responses varying widely across the spectrum of severity, from: (1) unintelligible, to (2) complete and accurate.

The only striking finding was that 14 out of 15 of these patients had evidence of verbal apraxia. This was an interesting finding to us because, as I stated earlier, our original observation of these patients was that they frequently exhibited evidence of apraxia, together with a mild language processing deficit. The evidence for motor planning difficulties in the 15 patients reported here was based on clinical observations by clinicians working with these patients. However, formal testing revealed a great variety of verbal scores; consequently similarities of motor planning impairments among subjects could not be defined. These findings accentuate the need to study these deficits in greater depth, in order to identify the parameters of apraxia and to differentiate the different kinds of voluntary speech disorders that may exist in patients like those reported here. Our findings also lend credence to the theory that apraxia or motor planning problems may not be due to discrete lesions only in the frontotemporal area, but may be due to damage in one of several areas of the central nervous system.

So, in summary, few common characteristics in communicative deficits were detected in patients one month post-onset with no residual physical involvement, and patterns of recovery from the CVA over time suggested only that there might be a trend toward more rapid than usual recovery, which could simply indicate the presence of a large proportion of embolic lesions. It was interesting that all patients exhibited some form of apraxia, although more detailed study of their voluntary speech patterns

would be necessary to identify any common motor planning deficits.

The major contribution of this study has been to increase our awareness of potential commonalities in speech and recovery of aphasic patients without limb involvement, and to lead us to continued documentation of communication patterns of these patients, for better understanding of the relationships among the central nervous system, speech and language, localization of cerebral injury, and recovery.

References

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Boone, D. Relationship of progress in speech therapy to progress in physical therapy. Archives of Physical Medicine and Rehabilitation, 42:30-32, 1961.

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Schuell, H.M. Minnesota Test for Differential Diagnosis of Aphasia. Minneapolis: University of Minnesota Press, 1965.

GRAPH NO. 1

PATIENT	AGE	ONSET	ETIOLOGY	EXT. INV.	RECOVERY %
1	64	4-13-72	Thrombosis	none	82 - 95%
2	45	3-31-75	Thrombosis	Slight at 1st	65 - 95%
3	72	2-19-73	Embolus	24 hours	27 - 68%
4	68	12-29-73	Thrombosis	none	30 - 77%
5	53	2-16-73	Thrombosis	none	57 - 83%
6	74	2-20-73	Thrombosis	none	25 - 49%
7	84	1-6-75	Thrombosis	none	93 - 98%
8	49	12-25-72	Thrombosis	Slight at 1st	22 - 49%
9	59	6-4-75	Thrombosis	none	94 - 99%
10	57	11-22-75	Embolus	none	30 - 70% to date
11	66	12-4-74	Embolus	3 weeks	77 - 94%
12	60	9-20-74	Embolus	none	91 - 96%
13	39	11-30-74	Embolus	none	73 - 94%
14	79	3-26-76	Embolus	none	80% to date
15	67	5-22-75	Embolus	none	44 - 86%

Porch Index of Communicative Ability

MODALITY RESPONSE SUMMARY

Name GRAPH #2 Case No.

Age Birthdate Sex Race Handedness

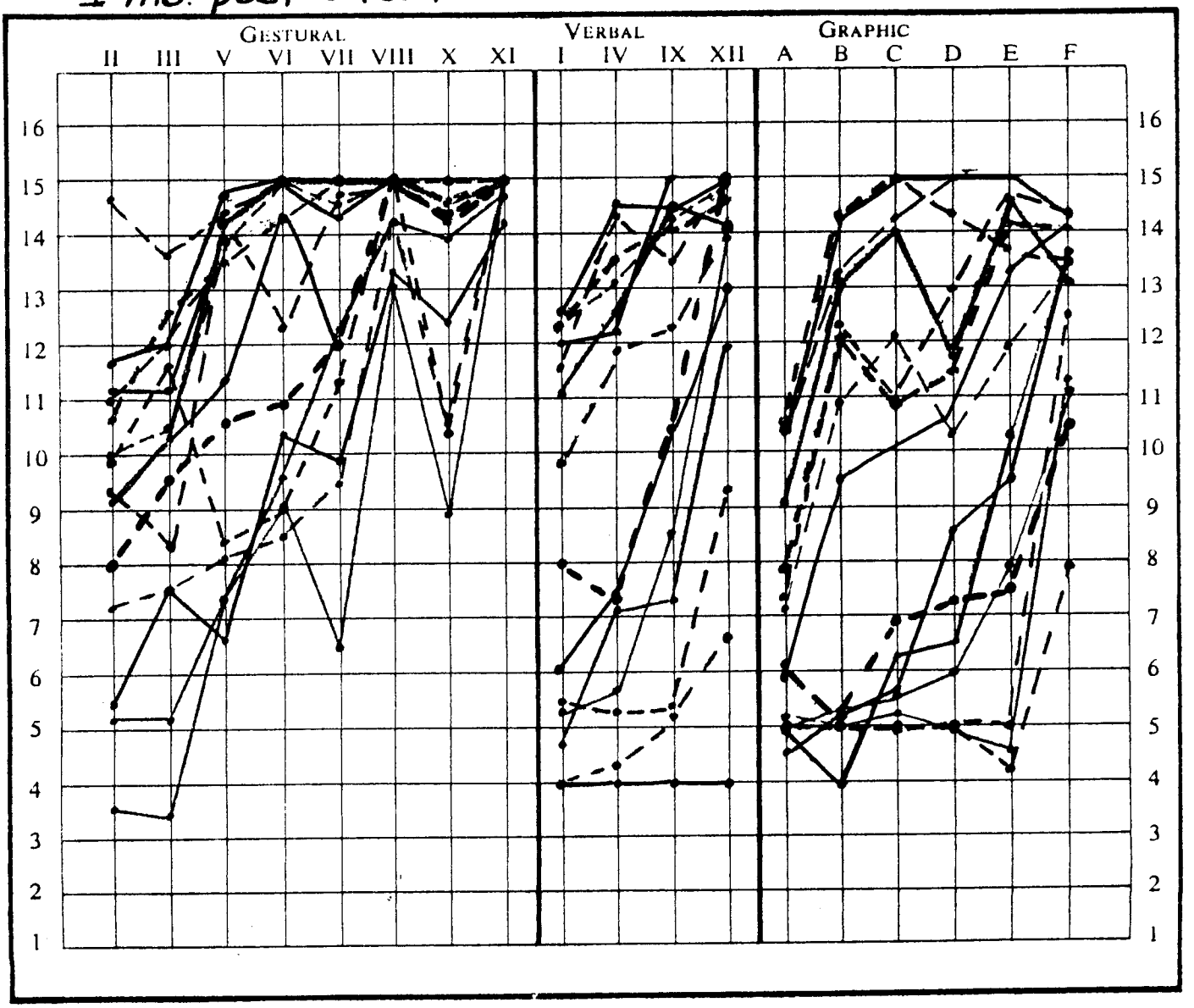
Diagnosis THROMBOSIS + EMBOLUS Onset
WITHOUT HEMIPLEGIA (L) HEMISPHERE ONLY

Date Overall Gestural Verbal Graphic

Date Overall Gestural Verbal Graphic

Date Overall Gestural Verbal Graphic

1 mo. post ONSET



Note

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APHASIA RECOVERY CURVE

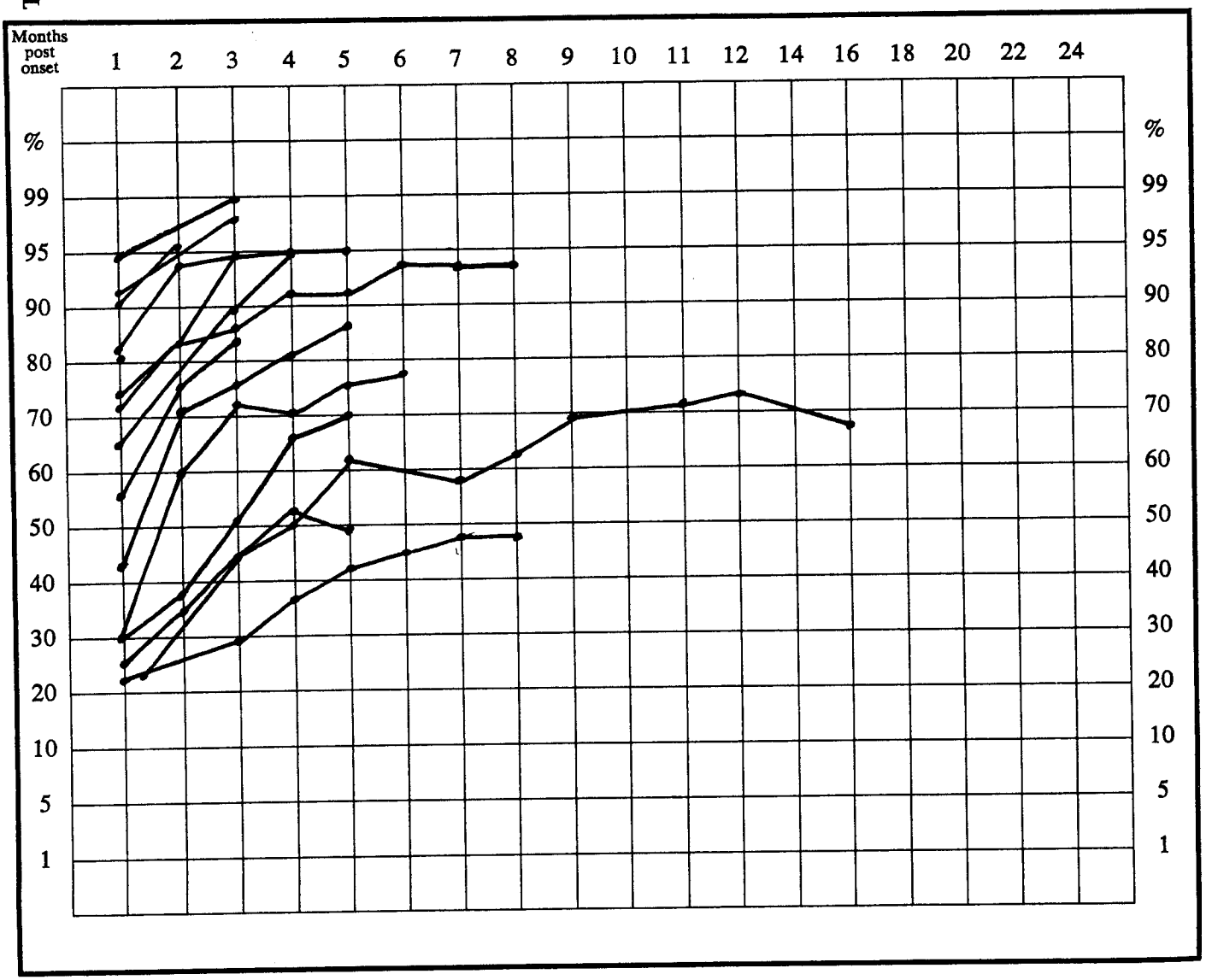
(Percentiles)

Name GRAPH #3 Case No. _____

Birthdate _____ Race _____ Onset _____

DX. Type THROMBOSIS & EMBOLUS without hemiplegia Site (L) HEMISPHERE ONLY

Test Date



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