Case Report

PRELIMINARY REPORT ON THE EFFECTS OF MELODIC INTONATION THERAPY IN THE REHABILITATION OF PERSIANAPHASIC PATIENTS

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ABSTRACT

Melodic Intonation Therapy (MIT) is a method used in the rehabilitation of certain groups of non-fluent aphasic patients using prosodic-based melodic phrases. In this study, MIT has been adapted for the Persian language and its effects have been examined in a series of three right-handed, Persian-speaking patients afflicted with chronic non-fluent aphasia. We utilized subtests from the Persian Aphasia Test (FAT) to show the efficacy of the MIT program after 15 sessions of treatment. Using single - group time-series design, improvements in the selected variables proved to be significant. No significant progress was observed during the treatment-free phases.


Key Words • Aphasia • Rehabilitation of speech and language disorders • language therapy • music therapy

Introduction

Aphasia is: "an acquired disorder of previously intact language ability secondary to brain damage that may be present as impairment-disruption in phonology, morphology, semantics and/or syntax disability (a reduction of functional communication in everyday life) and/or handicap (restricted participation in society), that reduces the quality of life."1

Aphasia is a condition with considerable incidence, but lack of public and even expert and official awareness has led to a paucity of statistical data concerning its incidence or prevalence in Iran.

Regarding aphasia diagnosis and classification, besides the medical history and neurological examination of the afflicted patient there are certain standardized tests (such as the well-known Boston Diagnostic Aphasia Examination2 and the Minnesota Test for the Differential Diagnosis of Aphasia)3 and neuroimaging procedures that can aid clinicians in diagnosing and implementing therapeutic0 strategies. In Iran the only published and standardized test existent at publication, is the "Farsi Aphasia Test"4 developed by Nilipour in 1993.

Therapeutic approaches toward aphasia take into account the type of aphasia and the specific pathologic performance of the patient in different modalities of language.

All aphasia therapeutic methods are based on certain theoretical bases. Wertz classified different techniques into four categories: Stimulation-Facilitation, Cognitive Neuro-psychological and/or Psycholinguistic, Functional Communication, and Neurobehavioral.1

Based on strong neurobehavioral theories, MIT is one of the stimulation techniques of aphasia therapy.
that was developed by Albert, Sparks and Helm in 1973 and which to date has not been introduced as an aphasia rehabilitation method in Iran. It is a recognised method for the rehabilitation of non-fluent aphasic patients with certain characteristics.5

Regarding patient selection criteria, two groups of characteristics, one including language criteria and the other comprising CT scan characteristics, have been proposed by Helm,6 and Naeser and Helm-Estabrooks.7

The American Academy of Neurology, reported the method as being promising,8 which denotes that more research would be welcomed.

Using PET scans, Belin et al showed objectively the mechanism of recovery from non-fluent aphasia in patients rehabilitated with MIT. They believed that the reactivation of Broca's area was the possible mechanism for recovery from nonfluent aphasia after MIT.9 Concerning the number of treatment sessions, Helm Estabrooks et al. suggested that the minimum number of treatment sessions for observing first improvements was 10-15 sessions and such improvements were taken as a sign that treatment should be continued.10 It has been mentioned that demonstration of improved verbal communication skills is the ultimate goal for measuring treatment effectiveness.

This paper is a preliminary and concise report of the results of MIT (adapted for Persian aphasia) in three non-fluent aphasic patients after 15 sessions of treatment.

**Materials and Methods**

The standardized "Farsi Aphasia Test" (FAT) was used (twice before and twice after the introduction of the MIT program) for measuring changes in expressive and auditory comprehension abilities. Diagnoses other than vascular aphasia such as dementia or other mental disorders and auditory agnosia were ruled out in all three patients.

As a hierarchically structured program, the MIT is divided into three levels. In the first two levels, multisyllabic words and short, high probability phrases are musically intoned using a special style of singing termed "recitative". The third level introduces longer and more complex sentences starting in the recitative style and progressing to the use of the "Sprechgesang" technique, which leads the patient to normal speech prosody.10 The intoned patterns are sung with the patient according to an accurate and detailed program10 and progression from one level to the next is based on a well-described quantitative criteria with scoring.10,12 Effects of the method are assessed using standardized aphasia tests.

After the first two assessments, the MIT program (adapted for Persian aphasia) was initiated at the rate of 3 sessions per week and the patients were tested twice after the treatment period was completed.

**Case 1**

A 59 year old right-handed male antique-seller who developed an embolic stroke following a CABG operation. When visited 33 months post onset, he had rightsided hemiplegia and severe Broca's aphasia, and could produce only one or two-words utterances with great effort. In contrast, he could sing lyrics and verses with good articulation and precise melody. CT scan revealed a Broca-like pattern with patchy infarcts in Wernicke's area in the left hemisphere (Fig.1).
One month after the first assessment, the patient displayed no improvement in his expository speech, or expressive and comprehension skills when evaluated by FAT. However, after 15 sessions of MIT program, the patient could produce up to 4-word utterances and had significant improvement in the naming subtests and auditory comprehension skills. This improvement was also appreciable in environmental settings other than the therapy ward, as witnessed by his close family and observed by the therapist himself. Notably, the observed improvement persisted when he was tested after one month of being treatment free.

**Case 2**

A 48-year-old right-handed woman afflicted by aphasia after an embolic stroke a few hours after her last confinement, secondary to an established mitral stenosis. Fifty eight months later, she was evaluated twice by FAT (one month apart), and showed no significant improvement before commencing MIT program. This alongside with a mild hemiparesis suggested severe to moderate Broca's aphasia with a phrase length of 2 in expository speech and difficulty in the naming and reading comprehension subtests. Brain CT scan revealed a left hemispheric infarct compatible with Broca's aphasia pattern (Fig. 2).

After 15 sessions of MIT treatment, the patient was able to use up to 3-word phrases in both expository speech subtests and her conversational speech beyond the testing sessions. She also showed a significant improvement in the naming subtest and started to handle her own conversational needs in some common circumstances. These also persisted after one month of being treatment free.

**Case 3**

A 61-year-old right-handed male engineer who suffered a thrombotic stroke 57 months before the first evaluation. On assessment, the patient's expository and conversational speech were limited to one or two word utterances, which were effortfully expressed. He also had a dense right hemiplegia. According to his scores in the FAT and his brain MRI, his condition was diagnosed as moderate to severe Broca's aphasia (Fig. 3).

While the second assessment after one month showed no significant changes in his speech and auditory comprehension, after 15 sessions of MIT program, the third testing showed noticeable improvement in expository speech samples with 3-word phrases. He also showed a significant improvement in auditory comprehension subtests. His use of lengthier phrases and sentences were prominent as reported by his spouse and continued to be so after one month.

**Conclusion**

Intoning a phrase contains three elements: Melodic line, rhythm and points of stress which all differ in their linguistic concept in Persian from English. While in English, duration is the most important factor in perception of stress, in Persian syllables, increasing the pitch plays the single most important role.

In all three of our patients, there were noticeable improvements in expository variables, such improvement being the ultimate goal of therapy. We also observed positive changes in some auditory comprehension skills in both those who had more comprehension impairments. This observed improvement could not be accounted for by spontaneous recovery as the MIT program was instituted at more than two years post-onset. In addition, as no significant progress was seen during the one-month therapy-free periods, one cannot attribute the post-MIT changes to confounding factors.
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As a result, it appears that it is the MIT program that has produced the improvement in a period of nearly one month. The observed results in our Persian aphasics are in concordance with other reported studies from other contributors. This indicates that the future of MIT on well-selected Persian aphasics may be promising. However, it should be noted that the design employed in this study was limited and generalizations based on its results unwise.

Finally, it is noteworthy that, although Iranian speech therapists may use music for enhancing patient’s output (a technique that is helpful transiently but not for permanent long-term rehabilitation goals), MIT is not currently used in the rehabilitation of severely afflicted non-fluent aphasic patients in our clinics. Further studies on the efficacy of MIT may prove it to be an effective method as indeed studies from other countries have shown. At the same time, developing different experimental studies to illustrate the efficacy of other therapy methods other than MIT is of utmost importance. Limited published data exists in this regard, which may contribute to the lack of awareness of aphasia, not only among non-physicians, but also among officials and medical doctors.

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References


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