



Prosodic Impairments of Adult Persian-Speaking Brain Damaged Patients Based on the Montreal Protocol for the Evaluation of Communication (M.E.C.)

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1. INTRODUCTION

The previous prevailing view in neurolinguistics was that it is the left hemisphere which play a central role in different linguistic levels and damage to this hemisphere, in various forms, causes impairments in linguistic abilities of individuals to varying degrees, but today it has become clear that right hemisphere is involved in processing of various linguistic aspects. Neurolinguistics studies have shown that due to brain damages in some areas, the ability to understand or produce language is impaired to varying degrees and causes language disorders. The aim of the present study was to evaluate prosodic skills in adult right and left hemispheres damaged patients using the Persian version of the Montreal Protocol for the Evaluation of Communication (M.E.C.)

2. MATERIALS AND METHODS

The research method was quantitative and experimental. 10 brain-damaged patients (5 right hemisphere damaged patients and 5 left hemisphere damaged patients) who experienced a stroke formed the statistical population of the study. Patients' brain lesions were determined using C. T. Scan and M. R. I. Screening tests were administered including: Coren Handedness Inventory, Mini Mental State Examination (MMSE) and Persian Diagnostic Aphasia Battery (Bedside Version-AQ1). Then, Montreal Protocol for the Evaluation of Communication (M.E.C.) was performed in order to evaluate the prosodic skills. M.E.C protocol was designed by Joannette, Ska and Cote (2004) in Canada and in French language. Then, in later years, the protocol was translated and localized into Spanish, Portuguese, Italian, and English. Raqibdoust and Modarresi Tehrani also translated and localized a Persian version based on the English one. In this study, the Persian version has been used to evaluate the prosodic processing of patients. This protocol consists of 16 subtests that measures prosodic, lexical-semantic, discourse and pragmatic skills. In the present study, subtests related to prosodic skills have been used. To analyze and compare the data, standards scores and patient performance percentages in each subtest were used. During conducting this study, the research ethics guide for human samples and clinical subjects were considered. In this study, statistical data's were

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presented in the form of descriptive and analytical statistics. For descriptive statistics, central measures of dispersion including mean and variance were calculated and for analytical statistics, research data's were analyzed using SPSS software version 25 in appropriate methods. According to the purpose of the study, parametric t-test and Mann-Whitney non-parametric groups were used to compare the mean range of variables in each of the two groups of subjects.

3. RESULTS AND DISCUSSION

Data analysis showed that right hemisphere damaged patients had poor performances than left hemisphere damaged patients in all subtests. Statistical analysis revealed that the differences of performance between the two group of RHD and LHD is only meaningful in the emotional prosody (comprehension) ($P < 0.05$) and the difference in performances between these two groups in linguistic prosody (comprehension, repetition) and emotional prosody (repetition, comprehension, production) is not significant ($P > 0.05$). The results of the present study showed that in LHD group, patient (3) with temporal-frontal lobe lesions and patient (1) with temporal-parietal lesions showed the most impairments in linguistic prosody and emotional prosody. Therefore, it seems that damage to the temporal-parietal region of the left hemisphere also leads to the problems in the prosodic skills of aphasic patients. In the present study, some differences were observed between Broca patients' performances, which may be attributed to the differences such as age, educational characteristics, brain lesion location and the chosen tool, which used for assessing their prosodic ability. Therefore, more researches are needed to achieve clear results. Of course, a more detailed conclusion in this regard requires comprehensive researches on various groups of brain damaged patients. It is clear that the realization of this goal depends on the development and application of accurate measurement tools. Of course, a more detailed conclusion in this regard requires comprehensive researches on various groups of brain damaged patients. It is clear that the realization of this goal depends on the development and application of accurate measurement tools.

4. CONCLUSION

Results showed that damage to the right and left hemispheres leads to prosodic impairments. However, right hemisphere damages cause more prosodic impairments than left hemisphere. This increase in the severity of communication impairments makes the function of right hemisphere damaged subjects more heterogeneous in prosodic skills. Also, damage to the temporal lobe and surrounding areas in the right hemisphere of the brain and damage to the temporal-frontal lobe as well as the temporal-parietal lobe of the left hemisphere lead to impaired communication skills in brain-injured individuals. Therefore, based on the obtained data of the present study, it may be claimed that there is a direct relationship between the degree of impaired processing of prosodic skills and the location of the brain lesion.

Key words: Prosodic disorders, Right and left hemisphere damaged, Montreal Protocol for the Evaluation of Communication), Persian-speaking