The association between neurological symptoms and the outcomes of N-methyl-D-Aspartate receptor encephalitis treatment

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ABSTRACT

Objective: To analyze the relationship between neurological symptoms and treatment outcomes of anti-NMDA receptor encephalitis at the Neurology Center of Bach Mai Hospital.

Subjects: We selected 50 patients who were diagnosed with anti-NMDA receptor encephalitis at Bach Mai Hospital from January 1st, 2020 to October 31st, 2023.

Methods: Cross-sectional descriptive study.

Results: Among the 50 patients studied, 48% achieved good treatment outcomes, while 52% had poor outcomes. There was evidence of a significant difference in treatment outcomes between the group with symptoms of consciousness disorders, dyskinesia and movement disorders, speech disorders, or dysautonomia compared to the group without these symptoms (p<0.05). There was no statistically significant difference in treatment outcomes between the group with symptoms such as seizures, memory impairment, and sleep disorders compared to the group without these symptoms (p>0.05).

Conclusion: In our study, 48% of patients achieved good treatment outcomes at discharge. Symptoms of consciousness disorders, dyskinesia and movement disorders, speech disorders, and dysautonomia were associated with treatment outcomes.

Keyword: Autoimmune Encephalitis, Anti N-methyl-D-Aspartate receptor, NMDA.

I. INTRODUCTION

In 2005, Roberta Vitaliani identified a syndrome characterized

by prominent psychiatric symptoms, memory loss, decreased consciousness, and central hypoventilation in four young women with ovarian teratomas. This syndrome was associated with antibodies against hippocampal receptors. In 2007, Dalmau identified the target receptor as the N-methyl-D-aspartate receptor (NMDAR).[1,2] This condition can lead to severe consequences and long-term sequelae in both children and adults, placing a significant burden on families and society. However, early diagnosis and intervention can improve the prognosis.[3] Therefore, the role of clinicians, particularly neurologists and psychiatrists, is crucial in screening, diagnosing, and treating this condition early to improve mortality and disability outcomes in patients with autoimmune encephalitis due to anti-NMDAR antibodies.[4]

To assist clinicians in assessing the relationship between prominent neuropsychiatric symptoms and treatment outcomes, we conducted a study: "The association between neurological symptoms and the outcomes of N-methyl-D-Aspartate receptor encephalitis treatment".

II. SUBJECTS AND METHODS

2.1. Study Subjects

We selected 50 patients diagnosed with Anti-NMDA receptor encephalitis from January 1st, 2020 to December 31st, 2022, at the Neurology Center of Bach Mai Hospital.

2.2. Research Methodology

This is a cross-sectional descriptive study.

III. RESULTS

3.1. Treatment Outcomes

Outcome	Number of Patients (N=50)	Percentage (%)
Good (mRS ≤ 2)	24	48
Poor (mRS > 2)	26	52

Observation: Good outcomes accounted for 48%, while poor outcomes accounted for 52%.

3.2. Relationship Between Consciousness Disorders and Treatment Outcomes

Consciousness Disorder	Good Outcome (n=24)	Poor Outcome (n=26)	P value
No	8 (33.3%)	2 (7.7%)	0.035 F
Yes	16 (66.7%)	24 (92.3%)	

Observation: There is evidence of a significant difference in treatment outcomes between the group with consciousness disorders and the group without this symptom (p<0.05).

3.3. Relationship Between Seizures and Treatment Outcomes

Seizures	Good Outcome (n=24)	Poor Outcome (n=26)	P value
No	13 (54.2%)	10 (38.5%)	0.266 C
Yes	11 (45.8%)	16 (61.5%)	

Observation: There is no significant difference in treatment outcomes between the group with seizures and the group without this symptom (p>0.05).

3.4. Relationship Between Dyskinesia and Other Movement Disorders and Treatment Outcomes

Dyskinesia and Other Movement Disorders	Good Outcome (n=24)	Poor Outcome (n=26)	P value
No	18 (75%)	6 (23.1%)	0.000 C
Yes	6 (25%)	20 (76.9%)	

Observation: There is evidence of a significant difference in treatment outcomes between the group with dyskinesia and other movement disorders and the group without these symptoms (p<0.01).

3.5. Relationship Between Language Disorders and Treatment Outcomes

Language Disorder	Good Outcome (n=24)	Poor Outcome (n=26)	P value
No	18 (75%)	11 (42.3%)	0.019 C
Yes	6 (25%)	15 (57.7%)	

Observation: There is evidence of a significant difference in treatment outcomes between the group with language disorders and the group without this symptom (p<0.05).

3.6. Relationship Between Memory Impairment and Treatment Outcomes

Memory Impairment	Good Outcome (n=24)	Poor Outcome (n=26)	P value
No	14 (58.3%)	15 (57.7%)	0.963 C
Yes	10 (41.7%)	11 (42.3%)	

Observation: There is no significant difference in treatment outcomes between the group with memory impairment and the group without this symptom (p>0.05).

3.7. Relationship Between Sleep Disorders and Treatment Outcomes

Sleep Disorder	Good Outcome (n=24)	Poor Outcome (n=26)	P value
No	8 (33.3%)	9 (34.6%)	0.924 C
Yes	16 (66.7%)	17 (65.4%)	

Observation: There is no significant difference in treatment outcomes between the group with sleep disorders and the group without this symptom (p>0.05).

3.8. Relationship Between Autonomic Nervous System Dysfunction and Treatment Outcomes

Autonomic Nervous System Dysfunction	Good Outcome (n=24)	Poor Outcome (n=26)	P value
No	19 (79.2%)	8 (30.8%)	0.001 C
Yes	5 (20.8%)	18 (69.2%)	

Observation: There is evidence of a significant difference in treatment outcomes between the group with autonomic nervous system dysfunction and the group without this symptom (p<0.05).

IV. DISCUSSION

Among the 50 patients with autoimmune encephalitis due to anti-NMDAR antibodies at the Neurology Center of Bach Mai Hospital, 24 patients had good treatment outcomes with an mRS score of ≤ 2, while 26 patients had poor treatment outcomes with an mRS score > 2.[5,6] These results are similar to those of Yejia Mo, who reported a 38.3% rate of good prognosis, but differ from the study by Anastasia Zekeridou, where 83% of the 36 patients studied had a good prognosis. The similarity in our study with Yejia Mo's can be attributed to the comparable sample sizes and demographic characteristics, such as age and gender. The difference with Anastasia Zekeridou's study may stem from the fact that their research focused exclusively on children, unlike our study, which included patients of all ages.

When evaluating the relationship between neurological symptoms and treatment outcomes, we found that consciousness disorders, dyskinesia and other movement disorders, autonomic nervous system dysfunction, and language disorders were significantly associated with treatment outcomes (p < 0.05). Symptoms such as insomnia, seizures, and memory impairment showed no significant difference in treatment outcomes (p > 0.05). These results are consistent with those of Yejia Mo, where patients with consciousness disorders and autonomic nervous system dysfunction exhibited significant differences in treatment outcomes, but patients with language disorders did not. However, Yejia Mo's study found no significant

difference in prognosis between patients with and without dyskinesia and other movement disorders (p=0.126).[6] The differences between our study and Yejia Mo's regarding prognostic factors could be due to anthropometric variations and treatment methodologies. These differences may also partially account for discrepancies in prognostic models between the two studies.

V. CONCLUSION

In our study, 48% of patients achieved good treatment outcomes at discharge. Consciousness disorders, dyskinesia and other movement disorders, autonomic nervous system dysfunction, and language disorders were significantly associated with treatment outcomes.

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