# Nursing & Primary Care

## Don't Call Me 'Madman'- The Curse of Anti-NMDA Receptor Encephalitis

Chiu-Ping Cho<sup>1\*</sup>, Hui-Hsuan Huang<sup>2</sup> and Wei-Chih Kan<sup>3</sup>

<sup>1</sup>RN, hemodialysis room, Chi Mei Medical Center, Tainan, Taiwan.

<sup>2</sup>*Head nurse, hemodialysis room, Chi Mei Medical Center, Tainan, Taiwan.* 

<sup>3</sup>Department of Nephrology, Chi Mei Medical Center, Tainan, Taiwan.

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#### Keywords

Anti-NMDA, Immunoglobulins, Mental illness.

NMDA receptors are involved in central nerve conduction and are distributed in the forebrain, pituitary gland, hypothalamus, and marginal lobe systems. They are the basic mechanisms of memory and learning.

Anti-NMDA receptor encephalitis is a disease discovered in 2005. It was first reported in 2007 and belongs to an acute encephalitis. The autoimmune antibody attacks the NMDA receptor to elicit an immune response, which may be fatal. However, the chances of recovery are high. Anti-NMDA-R encephalitis is associated with tumors, especially in young women with ovarian teratoma. Most of the patients diagnosed in the past were adults, but in recent years, adolescents and infants have confirmed cases. The initial symptoms are similar to mental illness and then epilepsy and dyskinesia. They are often misdiagnosed and sent to psychiatry as a psychiatric patient ruin the recovery opportunity. Treatment with steroids, immunoglobulins, and plasma exchange is a priority.

#### **Document verification**

#### Anti-NMDA receptor encephalitis physiology

Glutamate receptor is an excitatory receptor that can be divided into NMDA, AMPA and KA. The NMDA receptor is a heteromer, a sodium and calcium channel. NMDA is permeable to calcium ions and requires two agonists, one is glutamic acid and the other is glycine. When the anti-NMDA receptor is activated by two nerve cells at the same time, the intensity of the reaction of the synapses bound between the two cells is enhanced.

This is called long-term potentiation (LTP). The effect can last for hours or even days. LTP is distributed on the synapses of stimulated cells and is found in several specific parts of the brain, especially hippocampus inside the temporal lobe, which is the basic mechanism of learning and memory. NMDA over-stimulation can cause neuronal injury and degeneration, leading to signs of epilepsy, dementia and stroke; NMDA function is low in the short term and easily cause memory impairment and schizophrenia, and long-term changes similar to Alzheimer's disease.

Chiu-Ping Cho, RN Hemodialysis Room, Chi Mei Medical Center,

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### **Clinical manifestations**

#### **Precursor period**

\*Correspondence:

Tainan, Taiwan.

There is a prodromal symptom similar to a viral infection. Most patients will show up with fever, general weakness, distraction, nausea, vomiting or headache.

#### **Psychiatric period**

It will be presented with behavioral disturbances and emotional disorders, similar to schizophrenia, including anxiety, agitation, hallucinations, auditory hallucinations and disorders. There may also be symptoms of hand-foot chorea, lack of tension in the limbs, epilepsy, and physical violence.

#### No reaction periods

Cannot listen to the command action, there may be a phenomenon of smirking, looking straight or continuing to move.

#### **Movement period**

In this period, autonomic neuropathy is manifested. If the vital signs are unstable, even the lack of ventilation requires intubation. In severe cases, it needs to be treated in the intensive care unit; it is rarely presented in children, and children mainly rely on sports and language disorders.

#### Diagnosis

Anti-NMDA-R encephalitis is a clinical manifestation that spans multiple specialists. It is extremely difficult to diagnose and is easily confused with mental illness. In order to distinguish from a psychiatric diagnosis, a high-accuracy cell-base assay can be used, which is helpful for early diagnosis and treatment. If the cell assay is not easy, usually by blood and cerebrospinal fluid puncture (diagnosis to be able to find anti-NMDAR IgG antibodies in plasma / brain pulp), then arrange brain magnetic resonance imaging (MRI), EEG and tumor examination, the study showed that 67% of patients with normal MRI in the brain, but 90% of EEG is abnormal.

#### Treatment

There is no established guideline for the treatment of anti-NMDA receptor encephalitis. At present, the main treatments include supportive therapy, immunotherapy, and tumor resection. The first line of immunotherapy consists of high-dose steroids, intravenous immunoglobulins (IVIg), and plasmapheresis. Plasma exchange can remove systemic antibodies, but it does not alter the autoimmune process that occurs in the brain. So far, there is no data to confirm the superiority of treatment in the three. Rituximab and cyclophosphamide are available as second-line treatment for patients who fail first-line treatment. In summary, early diagnosis, early immunotherapy, and complete tumor resection are important to change the progression of this thorny disease [1-5].

#### Nursing assessment

#### Basic information on cases and families

Miss Han, 25 years old, unmarried, university degree, as a longterm daughter, has two younger brothers, is currently employed, her father has just passed away, the main communication language is Mandarin, Taiwanese, serving in the catering industry. Currently living with a mother and two younger brothers, the mother is the main caregiver during hospitalization.

#### Past medical history

No special medical history and hospitalization experience.

#### **Family history**

Father: Died (car accident). Mother: Save. The family has no history of mental illness.

#### Health function assessment

- Health treatment---health treatment type: seek medical treatment for illness. Smoking: None. Drinking: No. Areca: None.
- Nutrition and metabolism diet type: no special restrictions. Oral condition: normal. Gastrointestinal condition: no problem. Height 160cm; weight 55kg, body mass index (BMI) 21.4 (kg / m2), weight in the normal range.
- Excretion---Defecation pattern: 1 time, normal, normal. Intestinal peristalsis: about 10 times / minute. Urinary pattern: incontinence, urinary retention. Urine type: normal.
- Activity and exercise breathing: regularity. Musculoskeletal: musculoskeletal in the upper left limb, muscle strength: 1. Right upper limb musculoskeletal, muscle strength: 1. Left lower limb musculoskeletal, muscle strength: 1. Right lower limb musculoskeletal, muscle strength: 1. Daily life: need to assist in eating, need to assist in dressing, need to help clean, need to help with toilet, need to help turn over, need to help

sit up.

- Sleep and rest---current use of sleeping pills: can not be assessed.
- Cognition and feeling---conscious state: GCS: E-4 V-1 M-4. Perception/Thinking, Hearing, Emotions/Behavior, Pain (Pain Strength Assessment FLACC), Memory, Vision: Unevaluable
- Response and stress---currently the most concerned: unable to assess.
- Sex and reproduction normal.
- Role relationship main supporters: mother. Primary caregiver: during hospitalization mother. After leaving the hospital mother.
- Value and Faith) Religion: Taoism. Special contraindications: None.

#### Progress of the disease course

09/01/2018	The patient was under great pressure after her father passed away, and She developed mental disorder, urinary incontinence and auditory hallucinations. She had no improvement in seeking treatment in the external hospital. She was admitted to the hospital for treatment because of breathing and facial discharge. GCS: E4V1-2M4, Both sides of the pupil 3.0 (+), muscle strength are 3 points, body temperature 38.4 ° C, to be arranged for hospitalization. Consultation psychiatry, it is recommended to use sedatives.
09/04/2018	The patient still has occasional awareness of E2V2M5, which has been shaken by the mouth and feet. She didn't have eaten for 3 days, and the nasogastric tube is placed and the nutrition department: [tube feeding] high protein 73 grams, high fiber, heat 1700 calories.
09/07/2018	There were 15 episodes of limb stiffness, limbs pumping and shaking, and relief after about 20-40 seconds. The EEG report shows an abnormal discharge in the brain. The principle of treatment is to use high doses of steroids, to depress antibodies, and to use immunoglobulins to neutralize autoimmune antibodies.
09/08/2018	MRI reports showed high frontal and basal ganglion swelling, meningitis; due to poor use of high-dose steroids, the consultation of the nephrology: suspected intra-abdominal tumors (teratoma), NMDA antibodies cause meningitis. After evaluation, the patient was transferred to the intensive care unit to perform plasma exchange (FFP 22U) at her own expense. The blood volume was 13.38L and the plasma volume was 2.55L.
09/11/2018	Abdominal computerized tomography showed suspected nest teratoma, near the left side of the pelvic cavity, laparoscopic surgery, and intubation of the endotracheal tube.
09/12/2018	The brain wave examination has no abnormal discharge. Consultation social worker, social worker treatment plan 1. Adaptation problem: emotional support, reduce anxiety, depression, guide positive thinking, strengthen problem-solving ability; 2. Family problem: Social workers care about the case, which indicates that the patient has resigned and is safe to take care of the disease.
09/20/2018	There is still a convulsion in the corner of the patient's mouth, and there is a convulsion in the soles of the feet.
09/24/2018	Consciousness E4VEM6, evaluated by the respiratory therapist, adjusted to use the PSP mode of the respirator mode; family members come to visit the visitor, can nod and cry.
09/26/2018	The vital signs are stable, and the endotracheal tube is removed after breathing training.
10/03/2018	Transfer to the general ward.

10/09/2018	Remove the nasogastric tube.
10/12/2018	One and a half months later, the patient was cared for by a cross-team medical collaboration, including a team of physicians in neurology, psychiatry, nephrology, oncology, and obstetrics and gynaecology. After treatment with immunotherapy, removal of its potential ovarian tumors, and 7 times of self-contained plasmapheresis, it showed dramatic and recovered a good mental state and was discharged.

#### Nursing problems and measures

Brain tissue perfusion changes

- Close monitoring of coma index, blood pressure, slow heartbeat, abnormal pupil reaction and vomiting Shape, and observe the clinical epileptic seizure pattern and time.
- Give sedative drugs and soft stools according to the doctor's advice to prevent the patient from defecation and to increase brain pressure.
- Maintain a smooth airway and closely monitor the arterial blood gas analysis. The twitching action should be gentle.
- Each twitching time is less than 15 seconds, and 100% oxygen is given before and after convulsions.
- In accordance with the doctor's advice to give intravenous infusion, record and monitor the input and output, pay attention to water and electrolysis Quality situation.
- Use the reel to place the sides of the head to keep the patient's head and neck in the centerline of the body to avoid pressure.
- Force the jugular vein. The bed is raised 30 degrees to promote venous return.
- Monitor and prevent secondary injuries, including monitoring for hypoxemia, hypotension, hyperthermia, Or high blood sugar conditions.
- After the patient is awake, explain before giving any treatment and maintain emotional stability.
- Give a quiet and comfortable environment and reduce the stimulation of the surrounding environment.

#### **Inefficient breathing patterns:**

- Closely monitor vital signs and oximetry values, observe and record the respiratory pattern of the case (including speed Rate, rhythm, breath sounds, presence or absence of respiratory assisted muscles), assist intubation use as appropriate Suction device.
- The consultation respiratory therapist jointly drafts a respiratory training program and adjusts the dose of the drug to be calmed as appropriate.
- According to the doctor's advice, give phlegm and bronchodilator, and observe the reaction after administration.
- Perform chest physiotherapy such as posture drainage and sniping to assist with coughing.

#### **Physical activity dysfunction:**

- Daily assessment of limb muscle strength, joint mobility and examination of skin compression. Turn over once in two hours and use a pillow and a single roll to maintain the joint in a normal functional position.
- Explain to the family the importance of active and passive exercise on the affected side, such as preventing muscle atrophy

and joint stiffness, and also promoting the improvement and recovery of limb function.

- Assist the rehabilitation physicist and discuss the rehabilitation content and purpose with the rehabilitation teacher and family members to assist in active and passive total joint exercise.
- When the patient's consciousness is restored, teach the method of transposition, turning over, lying down, sitting properly, and dressing properly, and give appropriate assistance to the patient to gradually complete the continuous action.
- Affirmation of any progress or performance of the patient, as well as encouragement and support to increase self-confidence.

#### The role of the caregiver is tense:

- Establish good therapeutic interpersonal relationships with family members, patiently listen and encourage family members to express inner feelings
- Subject to giving positive feedback.
- Give family members an introduction to the environment, inform the hospitalization code, and patient neurological changes.
- Encourage family members to accompany patients and give more positive support.
- Fully explain the purpose and precautions before performing the nursing activities.
- Teach family members daily care skills to assist patients in getting out of bed early and self-care training.
- Teach the family to divert attention and relax skills such as listening to music, watching movies, etc. situation.
- Affirm the family's care and pay for the patient to enhance self-confidence and reduce anxiety.

#### Discussion

Anti-NMDAR encephalitis is a rare disease in China and is the most common form of autoimmune encephalitis. It has been treated with psychiatric diseases in the past. More cases have been reported in recent years. For patients and their families, as the seafarers found life-saving Like a driftwood, there was a glimmer of light. This article reminds medical personnel that if the patient has no history of mental illness, if there is abnormal behavior of flu symptoms and rapid and rapid progression, neurological assessment should be performed early to further diagnose such anti-NMDA receptor encephalitis and treat it promptly. The sooner you treat, the higher your recovery rate.

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