

Review Article

Nodding Syndrome - A Mysterious Disease Affecting Children

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ABSTRACT

Nodding Syndrome is a disorder of brain that affects children and adolescents in African countries. It is characterized by episodes of repetitive dropping forward of the head, often accompanied by other seizure-like activity, such as convulsions or staring spells. Studies have suggested that the head nods are due to atonic seizures. Since the cause is not known cause, symptomatic treatment was given. The objective is to relieve symptoms, and to provide primary and secondary prevention for disability and to improve function. The most important aspect of treatment was seizure control, management of behavioral and psychiatric difficulties, nursing care, nutritional and physical and cognitive rehabilitation.

Key words: Nodding Syndrome, Seizure, Convulsions.

INTRODUCTION

Nodding Syndrome is a neurologic disorder of unknown etiology that affects children and adolescents in some parts of Africa. There are probably between 5000 - 10,000 affected children in East Africa. This was first reported in Tanzania in 1960's and later from Liberia, South Sudan and Northern Uganda where there are several thousand affected individuals. The syndrome is characterized by head nodding with variable presence of seizure types, cognitive and motor decline, wasting, stunting, behaviour and psychiatric difficulties.

Definition

Nodding syndrome is a neurologic condition characterized by episodes of repetitive dropping forwards of the head, accompanied with seizure-like activity, such as convulsions or staring spells. The condition commonly affects children aged 5-15 years.

Causes

World Health Organization (WHO) and the Centers of Disease Control (CDC)

are investigating to find out the exact cause and pathophysiology for nodding disease.

The cause for the nodding is a special seizure called an atonic seizure. Associations of the disease with malnutrition and with onchocerciasis (parasitic infection)

Signs and symptoms

Head Nodding is defined as repeated, involuntary drooping of the head on two or more occasions. Frequency of nodding 5 to 20 per minute. It is usually accompanied by following minor criteria: neurological abnormalities (cognitive decline, school dropout due to cognitive or behavioral problems, seizures or neurological abnormalities), Clustering in space or time with similar cases, Triggered by food or cold weather, Stunting or wasting, Delayed sexual or physical development. Psychiatric symptoms such as impulsivity, emotional and mood disorders and cognitive decline.

Depression and anxiety, including post-traumatic stress disorder are associated with this syndrome.

Investigations

Investigations such as blood test for malaria parasites, blood glucose, complete blood count, ESR, liver and renal function, electrolytes and creatine kinase.

chest x ray to detect chest infection and x-rays of the wrist to determine bone age Electroencephalogram recording for seizure activity lumbar puncture for cerebrospinal fluid analysis to detect meningitis brain imaging with brain MRI or CT scan to detect structural & functional abnormalities.

Management

1. Seizure control.
2. Management of behavioral, social and psychiatric difficulties.
3. Management of malnutrition.
4. Microfilaria and helminthic treatment.
5. Nursing care.
6. Assessment and rehabilitation of functional difficulties and disabilities.
7. Follow up care Surveillance, documentation, community education and engagement.

1. Seizure control

The initial management for seizure control include intravenous benzodiazepine (Diazepam 0.3mg/kg, Midazolam 0.3mg/kg /Lorazepam0.1mg/kg).

2. Management of behavioral, social and psychiatric difficulties

Some of behavioral changes can be modified positively or, rarely, negatively by sodium valproate. Other Management includes counseling for patients and their caretakers about the illness, talking about and finding solutions to the emotional, social and behavioral problems, and follow up care and referral to a mental health agency for drug therapy (E.g. Treatment for depression and anti psychotic drugs) and other interventions.

3. Management of malnutrition

Children, who are under nutrition and dehydration, are given rehydration solution for malnutrition e.g. (ReSoMal) at

5mL/kg/hr for the first 2 hours, then 5-10mL/kg ReSoMal.

Severely anemic patients (haemoglobin <5g/dl) with under nutrition are given blood transfusion at 5 -7 mL/kg.

4. Microfilaria and helminthic treatment.

Sometimes Nodding Syndrome is associated with infestation with *Onchocerca volvulus*. Interventions for this include aerial spraying against the parasite and mass treatment of all people living in the affected areas with antifilarial drug e.g.: ivermectin.

Because of high prevalence of intestinal helminthes in these rural setting, a single dose of Albendazole 400mg is recommended. It is repeated every 6 months.

5. Nursing management

Nursing Management include parental education on epilepsy and seizure management, Use of & common side effects of anti epileptic drugs and treatment adherence, nutrition, hygiene, injury prevention and wound care. Children with frequent seizures should be supervised to prevent injury. Encourage, teach and supervise self care, feeding, toileting, hygiene and monitor growth. Make sure that vaccinations are up to date & promote use of insecticide for malaria prevention. Parents should be discouraged from restraining children with ropes.

Wounds should be cleaned dressed regularly and parents should be taught to keep the wounds dry and clean. Parents should be advised on food preparation and children should perform mild daily exercises to prevent muscle atrophy, storytelling, and play therapy to help with concentration, memory and stimulation

6. Functional difficulties and disabilities Assessment

Difficulties include behavior, motor, psychiatric difficulties, declining cognitive function and difficulties with personal care. The speech may not be clear and patients may be confused and disoriented especially during and up to 24 hours following a seizure. Speech difficulties may arise from

impaired cognition, seizures or muscle weakness. All should be individually assessed & repeated Assessment during follow up visits to document any progression or improvements with therapy. Document the presence of any of these difficulties and provide a management plan for each.

7. Follow up care

For every follow up visit, children should be assessed for seizure control, medication side-effects, and nutrition, and disability, psychological and social issues. Follow up visits should be conducted every 2 weeks until there is seizure control.

CONCLUSION

Nodding Syndrome is a disorder of brain that affects children both physically & mentally. It is a fatal disorder with duration of 3 or more years. Since the exact cause is not known symptomatic treatment is done to reduce the severity of disease. Hope soon our scientists will find out the root cause of the disease & exact treatment for this & thereby saving many lives of children's.

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