Habilitation Of Cerebral Palsy Spastic Type + Upper Respiratory Track Infection + Malnutrition + Respiratory Disturbance + Feeding Problem + Mobilization Disturbances + Communication Disturbance

Dewi Nur Fiana
Medical Faculty, University Of Lampung, Physical Medicine and Rehabilitation Specialist

Abstract

Cerebral Palsy (CP) is a disorder of movement and posture that appear during infancy or early childhood. It is caused by nonprogressive damage to the brain before, during or shortly after birth. CP is not a single disease but a name given to a wide variety of static neuromotor impairment Syndromes occurring. Secondary to a lesion in the developing brain.[1] HR, 26 month old boy,was consulted by Pediatric Department on 11-09-2015 with diagnose Epilepsi focal symptomatic + Cerebral Quadriplegi + suspect visupect visual impairment. HR had ad bonam for prognosis quo ad vitam and ad sanationam, but dubia ad bonam for quo ad functionam. He had stable hemodynamic and but have high risk of infection or risk of aspiration right now. His maturation is at brain stem level and her GMFCS level was V. He might have dependence in mobility. Prognosis still dubia because during therapy at physical medicine & rehabilitation department, his body weight was increase, his pulmonary problem is improve, His head and neck control improved, and his ability to rolling is improve. His parents also understand their son condition and set a reasonable expectation.

Keywords: Cerebral Palsy ,Feeding Problem, Immobilization, Sapsticity,

Correspomdence: dr. Dewi Nur Fiana., Sp.KFR, addres: Springhill Residence Bandar Lampung, Email: dewinurfiana@gmail.com

Foreword

Early signs suggestive of CP in the infant are abnormal behavior, oromotor problems and poor mobility. The infant is irritable, too docile, or difficult to handle. He does not suck well, sleeps poorly, vomits frequently and has poor eye contact. Deviant oromotor patterns include tongue retraction and thrust, tonic bite and grimacing. Early motor signs are poor head control with normal or increased tone in the limbs, and persistent or asymmetric fisting. Motor development is both delayed and abnormal. Instead of crawling, the child moves by creeping or hopping like a bunny. Hand preference during the first two years of life is a sign of hemiplegic CP.[1]

Case

HR, 26 month old boy lives in Sukaluyu Bandung, control to PM&R department on 21-05-2016. He was consulted by Pediatric Department on 11-09-2015 with diagnose Epilepsi focal symptomatic + Cerebral Quadriplegi + suspect visupect visual impairment.

Chief Complaint (June ,8th 2016)

Unable roll by himself

History of Present Illness (from anamnesis with his parents and medical record)

The child's mother complains his son cannot roll from supine to prone or vise versa by himself. He mostly lies supine.He can do sidelying but he can't roll his body. When he positioned in prone, he can lift his head and hold it about 1-2 seconds. He cannot sit nor crawl yet. He cannot keep his head upright in sitting position.

The child hand are mostly open. His left hand is more active than right hand and also his left leg. He can not reach,but he can hold toys in his left hand by holding it with thumb and index finger. He recognizes his milk bottle but cannot hold it yet. He can differentiate between family member and stranger. He can say "aa.." , "yah.." without meaning. He cries when he is hungry and iritated. He smiles to person calling next to him. His mother says he is having difficulties in gaining weight. He frequently had coughing and sometime fever. He just suffered from bronchopneumonia when he was one years old, got hospitilized in pindad for about a week, and controll in pindad. Eventhough the bronchopneumonia is resolved, right now, he has coughing and got ambroxol and Amoxicillin syrup from pediatric department in Pindad Hospital.

Patients has history of icteric. His body turn yellow since one day after birth and prolong until more than a month. Her mother only take him to midwife because she has experienced that his older brother also got icteric but his brother still healthy and grow normal. When he was 1 month old, his mother notice that his body frequently look stiff, from chest,abdomen and both of his hand and leg. Her mother control regurally to midwife and because his stiffness, he got consult to pediatric specialist and eventhough child's mother denies that patient ever got seizures, he was diagnose as epilepsi based on EEG but his mother said that he never got any epilepsy medicine. He had been consulted to Eye Department and both of his eye are normal. He also has been conculted to Otorhinolaryngology Department and got BERA examination on 31 December 2014 and he had no impairment in hearing.

He had been consulted to IKFR departement for the first time at September 11th, 2015,when he was 18 month old. He was dignosed with mobilization disturbance + Respiration disturbance et causa cerebral palsy quadriplegic spastic type + epilepsi focal symptomatic. The program are Physical Therapy for ROM exercise and ihibition of spastic, postural drainage, and oromotor massage.

Prenatal History

HA is a fourth children from a 36 old woman who carried him for 9 months of pregnancy. During her pregnancy, she regularly visited nearby midwife in primary care and takes the vitamin given. History of consuming traditional medicine was denied. History of bleeding, seizures, trauma, infections, smoking cigarette, drinking alcohol were denied. No pet was in or near the house.

Perinatal History

He was delivered spontaneously pervaginam with head presentation on the due date helped by midwife. No history of prolonged and difficult labor, no history of premature ruptured of membranes or vaginal bleeding prior to admission to labor. He cried right away after delivered and was actively moving. There were not any bluish nor jaundice seen on his body. Birth weight was 3300 gram. Birth height was 48 cm. Head circumference was not checked.

Postnatal History

History of seizure of febrile seizure was denied. History of icterus was positive in one day after birth and last until more than a month. His mother only take him to midwife. He was diagnosa with bronchopneumonia at one years old and he recover.

Growth and Development History

Side lying: 9 month

Fine Motor Developmental History

He was able to hold marker in his palmar.

Personal Social Developmental History.

He had been able to differentiate between familiar person and stranger.

Speech and Language Developmental History

He had been able saying "aa.." , "yah without meaning.

Psychological, Social and Economic History

He is the 4th chld of his parent. His father is junior high schol graduate. He sell clothes in Suci market. His mother was graduate from senior high school, she is a housewives, but sometime help earn a living by selling cokies that she made . His father working as labor with income sent home approximately 2 million rupiah per month. They're using BPJS for medical insurance

He lives with his parents at their rented house. The house is about ±45 m^2 with 2 bedrooms, one bathrooms, a kitchen and one living room. Their house actually an upstair of another house. The stair to reach their room is in the outside. The owner is live in the first floor. Infornt of their house is a balcony conected with the stair . The house is located in the alley for about 1,5 wide. There is no space for him to play in the house nor outside.

Their house has not met healthy house criteria with little ventilation which is only in the living room facing the balcony. The situation is quite noisy predominantly along daytime.

His father leaves home for work at 07.00 – 16.00 everyday. His mother looks after him all day long. If her mother is too busy making cookies, she will commend his son to his sister who live nearby, for about 3 houses arround the neighborhood.

Parents' Expectation

His mother desires him to be able sitting and eating by himself.

PHYSICAL EXAMINATION

HR's mother carried him to PM&R clinic, the baby in her lap

Consciousness : Compos mentis

Visual respon (+), visual contact (+); audio respon (+)

Posture : Hips and knees flexed and head preference to left when in prone position Rounded back when held sitting

Nutritional status

Body weight : 7.6 kg → BW/Age : below -3 SD . Body length : 75 cm → BL/ Age : Below -3 SD. BMI: 15.3 → BMI/Age : between -1 SD to - 2 SD

Communications : Smiling, saying "yah" occasionally

Mobilization :

Lying to side lying : independent

Rolling supine to prone : dependent

Rolling prone to supine : dependent Non ambulatory

Observation

Patient in supine position, he moves his legs and arms actively,simetris. His head in midline. He responses when called or stimulate with a loud sound, has visual contact, response with smile. When in prone position, with stimulation he lifts his head about 30 degree for 2 seconds and then falling down slowly. There is no head turning movement in prone. When held in supported sitting he has rounded spine and can keep his head upright slightly about about 2-3 seconds. He falls when held in arm supported sitting position. Both of his hand mostly open. He is respon with toys that given to his hand, he can hold it but he can not reach the toys. He mostly uses his left hand. He cries when he feel uncomfortable.

MMT

Prone position : Swimming : weak function Rolling prone to supine : weak function Rolling supine to prone : non functional

Supine position : Pull to sit : non functional

Maturation

Equals to midbrain : body righting (-)

Equal to Brain stem : ATNR (+)

Automatic Movement Reactions

Moro reflex (+)

Landau reflex (-)

Parachute reaction (-)

Bleck Prognosis Examination

Asymmetrical tonic reflex (1)→ 1

Neck righting reflex (-)

Moro reflex (+)→ 1

Symmetrical tonic neck reflex (-)

Extensor thrust (-)

Parachute reaction (-) → 1

Foot placement reaction (-)

Total score 3 (poor prognosis for walking)

Milestone

Gross motor : 4 months (head midline)

Fine motor : 4 month (Hand mostly open, crude palmar grasp)

Personal Social : 7 month (differenciate between familiar perso and stranger)

Speech and Language : 4 month (laughs)

Cognition : 7 month (interesting result of an action motivates in repetition)

Medical diagnosis

Clinical diagnosis :

CP Spastis Quadriplegia + Upper Respiratory Track Infection + Malnutrition

Etiological diagnosis : Neonatal hyperbilirubienima, microchepal

Functional diagnosis : Respiratory disturbance, Feeding disturbance, Mobilization disturbance (GMFCS Level V)

Rehabilitation diagnosis

Impairment :Neuromuscular system, pulmonary infection.

Disabilities :Rerpiratory, Feeding, Communication, Mobilization

PROBLEM

Medical : Cerebral Palsy , Respiratory track infection, Malnutrition

Rehabilitation : Respiratory Function, Feeding, Communication , Mobilization , ADL, Phychososial.

GOAL

Short term : 1 month

1. Improve respiration function
2. Safety Feeding
3. Gain weight
4. Improve development of head and neck control
5. Improve hand function
6. Parents understand the child's condition

Midterm : 3 month

1. Maintain respiratory function
2. Maintain weight gain
3. Improve speech languange equals to 7 month
4. Achive head and neck control stabilization
5. Improve trunk control
6. Improve fine motor to 7 month

Long term : 9 month

1. Improve feeding developmental patern
2. Improve speech languange equal to 10 month
3. Trunk control stabil
4. improve psikososial milestone equals to 10 month

FUNCTIONAL OUTCOMES:

Short Term

1. Child breath normaly with less slem nor crackles
2. Feeding without choking
3. Can hold bottle
4. Family meeting

Mid Term

1. Child can breath normaly without slem nor crackles
2. Feeding without choking and gain weight
3. Can reach
3. Able rolling

Long Term

1. Feeding : vertical chewing begins and accepting straw.
2. communication: shout for attention, inhibit behavior to "no", uses words with meaning
3. Sitting with proped arm
4. Finger feed

PROGNOSIS

Quo ad vitam : ad bonam
Quo ad sanationam : ad bonam
Quo ad functionam :dubia ad bonam

Discussion

HR, 26 month old boys was born normal. He had suffered prolong icteric in day one after birth and prolong for more than one month. At the age of one month, his mother realize that his body become stiff. His growth and develompent was delayed since then. His maturation was brainstem. He had fair head and neck control, spasticity on all of his extremities. He could not roll and his hands are mostly open. His speech is only "aa" and "yah" without meaning. He had delayed in all aspect of development. His clinical findings showed characteristics of cerebral palsy of spastic quadriplegic type. CP is likely if there is no head control at 3 months, no sitting and rolling over at 6 months, and no walking at 18 months.

The coordinated contraction and relaxation of many muscles are necessary for a smooth movement. Certain muscles need to relax while others contract. The cerebral centers controlling this complex selective motor control are disturbed in CP. The child is unable to relax certain antagonist muscles and contract the agonist muscles necessary for a specific task. Increased muscle tones and weakness of extremity & trunk muscles make it more difficult for a child with CP to control his posture and to make voluntary movements. ATNR interferes with the development of gross motor control, especially rolling supine to prone. Advanced postural reactions for balance and equilibrium that are prerequisite for sitting are either delayed or nonexistent. When the child cannot sustain balance, movement becomes more difficult.

Although normal child development is the basis on which the abnormal development is appreciated, treatment should not rely upon a strict adherence to normal developmental schedules. Gross motor, fine motor, speech and language, personal social and cognitive developmental levels may all be at different

ages. None of these ages necessarily coincide with the child's chronological age. Therefore the developmental schedules in normal child development should only be used as a guideline in treatment and adaptation should be made for each child's disabilities and individuality.

HR had fair head neck control and poor trunk control. He couldnt lift his head in prone position. Prone development is needed for strengthening of extensor muscles. So, HR was given 24 hour postural management, including prone position, supported sitting and supported sanding. He was also given stimulation to rolling by rotating the child's shoulder girdle forward while rotating his pelvis back. If the rotatory stretch on the trunk is adequate, these counter rotations stimulate an active response in the child's shoulder or pelvis or in both area. The other way is by rotating the pelvic or shoulder girdle. The rolling can stimulate head righting and activating various body derotative and rotative pattern. Because He showed ATNR, He got stimulation rolling to prone by inhibiting the ATNR.

HR poor postural control also makes him have difficulty in feeding. He often choke while eat or drink and oftten had pulmonary infection. His chewing ability was still munching that has no rotary movement of jaw nor lateral movement of tongue. He did not have problem with swallowing. Based on quadriplegic type of cerebral palsy growth chart, his nutritional status is underweight (less than 3 SD) . HR needed postural support and stimulation for his feeding problem. External postural support was needed because he was lacks of internal support. The position that benefits him was supported sitting, either in mother's lap or with chair modification, at his case, he uses stroller with support, and recline 70-80 degree.

The stimulation given was for lateral movement of tongue and rotary jaw movement that support her to chew. The stimulation include food position in her mouth, food consistency modification, and various taste, temperature and texture of the food. He was consulted to nutritionist to adjust the variety of menu to fulfill the energy needed.

The use of stander. We prescribe a modified stander to orthotic prostetic in colaboration with furniture maker. The modified sander can be use as supine and prone stander.

Graphic 1. Stander

Using stander, could drive many benefit to him, especially for respiratory function and postural control.

At home, patient have this utility that can modifeid as wedges. It use to facilitate home base exercise to improve head –neck and trunk control.

Graphic 2. Modified Wedges

His parents should be educated about unhurried feeding period and positioning for feeding. Education about feeding safety become so imporant on this case because he often got respiratory infection and choking while being fed. The feeding time should take place in a socially pleasant atmosphere. HR use nebulizer modalities to help his postural drainage program to mobilize mucus. Before, he always had ambroxol syrup to dilute he mucus. Drinking a lot of water while using ambroxol is a must, because the medicine need

water t dilute the mucus. The use of ambroxol is not really suitable for patient with feeding problem. The parent should educate how important to keep their son safe from choking. The using of nebulizer in this patient is suitable to humidied the mucus and dilute it beforethe postural drainage is begin. After two month of follow up, we can see that a lot of respiratory improvement on this patient. Before we can hear slem while the patient breathing and frequently coughing, but at the last follow up, we only hear the slem while he was coughing and the couging is not frequent.

Head circumference is a useful index of nutrition status and brain development, and is associated with scholastic achievement and intellectual ability in school-aged children.HR has slight microcepal (less than 1 SD), but his fontanel is still opening and he never had seizure. So for his head condition, we can just observed. His head circumference is smaller can be resulted for longterm effects of severe undernutrition at an early, it can also delay the brain development, and decreased intelligence.

Conclusion

HR had ad bonam for prognosis quo ad vitam and ad sanationam, but dubia ad bonam for quo ad functionam. He had stable hemodynamic and but have high risk of infection or risk of aspiration right now. He has no seizure or underlying disease that would give progression to brain injury. He had not been able to sit yet. Based on Bleck's prognosis, he has poor prognosis for walking right now. However, He still had chance for sitting. Her maturation is at brain stem level and her GMFCS level was V. He might have dependence in mobility. It still dubia because during therapy at physical medicine & rehabilitation department, his body weight was increase, his pulmonary problem is improve, his head and neck control improved, and his ability to rolling is improve. His parents also understand their son condition and set a reasonable expectation.

Bibliography

1. Nadire Berker SY. The HELP Guide To Cerebral Palsy. Edisi ke-2.Global HELP Organization;2010.
2. Wood E, Rosenbaum P. The gross motor function classification system for cerebral palsy: a study of reliability and stability over time. Developmental medicine and child neurology. 2000 May;42(5):292-6.
3. Frontera WR, DeLisa JA. Physical medicine and rehabilitation : principles and practice. Edisi ke-5th. Philadelphia: Lippincott Williams & Wilkins Health;2010.
4. Kuperminc MN, Stevenson RD. Growth and Nutrition Disorders in Children with Cerebral Palsy. Developmental disabilities research reviews. 2008;14(2):137-46.
5. Hinchcliffe A. Children with cerebral palsy : a manual for therapists, parents and community workers. Edisi ke-2nd. New Delhi ; Thousand Oaks: SAGE Publications;2007.
6. S C. Understanding and supporting children with cerebral palsy through therapeutic handling and postural management. Singapore: Cerebral Palsy Symposium; 2011.
7. Winstock April. The practical management of eating and drinking difficulties in children. United Kingdom: Winslow Press Ltd. 1997; 75-80