A Case Report on Neurocysticercosis in Children

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ABSTRACT

Neurocysticercosis is a parasitic disease which is caused by the incidental ingestion of *Taenia solium* eggs (pork tapeworm) through the contaminated food. Neurocysticercosis shows its effect on the nervous system and it has been the main cause of acquired epileptic episodes and it was majorly seen in developing countries, and it is more prevalent in some parts of subcontinents like Asia and Sub-Saharan Africa. It was reported that large group of US immigrants are known to suffer from this disease. The major factor which can cause neurocysticercosis is poor sanitation and unhygienic food. The patients may have symptoms of epilepsy, headache, memory problems and thinking problems. Cysterici undergoes different changes in the brain, subarachnoid space and spinal cord leads to Neurocysticercosis. Neurocysticercosis is preventable, and probably eradicable. Eventually, the cysts either resolve or form a calcified granuloma, which is associated with seizures if it is located in the brain. It is estimated that 30% cases will experience epilepsy.

Keywords: Neurocysticercosis, Epilepsy, Immune attack.

INTRODUCTION

Neurocysticercosis affects mostly cerebral cortex and then cerebellum. Mostly pituitary gland does not involve in causing neurocysticercosis. But in some conditions, pituitary gland involves and forms a branch like structure called racemose neurocysticercosis leads to pituitary hormone deficiency.[1] Cysticercosis is mainly caused by tapeworm which contains 2 species *Taenia saginata* or beef tapeworm and *Taenia solium* or pork tapeworm. Two diseases caused by tapeworm are taeniasis and cysticercus larva of tapeworm is also called as cysticercosis. Mainly pork tapeworm cause both Taeniasis and cysticercosis but beef tapeworm can cause only Taeniasis.

Life cycle of *Taenia solium* starts from undercooked pork that contains cysticercus larva of teniasolium when a person consumed that cysticerus larva of pork it reaches to GIT it changes its shape to bladder worm then it reaches to intestine again it changes its shape consists of scolex, neck, rostellum, 2 rows of hooks and 4 suckers. The body of tapeworm consists of strobila consists of both male and female sex organs. Strobila has 3 developed proglottid, in which the first proglottid is not fully developed, the second proglottid is fully developed and the last proglottid contains branches of eggs. These eggs of uterine branches proglottid releases egg into faeces. These eggs are consumed by secondary host (pig). Eggs changes its form in GI tract called encysted hexacanth then changed into hexacanth in intestine enters into blood stream changes into cysticerus larva in muscle that is again transmitted to primary host (human being). When humans taken contaminated food containing eggs of *Taenia solium* forms an intermediate host. Neurocysticercosis changes its shape based on the hosts condition.[2]

Cyst cerci changes its shape in brain upper tissue, sub arachnoid space and spinal

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cord modified into Neurocysticercosis. In funduscopic examination parasites directly seen in inner part of the retina, by taking small part of the tissue in brain or abnormal tissue around spinal cord and infiltration forms around the cysts. Minor injury seen in Neuro imaging studies, enzyme linked immunosorbent assay in CSF leads to identification of anti-cyst cercus IgG or Cyst cercal foreign body and Cysticercosis was observed in the outside of CNS.[3] Neuroimaging characteristics of the stages of neurocysticercosis is vesicular, colloidal, granular and clacified.[4] Seizures caused when an immature form of tapeworm moves into the brain.

By giving proper education about health, transmission of parasites and maintaining proper hygiene condition can reduces the risk of spreading infection in people. Bringing a law to reduce eating meat or giving proper treatment to pigs.[5]

CASE REPORT

A 6-year-old male patient came to pediatric ward of GSL General Hospital, Rajahmundry with a complaint of seizures.

Child was apparently well 3 days back. It started with involuntary rigid movements/ posturing of all 4 limbs associated with up rolling of eye, frothing of saliva. Tongue bite episode lasted for 30 min after 2 hr child regained consciousness, but child had post ictal confusion. Child had 2 episodes of projectile vomiting. Having history of frontal headache on and off in the past 2 months. It is a series of complaints D1 having episodes of fever, D2 illness and D32 episodes of vomiting. During general examination, pulse rate 88bpm, BP 120/70mmHg, respiratory rate 22/min and temperature 98.2°F.

Laboratory investigation report were as follows: Hemoglobin: 10.1(12-16g/dl), PCV: 29.8(35-53%), RBC: 4.19mill/cu mm (1-5milli/cu mm), Total WBC count: 1200 cells/cu mm (4000-1100cells/cu mm), MCV: 71.2 femtolitres (80-97), MCH: 24.2pg (27-32pg), MCHC: 34% (31-37), platelet count: 3,04,000cells/cu mm (1,50,000-4.50,000). RBC was predominately Normocytic and Normochromic, WBC: mild increase in total count relative increase in lymphocytes with normal morphology. Platelets: adequate occasional gaint platelets seen. MRI brain: Two conglomerate ring enhancing lesions at subcortical region of left frontal lobe.

Based on the above subjective and objective evidence, the diagnosis was made as Neurocysticerosis (preventable parasitic infection caused by larval cysts).

The treatment given when the patient was in hospital includes: inj. Methyl prednisolone 10mg/kg/pulse dose/ IV/OD 5mL=500mg dil 5mL drug with 5mL normal saline(1:1ratio) given it over 30min. Albendazole 15mg/kg BD for 6-years-old patient drug monitoring should be given according to the body weight 15*33/2=247.5 dose should be given to the children but prescribed dose is 200mg for children should be maintained dose in blood plasma levels. Tab. carbamazepine 100mg BD, Tab. praziquantel 600mg TID, Tab. Lanzol junior 15mg OD given on empty stomach and Tab. ondem 4mg prescribed as required.

Treatment at the time of discharge: Tab albendazole 200mg, Tab. Praziquantel 600mg (1-1/2-1) for 13 days, Tab. Carbamazepine 100mg/kg BD ($1^1/_2$-0-1) for 6months, Tab. Prednisolone 1mg/kg/day-OD (26mg/day given 2 days), 20mg given 2days, 15mg given 2 days, 10mg given 2 days, and 5mg given for 2 days and stopped the prescribed dose.

DISCUSSION

Neurocysticercosis is a tapeworm infection that affects the brain, muscle, and other tissues. Cysticercosis is mainly caused by tapeworm. Diseases caused by tapeworm are taeniasis and cysticercosis. Cysticeri changes its shape in the brain upper tissue, sub arachnoid space and spinal cord modified into neurocysticercosis. A 6-year-old male patient came with tongue bite, up rolling of eyes due to seizures. Patient was suffering from fever since long time, fever was not relived after taking medications, so they admitted in hospital. After admission in the hospital then physician done subjective and objective evidence, through objective evidence, they observed the raise in WBC cells. That shows the patient was suffering from infection. Considering subjective and objective evidence they went for MRI brain. Then the impression in the report shows that two conglomerate ring enhancing lesions at subcortical region of left frontal lobe.

Due to early stages of recognition and intervention the patient reached to recovery. Neurocysticerosis is common in adults when compared to children most of the children leads to mortality before admitted to the hospital patient

have severe symptoms of post ictal confusion and frothing of saliva.

The treatment given to reduce the infections and patient was reacted positive to the treatment and dose calculations and drug monitoring given at the appropriate timings.

CONCLUSION

Neurocysticerosis is caused by cysts from the *Taenia solium* tapeworm that occurred in the brain. The treatment measures cause mostly antihelminth drugs to reduce the preventable infection.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

CSF: Cerebro-spinal fluid; **GIT:** Gastrointestinal tract; **Ig G:** Immunoglobulin G; **CNS:** central nervous system; **D1:** first day; **D2:** second day; **D3:** Third day; **RBC:** Red blood cells; **WBC:** White blood cells; **MCV:** Mean corpuscular volume; **MCH:** Mean corpuscular hemoglobin; **MCHC:** Mean corpuscular hemoglobin concentration; **BID:** Twice a day; **TID:** Thrice a day.

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