

DURATION OF ALBENDAZOLE THERAPY IN NEUROCYSTICERCOSIS –DOES IT MATTER ??

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INTRODUCTION:

Taenia solium is endemic in India. Poor hygiene and living conditions, allowing pigs access to human faeces, puts people at risk of developing cysticercosis . In endemic countries like India the disease is prevalent in urban, middle-class areas. Cysticercosis is a parasitic infection of the larval form of the zoonotic tapeworm, Taenia solium infection by adult larva in human causes Taeniasis and Cysticercosis. Infection of the central nervous system by the larval form is called Neurocysticercosis (NCC). This is the most common parasitic infection of the central nervous system ^{1,2} . It is also the leading cause of epilepsy in the developing countries ^{1,2,3} Cysticercosis / Taeniasis appears to be serious public and agricultural problem. Epileptic seizure is the most common presentation seen in 70-90% of the cases of NCC ^{4,5} . As NCC has given the burden of epilepsy patient in our country especially in pig farming areas. The pig production is markedly affected due to cysticercosis, resulting in condemnation of live pigs or carcasses at meat inspection and reduction in their commercial value ³ . Before the advent of neuroimaging facility neurocysticercosis was diagnosed on the basis of clinical features, CT head and search of eggs in stool examination. After the availability of MRI doubtful findings of CT head can be confirmed. On MRI vesicular cyst shows hypodense fluid, non-enhancing to mildly enhancing lesion which is not surrounded by oedema. While the degenerated cyst shows small isodense lesion with ring enhancement on contrast medium and perilesional oedema and calcified cyst ^{6,7} . Standard regimen uses 28-30 days schedule. Some of previous studies shown there is equal effectiveness and efficacy of short-term regimen as compare to the standard therapy of 28 -30 days, but there are conflicting

reports in previous study of very short duration of therapy and patients with different stage of lesions. Due to the enormous benefits of short-term regimen as compared to the standard regimen in terms of cost effectiveness, better compliance, less therapy related complication. it has recently been studied by several workers. It was decided to conduct this prospective, randomized controlled study comparing 14 days of albendazole therapy versus 28 days of albendazole therapy in children with neurocysticercosis.

MATERIAL AND METHODS:

This study was conducted in Department Paediatrics, Rohilkhand Medical College and Hospital Bareilly, UP. It was a Randomized control trial. The proposed study was conducted from 1 st November 2020- to 31 st October 2021. The study was conducted on patients attending out-patient department, in-patient department and Casualty in department of paediatrics in Rohilkhand Medical college and hospital over a period of 1 st November 2020 to 31 st October 2021 after obtaining informed consent. A total of 45 patients were taken.

Inclusion Criteria:

- Patients with new onset of focal or generalized seizures in children under 18 years of age.
- No focal neurological deficit.
- Radiologically confirmed neurocysticercosis on CT and or MRI brain as required.
- Patients whose parents are willing to enrol their children in the study.

Exclusion Criteria:

- Patients already or in between received antiparasitic drug or steroids.
- Patients with systemic diseases such as pulmonary tuberculosis, CNS

tuberculosis, renal failure or symptomatic secondary epilepsies.

- Patients with ocular cysticercosis.
- Patients having more than 3 brain parenchymal lesions.
- Patients in whom albendazole was contraindicated.

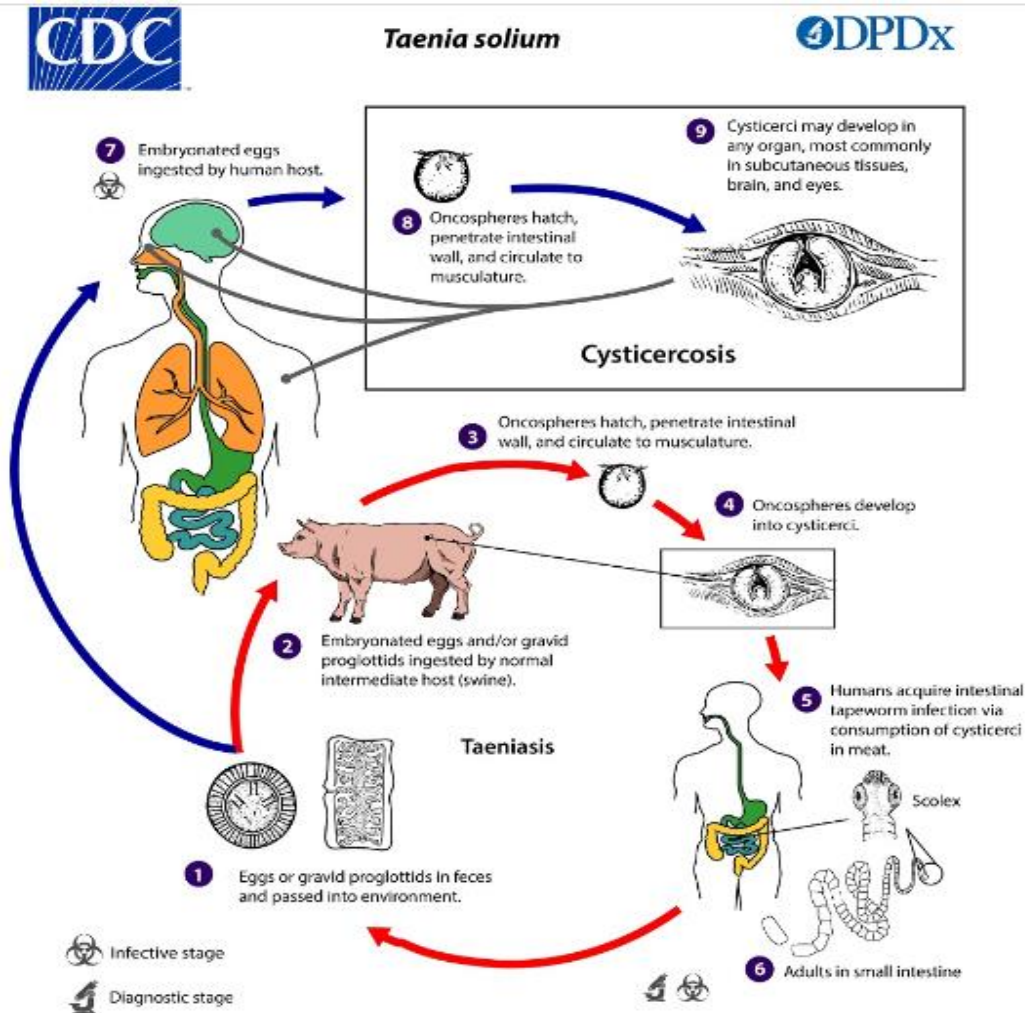


Figure:1 LIFE CYCLE OF TAENIA SOLIUM

45 patients attending out patient department and in patient department were enrolled in the study. A thorough examination of patients was performed followed by diagnostic evaluation. Investigation like hemogram, erythrocyte sedimentation rate, Mantoux test and chest radiograph, family screening for tuberculosis, stool sample for tape worm infection was collected on 3 consecutive days and / or perianal cellophane strip was applied and examined for egg of taenia, Serological test

for neurocysticercosis was done as required. Patients were randomly divided into those who receive albendazole therapy for 14 days and those who receive albendazole therapy for 28 days. Patients were called for follow up monthly for 3 months as clinically advised where the symptoms and their improvements were noted. CT head or MRI brain were performed as required.

RESULTS:

Table: 1. Showing geographical distribution of the studied population

In 14-Day Group around 38.33% subjects belonged to rural areas while only 11.6% belonged to urban area. Similarly in 28-Day Group 31.6% belonged to rural areas and 18.3% belonged to urban area as shown in table below.

RESIDENCE	14 DAY GROUP	28 DAY GROUPE
RURAL	23(38.33%)	19(31.66%)
URBAN	7(11.66%)	11(18.33%)
TOTAL	30	30

Table: 2. showing distribution of socio-economic status in studied population.

Majority of population that is 47 % belongs to upper middle class followed by 37% in lower middle class and only 16 belongs to very low socio-economic status.

Socio economic status	Frequency	Percentage
Upper middle class	28	47
Lower middle class	22	37
Very low	10	16

Table: 3. Showing distribution of type of seizures among the studied Population

Majority of population that is 88.33% reported that they were having Generalized Tonic Clonic Seizure at the same time 11.66% were suffering from Focal type of seizures as shown in table below

TYPE OF SEIZURE	FREQUENCY	PERCENT
FOCAL	7	11.66%
GTCS	53	88.33%
TOTAL	60	100%

Table4- Showing distribution of Anti-epileptic drugs compliance among the studied population

Majority of population that is 86.7% reported that they were having good Anti- epileptic drugs compliance at the same time 35% were there who were having poor compliance with these drugs as shown in table below.

AEDs COMPLIANCE	FREQUENCY	PERCENT
GOOD	52	86.7%
POOR	8	13.3%
TOTAL	60	100%

Table 5- Showing follow up of stages among the studied population

In total population that is in 77% cases there was change in stage in form of either resolution of lesion or calcification as shown in table below

FOLLOWUP	FREQUENCY	PERCENT
RESOLUTION OF LESION	43	77
TOTAL	60	100

DISCUSSION:

1. Age wise distribution of the epilepsy patients :

The study group included patients aged 2 years to 18 years with the mean age of 11.6 ± 15.6 in 14 days group and 12.9 ± 16.1 In 28 days group the present study

epilepsy was seen in all age groups in the paediatrics population, the majority of patients were in the age of 12 to 17 years (Table1). A study done by Pratibha singhi et al majority of patient were of age 7 year 12.9 ± 16 . In study done by Hh Gracia et al mean age was 39 years. In

another study done by Prabhjeet Kaur et al mean age in 7 days group was 7.6 years and 28 days group was 6.9 years.

2. Gender distribution among epilepsy patients :

Of the 60 epileptic seizure patients studied, 71.6% were males and 28.4% were females with male to female ratio of 1:2.5 (Table2). Similar distribution was seen in a study by Pratibha singhi et al 68% were male and 32 % were female in another study done by Prabhjeet Kaur et al there is almost equality in gender distribution.

3 Duration of seizure among the studied population:

In our study most common duration of seizure were between 1-5 min that is 51% followed by 32 percent of patient having 5-15 min of seizure episodes. In a previous study carried out by prithbha singhi et al mean duration of seizure was 11 min. as most of the patient do not exactly remember the duration we under took the range.

4. Seizure pattern seen in the study population :

In our study 88.3 % and 21.2% were GTCS type and focal type respectively in a study done by Pratibha singhi et al majority were partial seizure and partial seizure with secondary generalization. It has been observed in our settings that patient usually present with gtcs type of seizure though history taking suggestive of focal onset of seizure in most of the case. In other study done by Prabhjeet Kaur et al distribution of seizure pattern was similar to the current study that is most common being generalized seizure followed by partial seizure.

5 MRI findings:

Majority of cases in our study have stage 1 or 2 neurocysticercosis. Majority of them were having lesion in frontal lobe 40% followed by 38% were in temporal lobe resolution of lesion after 6 months follow up were 73 and 66% in 14 days and 28days group While a similar study done by pratibha singhi et al showed 77 and 79 percentage of resolution in 7days and 28 days group respectively, comparing with other study done by Prabhajeet Kaur et al there was complete resolution of lesion in 63 and 52%.

CONCLUSION:

There were no significant differences between the two groups receiving different duration of albendazole therapy in terms of disappearance, resolution or percentage reduction in size and number of lesions on follow-up radiologically after 3-6 months of treatment. There was no significant difference in the number of calcifications in the two groups. The clinical significance

of early-onset calcification is less because the number of patients with early calcification and seizure recurrence is too small to draw definitive conclusions. The overall efficacy of albendazole in our study was slightly lower than in many previous studies which were done on patients with >3 lesions, showing response rates greater than 80 percentage. However, studies done on single solitary lesions deficits lower efficacy compared to our study. Corticosteroid used before starting albendazole therapy has clinical significance because they reduce adverse reaction caused by albendazole therapy to dying parasite this is evident by the fact that in our study none of the patient had adverse reaction The appearance of new lesions, total lesions, calcified nodules, or recurrence of seizures is of no clinical significance. We concluded that 14 days of albendazole treatment was as effective as 28 days of albendazole treatment in children with one or more lesions in terms of radiological and clinical response.

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