ISRCTN11630542 https://doi.org/10.1186/ISRCTN11630542

Role of albendazole in disseminated cysticercosis

Submission date	Recruitment status	[_] Prospectively registered
20/08/2019	No longer recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
28/09/2019	Completed	[X] Results
Last Edited	**Condition category**	[_] Individual participant data
23/11/2020	Infections and Infestations	

Plain English summary of protocol

Background and study aims
Cysticercosis is a parasitic tissue infection that causes seizures. The evidence regarding the treatment of patients with disseminated cysticercosis, especially those with high lesion load (over 20 lesions), is sparse. Researchers have shown the safety of anticyticidal treatment in these patients and think that giving patients three cycles of albendazole might lead to a better clearance of neurocysticerci compared to a single cycle.

Who can participate?
Patients with disseminated cysticercosis, defined as the presence of multiple (≥ 3) cystic viable lesions in the brain, along with evidence of involvement of at least one extra site, like subcutaneous tissues, skeletal muscles, eyes, or presence in any visceral organ.

What does the study involve?
Participants receive three cycles of albendazole and the degree of clearance of lesions is measured.

What are the possible benefits and risks of participating?
The researchers expect a reduction in the frequency of seizures, hospitalisation rate, and dependence of corticosteroids. The risks are increased intracranial pressure, focal neurological deficits, and a transient increase in seizure frequency (if any).

Where is the study run from?
King George's Medical University (India)

When is the study starting and how long is it expected to run for?
August 2015 to December 2017

Who is funding the study?
King George's Medical University (India)

Who is the main contact?
Prof. Hardeep Malhotra
hsmalhotra@kgmcindia.edu

Contact information

Type(s)
Scientific

Contact name
Prof Hardeep Malhotra

ORCID ID
https://orcid.org/0000-0003-0438-4446

Contact details
Room No. 204
Department of Neurology
King George's Medical University
Lucknow
India
226003
+91 (0)522 2258852
hsmalhotra@kgmcindia.edu

Additional identifiers

Protocol serial number
76 ECM II-B-Thesis/P19

Study information

Scientific Title
Assessment of clinico-radiological outcome in disseminated cysticercosis after albendazole therapy - a prospective evaluation

Study objectives
The researchers hypothesize that administering 3 cycles of albendazole might lead to the better clearance of neurocysticerci compared to a single cycle. The concept of using more than one cycle is based on the result that a single cycle of 28 days of albendazole in patients with disseminated neurocysticercosis led to complete resolution of only 1/3rd lesions. Similar results had been observed in the standard-dose albendazole arm in a previous randomized controlled trial. Thus, it seems appropriate to evaluate the efficacy of 3 cycles of albendazole. It may be noted, that a heavy intestinal load of Taenia solium eggs usually underlies the phenomenon of dissemination and concurrent taeniasis can be observed in as many as 40% of patients. Classically, the time taken by a juvenile parasite to mature into an adult in the intestinal phase and for the differentiation of an oncosphere to a cysticercus in the tissue phase has been stated

to be 3 months and 2-3 months, respectively. In order, therefore, to address issues related to reinfection (auto-infection or external reinfection) as well as reactivation of lesions, we spaced the cycles by a difference of 3 months to aid in better clearance of the parasite/lesions.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 04/12/2015, Institutional Ethics Committee of King George's Medical University U.P. (Institutional Ethics Committee, Office of the Research Cell, King George's Medical University, U. P., Lucknow, 226003, India; Tel: +91 (0)9335901790; Email - res@kgmcindia.edu), letter number 7976/Ethics/R.Cell-15, Ref. Code: 76th ECM II-B-Thesis/P19

Primary study design
Interventional

Study design
Single-centre open-label prospective design

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Disseminated neurocysticercosis

Interventions
Antiepileptic drugs were prescribed to all the patients. Oxcarbazepine at a dose of 10-15 mg/kg /day was used as the first-line antiepileptic drug. If the control over seizures was neither obtained nor oxcarbazepine tolerated, levetiracetam was the next drug prescribed. To aid prompt control of seizures, clobazam was added for the initial 2-3 weeks; it was deemed that appropriate therapeutic levels of oxcarbazepine would have been achieved by this time. The patients were administered albendazole after excluding those with cysticercal encephalitis. In patients with vitreoretinal cysticercosis or cysticercal lesions abutting optic nerve, albendazole was initiated at least 6 weeks after the surgical excision of the cyst. Albendazole was given at a dose of 15 mg/kg/day (given in 2 divided doses). Three days prior to starting albendazole, the patients were primed with oral methylprednisolone (0.75-1 mg/kg of body weight) and it was continued in full dose during the course of albendazole therapy (28 days), followed by tapering in next 2-3 weeks (0.25 mg/kg /week). A total of 3 cycles of albendazole were administered; each cycle was of 28 days and the difference of 3 months between the two evaluations was calculated from the last tapered dose of oral methylprednisolone. The protocol warranted discontinuation of albendazole if any patient developed a rash or an untoward complication like raised intracranial pressure, signs of meningeal irritation, visual disturbances or suggestion of myelitis; oral methylprednisolone, however, was to be continued to manage the complications arising from the release of antigens. In severe cases, intravenous dexamethasone (0.1 mg/kg of body weight, maximum 30 mg/day), in three to four divided doses for the initial 2 weeks was planned, followed by a gradual taper in the next 2 weeks on stabilization of the patient.

Patients were assessed thrice after enrolment at a difference of 3 months, each calculated from the completion of an individual cycle. Presence of headache, seizure recurrence and other clinical variables, like focal neurological deficits, vision impairment, and abnormal behavior were assessed in the follow-up period prior to initiation of an individual cycle. Headache was recorded

as a dichotomous variable (present/absent), while the occurrence of seizure(s) was recorded both in terms of the proportion of patients as well as the number of seizures sustained. A seizure was noted as partial if consciousness was preserved, or else it was considered as generalized. A seizure was recorded as an event if there was a resumption of consciousness in the interictal period; clusters (≥3 seizures in 24 hours), similarly, were recorded as an individual event. Occurrence of any adverse drug reaction was also noted in the follow-up period. The radiological outcome was assessed by counting the lesion load at different levels at each of the 3 follow-ups. Patients with ≤ 3 viable lesions in the brain were not offered further cycles of albendazole.

Intervention Type
Drug

Phase
Not Applicable

Drug/device/biological/vaccine name(s)
Albendazole

Primary outcome(s)
Assessed thrice after enrolment at a difference of 3 months, each calculated from the completion of an individual cycle:
1. Frequency of seizures noted as individual events as reported by the patient or the observer
2. Intracranial lesion load in patients with >20 lesions and those with ≤20 lesions measured using MRI of the brain with GAD-contrast

Key secondary outcome(s)
Other clinical parameters (palpable/visible subcutaneous lesions), and laboratory assessment (hemogram, liver function tests, kidney function tests, blood sugar) assessed thrice after enrolment at a difference of 3 months, calculated from the end of an individual regime

Completion date
31/12/2017

Eligibility

Key inclusion criteria
All consecutive patients diagnosed with disseminated cysticercosis were included in the study. A diagnosis of cysticercosis was made on the basis of the established diagnostic criteria. Disseminated cysticercosis was defined as the presence of multiple (≥ 3) cystic viable lesions in the brain, along with evidence of involvement of at least one extra site, like subcutaneous tissues, skeletal muscles, eyes, or presence in any visceral organ.

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group

All

Sex
All

Total final enrolment
29

Key exclusion criteria
1. Patients with disseminated cysticercosis having features suggestive of cysticercal encephalitis. Cysticercal encephalitis was diagnosed if the patient had signs of raised intracranial pressure, like papilledema, severe headache, altered sensorium, heavy first-contact lesion load, and generalized cerebral edema
2. Patients with malignancy, tuberculosis, hepatitis B or hepatitis C virus positivity, human immunodeficiency virus infection, hepatic involvement, focus of any pyogenic infection, and pregnancy
3. Patients with a known hypersensitivity to albendazole in childhood, or those who had been administered albendazole, with or without corticosteroids, in the past 6 months

Date of first enrolment
05/12/2015

Date of final enrolment
30/11/2016

Locations

Countries of recruitment
India

Study participating centre
King George's Medical University
Shahmina Road
Lucknow
India
226003

Sponsor information

Organisation
King George's Medical University

ROR
https://ror.org/00gvw6327

Funder(s)

Funder type
University/education

Funder Name
King George's Medical University

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are/will be available upon request from Dr Hardeep Singh Malhotra (hsmalhotra@kgmcindia.edu).

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	14/03/2020	23/11/2020	Yes	No