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Pre- and post-surgical medical treatment of human cystic echinococcosis

Submission date
25/07/2023

Recruitment status
No longer recruiting

Registration date
02/08/2023

Overall study status
Completed

Last Edited
10/09/2025

Condition category
Infections and Infestations

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Cystic echinococcosis (CE) is a chronic disease and is considered a neglected one. It is a parasitic disease caused by tapeworms and is endemic in Uruguay and the region. Surgery, using various technical approaches, has the potential to safely remove the cyst(s) and lead to a complete cure in a high number of patients with simple forms of CE. However, surgery may be impractical in patients with multiple cysts in several organs, high surgical risk, or in patients with previous multiple surgeries. In these cases, treatment with the drug albendazole (ABZ) alone or combined with praziquantel (PZQ), has been promising as the best choice to achieve improvement or cure. This is a follow-up study of symptomatic cystic echinococcosis treatment with albendazole and praziquantel in Uruguay.

Who can participate?
Patients aged 15 to 65 years with cystic echinococcosis

What does the study involve?
A discontinuous treatment: 30 days treatment with a 15-day break between two 7-day courses of the corresponding drug was basically used in all patients from the beginning until the end of the study.
The standardized drug treatments before surgery were 7 days, 15 days or 1 month. The standardized drug treatment after surgery was six cycles of the 30/15 treatment protocol. The drug was ABZ in all cases, administered orally, twice daily, at a total dosage of 15 mg/kg/day, with food high in fat content for improved absorption. When possible, including in underdeveloped suburban and rural areas of the country, tests including blood and liver tests were used to assess potential side effects of the ABZ and evaluate the general clinical state of every patient. In cases of verified ABZ toxicity, the dosage was immediately lowered to 7.5 mg/kg /day and the tests run weekly until the values normalized. In case of continuing blood alterations, ABZ was suspended until all the abnormal values disappeared. Only then, ABZ delivery was resumed at 7.5 mg/kg/day, associated with PZQ at a dosage of 40 mg/kg/day, allowing the follow-up to continue with frequent monitoring of blood and liver parameters.
In abdominal cases, a follow-up ultrasound was performed every 3 months in the first year and a CT 1 year after finishing treatment. Subsequent control was performed with annual CT. The images were analyzed to determine the size and status of individual cysts.

What are the possible benefits and risks of participating?
There is a risk that albendazole causes leukopenia and transaminasemia, which leads to suspension of treatment and changing to praziquantel, which has no side effects, this being a second-choice drug.

Where is the study run from?
University of the Republic (Uruguay)

When is the study starting and how long is it expected to run for?
August 2003 to December 2020

Who is funding the study?
University of the Republic (Uruguay)

Who is the main contact?
Assistant Prof. Dr Walner Daniel Da Rosa, ddarosa@higiene.edu.uy, danddr@gmail.com

Contact information

Type(s)
Principal investigator

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Additional identifiers

Protocol serial number
U1111-1295-7209

Study information

Scientific Title
Follow-up study of symptomatic human cystic echinococcosis treatment with albendazole and praziquantel in Uruguay

Acronym
FUHCE

Study objectives
Treatment of symptomatic patients with cystic echinococcosis pre and postoperatively using albendazole and praziquantel with 5-year imaging follow-up.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 21/10/2020, The Ethics Committee of the School of Medicine, UDELAR (Gral. Flores 2125 Código Postal, Montevideo, 11800, Uruguay; (+598-2) 924 3414 - Int: 3363; comisiones@fmed.edu.uy), ref: 501115-002-20

Primary study design
Interventional

Study design
Prospective clinical trial non-randomized study

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Cystic echinococcosis

Interventions
A discontinuous treatment: 30 days treatment with a 15-day break between two 7-day courses of the corresponding drug was basically used in all patients from the beginning until the end of the study.

The standardized drug treatments before surgery were 7 days, 15 days or 1 month. The standardized drug treatment after surgery was six cycles of the 30/15 treatment protocol. The drug was ABZ in all cases, administered orally, twice daily, at a total dosage of 15 mg/kg/day, with food high in fat content for improved absorption. When possible, including in underdeveloped suburban and rural areas of the country, the biological fluid tests included blood count and complete functional hepatic to visualize potential side effects of the ABZ and evaluation of the general clinical state of every patient. Minimally, the researchers requested hematological determinations to assess leukopenia (≤5000 leukocytes) and hypertransaminasemia of ≤150 U/L, a number over three times the GOT and GPT normal values according to age and sex. In cases of verified ABZ toxicity, the dosage was immediately lowered to 7.5 mg/kg/day and the blood count and functional hepatic test run weekly until the values normalized. In case of continuing hematological alterations and/or hypertransaminasemia; ABZ had to be suspended until all the abnormal values disappeared. Only then, ABZ delivery was resumed at 7.5 mg/kg/day, associated with PZQ at a dosage of 40 mg/kg/day, allowing the follow-up to continue with frequent monitoring of blood and liver parameters.

Follow-up and treatment efficacy
In abdominal cases, a follow-up ultrasound was performed every 3 months in the first year and a CT one year after finishing treatment. Subsequent control was performed with annual CT. Priority for the imaging studies was given to the same professional who produced the original results; using the same conditions to consider the images comparative in the follow-up. The images were analyzed to determine the size and status of individual cysts (standards

classification of WHO-IWGE).
The treatment effectiveness is defined as resolution or not resolution considering imaging evolution 5 years after the end of the initial pharmacological therapy, per patient and status of cysts. The criteria to determine effective therapy was constructed from the standard classification by WHO-IWGE.

Individual cysts and patients were classified as achieving success (cure or marked improvement), or no success (no change or worsening). Cure was defined as the disappearance of the cyst(s) determined by TC parameters; marked improvement was defined as ≥25% reduction of the cyst size; both definitions required a transition to inactive phases (CE4, CE5) in the follow-up evaluation.

Statistical analysis
All the patient clinical and laboratory data were analyzed by Epi Info 2000 (Center for Disease Control, Atlanta, Georgia, USA). Data were described as mean value ± SD or frequency and percentage when appropriate.

Intervention Type
Drug

Phase
Not Applicable

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

Primary outcome(s)
Size of the cyst measured by computed tomography (CT) or nuclear magnetic resonance (NMR) at 5 years of follow-up

Key secondary outcome(s)
Stage of the cyst measured by computed tomography (CT) or magnetic resonance imaging (MRI) from active (CE1, CE2) to inactive (CE4 and CE5) stages during medical treatment at 5-year follow-up

Completion date
20/12/2020

Eligibility

Key inclusion criteria
1. Patients were recruited from January 2003 to October 2020 from different hospitals throughout Uruguay who completed the 5 years post-treatment follow-up in October 2020
2. Patients with cystic echinococcosis diagnosis, based on clinical symptoms, morphological features detected by imaging techniques (RX, US, CT, MR) and immunologic tests (indirect hemagglutination [IHA], indirect immunofluorescence [IFI])
3. Less or equal cysts size to 7 cm, remnants post-surgical act, high surgical risk or multiple locations
4. Stage CE1, CE2 o CE3a o CE3b

Participant type(s)

Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
15 Years

Upper age limit
65 Years

Sex
All

Total final enrolment
36

Key exclusion criteria
1. Patients who did not fulfil the follow-up criteria
2. Surgical treatment: Patients with low or moderate surgical risk and cysts larger than 7 cm, were subjected to surgery. However, the protocols require mandatory surgery for any cysts with a pulmonary location.

Date of first enrolment
01/09/2003

Date of final enrolment
18/12/2015

Locations

Countries of recruitment
Uruguay

Study participating centre
Departamento de Parasitologia y Micologia, Instituto de Higiene, FdeM, Udelar
Avda Alfredo Navarro 3051 3er Floor
Montevideo
Uruguay
11600

Sponsor information

Organisation
University of the Republic

ROR
https://ror.org/030bbe882

Funder(s)

Funder type
University/education

Funder Name
Universidad de la República Uruguay

Alternative Name(s)
University of the Republic Uruguay, University of the Republic, Universidad de la República, UdelaR

Funding Body Type
Private sector organisation

Funding Body Subtype
Universities (academic only)

Location
Uruguay

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated and/or analyzed during the current study are not expected to be available due to reasons of strict confidentiality with both the patients and the participating colleagues.

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		25/07/2024	10/09/2025	Yes	No