

IS ANTICYSTICIDAL TREATMENT USEFUL IN PATIENTS WITH NEUROCYSTICERCOSIS AND EPILEPSY?

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RESUMEN

Antecedentes. *Todavía no está claro si la terapia con anticisticidal usada concomitantemente con la terapia antiepiléptica de primera línea en pacientes con neurocisticercosis parenquimal y epilepsia, es útil en la prevención de estas enfermedades recurrentes.*

Objetivos. *El objetivo de esta revisión es evaluar los efectos de la terapia anticisticidal en relación a las subsecuentes mediciones o análisis en los pacientes con neurocisticercosis parenquimal.*

Estrategia. *Se buscó información en Medline, LILACS, la Biblioteca Cochrane, en los resúmenes de las dos reuniones anuales de la Academia Americana de Neurología, de la Sociedad Americana de Epilepsia y dos libros importantes sobre neurocisticercosis.*

Criterio de selección. *En este ensayo aleatorio o -casi aleatorio- se compara la droga anticisticidal con un placebo y un grupo control de pacientes con neurocisticercosis parenquimal.*

Análisis. *Se usó el método de Mantel-Haenszel para el análisis.*

Resultados. *Los tres estudios comprenden a 406 personas que conocían el criterio de inclusión. Se encontró una estadística muy significativa: la diferencia entre el uso de terapia del anticisticidal y placebo y los que no recibieron ningún tratamiento, después de uno o dos años de seguimiento (OR2.81 95%CI 1.81 a 4.34).*

Conclusiones. *Hay evidencia que la terapia del anticisticidal usada concomitantemente con medicamentos antiepilépticos, puede ser beneficiosa para los pacientes con neurocisticercosis y epilepsia, contribuyendo a la eliminación de la reaparición de estas enfermedades.*

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ABSTRACT

Background. *It is still not clear if anticysticidal therapy used concomitantly with firstline antiepileptic therapy in patients with parenchymal neurocysticercosis and epilepsy, is useful in the prevention of seizure recurrence.*

Objectives. *The objective of this review was to assess the effects of anticysticidal therapy in the relation to subsequent seizures in patients with parenchymal neurocysticercosis.*

Search strategy. *Search of Medline, LILACS, The Cochrane Library, abstracts from the last 2 annual meetings of the American Academy of Neurology and the American Epilepsy Society, and two major books in neurocysticercosis, was done.*

Selection criteria. *Randomized or quasi-randomized trials comparing an anticysticidal drug with a placebo or a control group, in patients with parenchymal neurocysticercosis.*

Analysis. *Mantel-Haenszel method was used for the analysis.*

Results: *Three studies involving 406 people met the inclusion criteria. A significant statistical difference was found between the use of anticysticidal therapy and placebo or no treatment, after one to two years of follow-up (OR 2.81, 95% CI 1.81 to 4.34).*

Conclusions: *There is evidence that anticysticidal therapy used concomitantly with antiepileptic medications may be beneficial for patients with neurocysticercosis and epilepsy, helping the elimination of seizure recurrence.*

PALABRAS-CLAVE : Neurocysticercosis. Epilepsia. Anticysticidal. Antiepiléptico.

KEY WORDS : Neurocysticercosis. Epilepsy. Anticysticidad. Antiepileptic.

BACKGROUND

Neurocysticercosis (NCC) is the final result of the invasion of the human brain by the larval stage of the pork tapeworm *Taenia solium*, which will evolve into a cysticercus, causing inflammation the severity of which is related to the degree of the host's immune response.¹

Epilepsy is the most common clinical manifestation of parenchymal NCC and in most of the cases it represents the only manifestation.²⁻⁴ At the same time, NCC is

the leading cause of adult-onset epilepsy in the world.^{1,5-7} The type of seizure will depend on the location of the parasite within the brain. Of all the different anatomical and pathological forms of NCC, the parenchymatous form is the one most commonly associated to epilepsy.⁷ The etiology behind that still remains an issue to be resolved.

It is well known that patients with epilepsy due to parenchymal brain cysts must be treated with antiepileptic medications, independently of the use of anticysticidal medication.⁶ In regard of this,

studies trying to find how useful is the use of this specific treatment, are contradictory, and the question how useful are they, has not been answered yet.⁹

The objective of the present study is to determine if concomitant anticysticidal therapy would change the prognosis of patients with epilepsy due to NCC.

METHODS:

The studies considered for this review were of a randomized or quasi-randomized design. Patients included in the studies had NCC, defined as characteristic lesions identified by radiological procedures (computed tomography or magnetic resonance imaging).¹⁰

Intervention was considered when an anticysticidal medication was given together with an antiepileptic medication, and control was considered when the patient only received antiepileptic treatment without anticysticidal therapy or with placebo. The outcome to measure was freedom of seizures.

The search strategy consisted in the review of MEDLINE 1966 to 2002, LILACS 2002, The Cochrane Library, published abstracts in special supplements of Neurology and Epilepsia, from the last 3 annual meetings of the American Epilepsy Society and the American Academy of Neurology, and analysis of the references cited in two major books in neurocysticercosis.¹¹ The search terms used in Medline and Lilacs were Neurocysticercosis and Trial, Cysticercosis and Trial, Cysticercosis and Epilepsy, Neurocysticercosis and Epilepsy, and Neurocysticercosis and Anticonvulsants. Me SH was used also for Neurocysticercosis and Epilepsy, as well as Neurocysticercosis and Anticonvulsants.

Following the Mantel-Haenszel method, odds ratios for each study were calculated, as well as the variance, and weights. A summary odds ratio for meta-analysis and the 95% confidence interval of OR_{MH} was also estimated.

Three studies were included,^{12,13,14} two were randomized, control trials^{12,13}, one included the use of placebo in the control group. The third study even though was retrospective, the initial allocation was quasi-random, and the inclusion of the patients in the study was blinded in some way.¹⁴ Five studies were excluded,¹⁵⁻¹⁹ the first of them, even though was randomized, the outcome was the number of cysts in neuroimaging studies, and seizure as clinical outcome was not reported.¹⁶ One study was comparative, it assessed seizure outcome using antiepileptic medication versus not using it.¹⁵ Two studies were crossover, and did not include an extra group for control, the same group of patients were analyzed before and after the use of anticysticidal therapy.^{17,19} The final study was a prospective, non-randomized evaluation of a population with NCC, with a subgroup of patients with epilepsy. They were not randomly assigned to anticysticidal therapy.¹⁸

One of the trials¹² lost 20% of patients during follow-up (20% in the treatment group and 21% in the control group), and another one lost 12.5% of patients to follow-up.¹³

Anticysticidal treatment consisted in albendazole (ALB) or praziquantel (PZQ), and the doses were of 15 mg/kg/day for 8 days of ALB or 50 mg/kg/day for 15 days of PZQ in one trial.¹² The second trial used doses of 15 mg/kg/day of ALB for 28 days.¹³

The third trial used doses of 50 mg/kg/day of PZQ for 15 days and 15 mg/kg/day for 30 days of ALB.¹⁴

Two trials used prednisolone routinely in all patients in two trials.^{12,13} And some of them (22%) in the third trial, used Dexa-

methasone.¹⁴ In all trials antiepileptic medication was used.

The clinical outcomes (number of seizures) were self reported by the patients¹² or by the parents,¹³ and was not stipulated in one study.¹⁴

TABLES

Losses to follow up were excluded for the analysis, because they did not seem to be associated with placebo or intervention group.

Trial 1¹²

	Using AEDs	Using AEDs+anti-cysticidal (ALB or PZQ)	Total
Sz recurrence	9	38	47
No seizures	12	59	71
Total	21	97	118

OR1:1.16

Trial 2¹³

	Using AEDs	Using AEDs+anti-cysticidal (ALB or PZQ)	Total
Sz recurrence	11	7	18
No seizures	21	24	45
Total	32	31	63

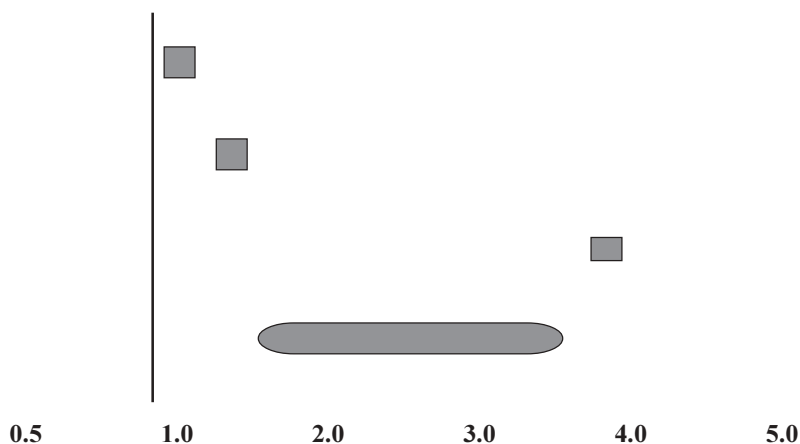
OR2:1.80

Trial 3¹⁴

	Using AEDs	Using AEDs+anti-cysticidal (ALB or PZQ)	Total
Sz recurrence	98	54	156
No seizures	24	64	88
Total	122	118	240

OR3:4.83

FIGURE 1



RESULTS

In the three trials seizures post-treatment with placebo or anticyclicidal or no treatment, were reported. Pooling the results together the OR is 2.81 (95% confidence interval 1.81 to 4.34) (Figure 1). A total of 46 patients from the two first studies were lost to follow up, but they were not counted in the analysis since they were not seem to be associated with any intervention group.

None of the trials reported withdrawal of antiepileptic therapy as an outcome. No deaths were reported.

There were not withdrawals from side effects of anticyclicidal medications reported.

DISCUSSION

Based on this analysis, concomitant anticyclicidal therapy in patients with parenchymal NCC and epilepsy appears to be beneficial. Previous analysis done in order to know which of the different anticyclicidal

therapies is better, revealed no differences between the use of ALB and PZQ.²⁰

As long as the patient with NCC and epilepsy is treated with anticyclicidal therapy together with the use of antiepileptic medications, the prognosis appears to be reasonable good. The antiepileptic treatment requires the use of any of the older antiepileptic medications,⁶ based on studies already published.^{12,13,14} The use of the newer antiepileptics required new studies, since this information is not available.

Concomitant use of steroids in selected patients may play a role in the control of seizures but because this special treatment was only used in two trials, the selection to use them or not, should be based on case-by-case basis. Guidelines for the treatment of patients with different stages of the disease have been published, and it is encouraged its review.⁹

Finally the selection of a treatment option should include a consideration of the risks and benefits of the therapy to be used.

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