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Should Anti-Epileptic Drugs be Used for Preventing Seizures after Acute Traumatic Brain Injury?

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Question

Are anti-epileptic agents effective and safe in preventing seizures after acute traumatic brain injuries?

Data Source

Cochrane systematic review of random or quasi-random controlled trials [1]. Trials were identified by searching Medline, Embase, the Cochrane Epilepsy and Stroke databases, pharmaceutical companies and the National Institute of Neurological Disorders and Stroke, Epilepsy Division. The search was updated in August 1999.

Patients

Patients with clinically defined acute (within 8 weeks) traumatic head injury of any severity.

Table 1. Benefit and risk of anti-epileptic prophylaxis in acute traumatic brain injury

Events/treatment	Events/control	OR	95% CI	ARR, %	NNT/NNH
Early seizures 22/456 (5%)	65/434 (15%)	0.33	0.21–0.52	9	11
Late seizures 81/608 (13%)	91/610 (15%)	0.91	0.65–1.26	1	100
Death 95/540 (18%)	78/514 (15%)	1.20	0.86–1.68	2	50
Skin rashes 30/292 (10%)	18/276 (7%)	1.63	0.90–2.95	4	27

OR = Odds ratio; ARR = absolute risk reduction; NNT/NNH = number needed to treat to harm.

Treatment

Anti-epileptic drugs listed in the British National Formulary. The most commonly used were phenytoin, carbamazepine and phenobarbital.

Outcome Measures

The number of patients who had one or more early seizures (seizures occurring in the first week after injury). The number of patients who had one or more late seizures (up to the end of follow-up). The number of patients who died from any cause during the follow-up period. The number of patients who had one or more skin rashes.

Quality of Studies

All trials were independently scored by evaluating randomization and allocation concealment. None of the trial reports had sufficient information to complete the quality scoring.

Main Results

Of 11 studies identified, 10 including 2,036 randomized patients were considered eligible. Four trials were unpublished.

The pooled odds ratio (OR), absolute risk reduction (ARR) and the number needed to treat or to harm (NNT/NNH) are presented on table 1. The treatment significantly reduced the risk of early seizures (OR = 0.33), but not late seizures (OR = 0.91). The treatment did not significantly increase the risk of death. Two trials documented the occurrence of skin rashes, which was higher in patients taking anti-epileptics.

Conclusion

There is evidence that anti-epileptic prophylaxis reduces early seizures, but not late seizures. Insufficient evidence is available to establish the net risk/benefit ratio of anti-epileptic treatment after head injury.

Comment

Although in clinical practice many patients receive anti-epileptic prophylaxis, there is no clear evidence supporting this policy. Similarly, anti-epileptic drug prophylaxis was ineffective in post-craniotomy patients [2].

References

- Schierhout G, Roberts I: Anti-epileptic drugs for preventing seizures following acute traumatic brain injury (Cochrane Review); in: The Cochrane Library, Issue 3, 2001. Update Software.
- Kuijlen JM, Teernstra OP, Kessels AG, Herpers MJ, Beuls EA: Effectiveness of antiepileptic prophylaxis used with supratentorial craniotomies: A meta-analysis. *Seizure* 1996;5:291–298.