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[Intervention Review]

Propofol versus thiopental sodium for the treatment of refractory status epilepticus

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ABSTRACT

Background

This review is an update of a previously published review in the Cochrane Database of Systematic Reviews (Issue 6, 2015).

Failure to respond to antiepileptic drugs in patients with uncontrolled seizure activity such as refractory status epilepticus (RSE) has led to the use of anaesthetic drugs. Coma is induced with anaesthetic drugs to achieve complete control of seizure activity. Thiopental sodium and propofol are popularly used for this purpose. Both agents have been found to be effective. However, there is a substantial lack of evidence as to which of the two drugs is better in terms of clinical outcomes.

Objectives

To compare the efficacy, adverse effects, and short- and long-term outcomes of refractory status epilepticus (RSE) treated with one of the two anaesthetic agents, thiopental sodium or propofol.

Search methods

We searched the Cochrane Epilepsy Group Specialized Register (16 August 2016), the Cochrane Central Register of Controlled Trials (CENTRAL) via the Cochrane Register of Studies Online (CRSO, 16 August 2016), MEDLINE (Ovid, 1946 to 16 August 2016), ClinicalTrials.gov (16 August 2016), and the [South Asian Database of Controlled Clinical Trials](#) (16 August 2016). Previously we searched [IndMED](#), but this was not accessible at the time of the latest update.

Selection criteria

All randomised controlled trials (RCTs) or quasi-RCTs (regardless of blinding) assessing the control of RSE using either thiopental sodium or propofol in patients of any age and gender.

Data collection and analysis

Two review authors screened the search results and reviewed the abstracts of relevant and eligible trials before retrieving the full-text publications.

Main results

One study with a total of 24 participants was available for review. This study was a small, single-blind, multicentre trial studying adults with RSE receiving either propofol or thiopental sodium for the control of seizure activity. This study was terminated early due to recruitment problems. For our primary outcome of total control of seizures after the first course of study drug, there were 6/14 patients versus 2/7

patients in the propofol and thiopental sodium groups, respectively (risk ratio (RR) 1.50, 95% confidence interval (CI) 0.40 to 5.61, low quality evidence). Mortality was seen in 3/14 patients versus 1/7 patients in the propofol and thiopental sodium groups, respectively (RR 1.50, 95% CI 0.19 to 11.93, low quality evidence). Our third primary outcome of length of ICU stay was not reported. For our secondary outcomes of adverse events, infection was seen in 7/14 patients versus 5/7 patients in the propofol and thiopental sodium groups, respectively (RR 0.70; 95% CI 0.35 to 1.41). Hypotension during administration of study drugs and requiring use of vasopressors was seen in 7/14 patients versus 4/7 patients in the propofol and thiopental sodium groups, respectively (RR 0.87; 95% CI 0.38 to 2.00). The other severe complication noted was non-fatal propofol infusion syndrome in one patient. Patients receiving thiopental sodium required more days of mechanical ventilation when compared with patients receiving propofol: (median (range) 17 days (5 to 70 days) with thiopental sodium versus four days (2 to 28 days) with propofol). At three months there was no evidence of a difference between the drugs with respect to outcome measures such as control of seizure activity and functional outcome.

Authors' conclusions

Since the last version of this review we have found no new studies.

There is a lack of robust, randomised, controlled evidence to clarify the efficacy of propofol and thiopental sodium compared to each other in the treatment of RSE. There is a need for large RCTs for this serious condition.

PLAIN LANGUAGE SUMMARY

Propofol versus thiopental sodium for the treatment of refractory status epilepticus (RSE)

Review question: In this review we evaluated the evidence for the use of these anaesthetic drugs in controlling seizure activity in patients with RSE.

Background: Persistent convulsions (lasting 30 minutes or more) are a major medical emergency associated with significant morbidity and mortality. At times, these convulsions fail to respond to first- and second-line drug therapy, and may occur in up to 31% of patients suffering from persistent seizure or convulsive activities. Persistent seizure activity may become unresponsive to antiepileptic drugs. Anaesthetics such as thiopental sodium and propofol are frequently given for control of seizures in such situations. Both agents have their own side effects and complications.

Study characteristics: The evidence is current to August 2016. We could only identify one trial, which was terminated early due to recruitment problems. This study enrolled only 24 participants of the required 150. This study was a small, single-blind, multicentre trial studying adults with RSE receiving either propofol or thiopental sodium for the control of seizure activity.

Key results: There was no difference between the two drugs in their ability to control seizure activity. The only difference noted was the requirement for prolonged mechanical ventilation for patients in the thiopental sodium group. This could be due to the prolonged presence of the drug in the body due to its slow removal.

Quality of evidence: We judged the quality of the evidence for our primary outcomes of total control of seizures and in-hospital mortality to be low. There is a clear need for a large randomised controlled trial to study the efficacy of anaesthetic agents in the treatment of RSE.