

Breakthrough Seizures - Further analysis of the Standard versus New Antiepileptic Drugs (SANAD) study

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Purpose

A breakthrough seizure is an epileptic seizure that occurs following a period of seizure freedom on antiepileptic drugs. Despite the severity and consequences of breakthrough seizures very few publications exist that examine factors associated with a breakthrough seizure and outcomes following such a seizure. We therefore developed prognostic models for risk of a breakthrough seizure, risk of seizure recurrence after a breakthrough seizure, and likelihood of achieving 12-month remission following a breakthrough seizure.

Methods

We analysed data from the SANAD study. This long-term randomised trial compared treatments for patients with newly diagnosed epilepsy. Multivariable regression modelling was used to investigate how clinical factors affect the probability of each outcome.

Results

34% of recruited patients had a breakthrough seizure. Of these, 44% achieved a subsequent period of 12-month remission. Significant factors for risk of a breakthrough seizure following 12-month remission were neurological insult, number of tonic-clonic seizures by achievement of 12-month remission, and time taken to achieve 12-month remission. Significant factors for risk of seizure recurrence following a breakthrough seizure were total number of drugs attempted to achieve 12-month remission, time to achieve 12-month remission prior to breakthrough seizure, and breakthrough seizure treatment decision. Significant factors for likelihood of achieving 12-month remission after a breakthrough seizure were gender, age at breakthrough seizure, time to achieve 12-month remission prior to breakthrough, and breakthrough seizure treatment decision.

Conclusions

The described models can be used to identify patients most likely to have a breakthrough seizure, most likely to have a seizure recurrence following a breakthrough seizure, and most likely to achieve 12-month remission following a breakthrough seizure. This will help to stratify patients for likely outcome following a breakthrough seizure, as for some the breakthrough heralds the development of treatment refractoriness, whilst for the majority seizure control will be regained.