

Use of the ketogenic diet as a long-term treatment for intractable epilepsy

The ketogenic diet has been in use since the early 1920s as a treatment for epilepsy.¹ It is a high fat, low protein, and low carbohydrate diet which was developed to mimic the effects of fasting, which has been found to decrease seizure activity.^{1,2} The diet produces ketosis, as does fasting, but the role of ketosis in seizure control is not known. These days, the diet is generally used to treat seizures which do not respond to drug therapy.

The ketogenic diet has been tested in infants,³ children,⁴ adolescents,⁵ and adults.⁶ Research suggests that the degree of seizure control varies somewhat with age group, but in general, the diet is very effective in suppressing seizure activity. The diet is usually administered for 1 to 3 years,⁷ and research has focused on fairly short-term effects.^{3-6,8,9} Some individuals have been maintained on the diet for longer periods of time,⁸ and research is needed to examine the efficacy of the diet when used in this way, and the possible long-term health issues.

A number of studies have examined the effects of the ketogenic diet when administered for 1 to 3 years, and the results following the discontinuation of the diet.^{3-6,8,9} In these studies, the diet has been found to be extremely effective in controlling seizures while the individual is on the diet, often allowing a decrease in medication, or the complete cessation of drug therapy. Of great interest, seizure activity may be reduced or eliminated for long periods after the diet is stopped.⁸ Side effects of the diet reported in these studies are generally minor and controllable.^{3-6,8,9}

The ketogenic diet is thought to be unpalatable, and difficult to follow, but its antiseizure effects are often considered to be worth the effort.^{6,8,9} For some individuals with epilepsy, the diet seems to be the only effective treatment. Improvement in mood, behaviour, and cognition unrelated to seizure control has been reported by individuals on the diet, and by the parents of children on the diet.^{6,10,11}

The study of interest in the present issue (Groesbeck, Bluml, and Kossoff, p 978) examined the long-term efficacy of the ketogenic diet in controlling seizure activity, and the long-term side effects. These are extremely important issues, as some individuals whose seizures are under control while on the diet experience a recurrence of seizures when taken off the diet.⁸ The study reinforced previous research which found that individuals were willing to bear the adverse reactions, and unpalatability of the diet if the rewards were sufficient. The diet was deemed by parents to cause fewer side effects than anti-convulsant medications, and was, therefore, preferred.

The authors point out the subjective nature of some of the data. Self-report of behaviour and symptoms is considered suspect, but it is not necessarily inaccurate.¹² While it should be

kept in mind that the data were obtained by self-report, this fact does not lessen the importance of the results.

This study dealt with individuals who had been on the ketogenic diet for a prolonged period of time. Presumably, the participants remained on the diet because their seizures were partially, but not completely, controlled by the diet. The main problem with this study is readily acknowledged by the authors. Many of the participants had severe physical conditions which may have acted as confounds. But it may be difficult to find participants for such a study who do not have comorbidities.

This study is an important piece of research. Although there are some unanswered questions, it shows that the diet continues to be a useful option over a long period of time, and indicates some possible problem areas.

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