

BACKGROUND

- Ketogenic diet (KD)- well established therapeutic option for children with non-surgical drug-resistant epilepsy (DRE)
- KD is often tried when children have failed 3 or more anti-seizure medications (ASM)
- At the time of KD initiation, most are on ASM, then adjusted as per seizure control
- Data limited on the influence of concurrent ASM on KD efficacy
- KD has unique mechanisms of action which differ from ASM, however, synergies may be possible
- A paucity of data on the efficacy of combined use of KD with ASM
- In one study, children receiving PHB in combination with the KD were significantly less likely to have a >50% seizure reduction[#]
- Conversely, those receiving ZNS in combination with the KD at onset were more likely to have a >50% reduction¹

OBJECTIVE

- The present study was planned to evaluate the effect of concurrent ASM on seizure control in children with DRE treated with KD

METHODS

- Retrospective and prospective data collection of 226 children treated with KD (2011-Present)
- Relevant variables extracted from this dataset to answer the research question
- Data extracted and analyzed for children started on KD, and continued on ≥ 1 ASM unchanged for a period of at least 3 months
- Seizure responder defined as >50% reduction in seizure frequency
- Effect of ASM on the efficacy of the KD - analyzed using logistic regression analysis
- Two models were built
- ❖ Model 1 included all ASMs used by a minimum of 10 participants, as well as clinical and demographic variables, such as types of seizures, epilepsy etiology, co-morbidities, age at start of KD and type of KD as predictors
- ❖ Model 2 utilized only ASMs used by a minimum of 10 participants as predictors
- Model outputs reported as OR and 95% C.I

RESULTS

A total of 127 children enrolled (55 boys, 42.3 %)

Baseline Variable	N (%)
Mean age at start of diet:	5.28 yrs (SD 4.3)
Developmental delay	108 (85%)
Monotherapy	13 (10.2 %)
Polytherapy	114 (89.7 %)
Classic KD	74 (58%)
MCT-KD:	43 (34%)
Modified Atkins diet	10 (8%)
Genetic	71 (55.9)
Structural	23 (18.1)
Metabolic	6 (4.7)
Immune mediated	3 (2.4)
Unknown	42 (33%)
Generalized	59 (46.4)
Focal	48 (37.7)
Unclassified	20 (15.7)

Model 1 - 5 ASMs were found to have a statistically significant positive association with the efficacy of the KD- LCM (OR 10.261 [95% CI: 1.533 – 68.671]), VGB (5.582 [1.141 – 27.312], LMT (5.004 [1.423 – 17.601]), TPM (3.194 [1.064 – 9.589], and LEV (2.895 [1.085 – 7.722])

Model 2 - the same 5 ASMs were found to have statistically significant associations

No ASMs were negatively associated with seizure responder rate in either model

CONCLUSIONS

We found that 5 ASMs had a positive association on seizure reduction efficacy of KD; VGB, LCM, LMT, TPM and LEV

None of the ASMs had a negative effect

However, the clinical significance of these results is questionable given the disparate ASM mechanisms of action and the limitations of our study sample

In the present state, we conclude that for practical purposes, concurrent ASMs does not seem to affect the efficacy of KD

The choice of the concurrent ASM needs to be based on appropriateness for the child's electro-clinical phenotype and tolerance in combination with the KD

REFERENCES

Morrison PF, Pyzik PL, Hamdy R, Hartman AL, Kossoff EH. The influence of concurrent anticonvulsants on the efficacy of the ketogenic diet. *Epilepsia*. 2009 Aug;50(8):1999-2001

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