Six-Month Responses of Refractory Epilepsy Treated with Low Glisemic Index Therapy

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INTRODUCTION

Epilepsy is a neurological disorder characterized by recurrent seizures affecting people of all ages. While many individuals respond well to anti-seizure drugs (ASD), there remains a subset of patients, particularly children, with refractory epilepsy, where seizures persist despite multiple medication trials[1]. In recent years, there has been growing interest in exploring alternative therapies for such cases. One such approach, Low Glycemic Index Therapy (LGIT), has shown promise in managing seizures. This article delves into the six-month responses of pediatric patients with refractory epilepsy undergoing LGIT[2].

Low Glycemic Index Therapy is a dietary intervention designed to stabilize blood glucose levels by emphasizing foods with a low glycemic index (GI). Unlike the high-carbohydrate ketogenic diet, LGIT focuses on moderating carbohydrate intake while maintaining adequate protein and fat consumption. The rationale behind LGIT lies in the hypothesis that stabilizing blood glucose levels may positively impact brain function, thereby reducing seizure frequency in individuals with epilepsy[3].

MATERIALS AND METHODS

A retrospective analysis was conducted on patients who commenced the Low Glycemic Index Therapy (LGIT) at the Pediatric Neurology Department, aged 2-18 years, between 2020 and 2022. Demographic and clinical data, including seizure type, baseline seizure frequency, medications, side effects, and anthropometrics, were gathered. The initiation of LGIT took place in both outpatient and inpatient settings.

Patients received instructions from a dietitian to limit foods with a high glycemic index and to restrict total daily carbohydrate intake to 40-60 g. Changes in seizure frequency were assessed during the first three months of follow-up. The efficacy was graded using the following categories: (1) Complete response (100% seizure remission); (2) Good response (more than 50% reduction in seizure frequency); (3) Partial response (less than 50% reduction in seizure frequency); (4) No response (seizure frequency unchanged).

RESULTS

Twenty patients (10 boys and 10 girls) with drug-resistant epilepsy were included in our study. The average age of all patients who underwent the diet was 10.9±5.05 (the mean age of boys was 11.9±5, and the mean age of girls was 10±4). While a complete response in seizure frequency was detected in 45% (n=9) of the patients on a low glycemic index diet, a good response was detected in 40% (n=8) patients, and a partial response was detected in 10% (n=2) patients, 5% (n=1) there was no change in the patient's seizure frequency. Hypoglycemia was observed as a side effect during the diet in 5% (n=1) patients, and 5% (n=1) patients were discontinued because they could not adapt to the diet. An improvement in electroencephalography (EEG) was detected in 40% (n=8) of the patients, and at least one anti-seizure medication was reduced in 35% (n=7) of the patients. Characteristics and treatment responses of patients starting LGIT are given in Table 1.

CONCLUSIONS

A complete and good response was obtained in approximately 85% of the patients who were administered the diet. Our preliminary results such as that the LGIT was associated with reduced seizure frequency in most patients, with limited side effects. Low Glycemic Index Therapy represents a promising avenue for the management of refractory epilepsy in pediatric patients. The six-month responses observed in this study underscore the potential of LGIT to reduce seizure burden and improve quality of life. By harnessing the therapeutic benefits of dietary modification, LGIT offers new hope for individuals living with epilepsy and highlights the importance of personalized, multidisciplinary approaches in epilepsy care.

Table 1. Characteristics and Treatment Responses of Patients Starting LGIT

	Patients Treated with LGIT (n=20)
Age, Mean SD, year	**10.9±5.05**
Male, /Female, n (%)	**10 (50) / 10 (50)**
ASD amount, n (%)	
1	**1 (5)**
2	**2 (10)**
3	**11 (55)**
≥ 4	**6 (30)**
Seizure Frequency n (%)	
≥1 day	**15 (75)**
≥1 week but ≤1 day	**4 (20)**
<1 week	**1 (5)**
Seizure type, n (%)	
Focal	**7 (35)**
Generalized	**11 (55)**
Mixt	**2 (10)**
Seizure responses after LGIT, n (%)	
Complete response	**6 (30)**
Good response	**11 (55)**
Partial response	**2 (10)**
No response	**1 (5)**
Number of patients with EEG improvement, n (%)	**8 (40)**
Number of patients whose seizure medications were reduced, n (%)	**6 (30)**

LGIT: Low Glycemic Index Therapy, SD: Standard Deviation, ASD: Ati-Seizure Drug, EEG: Electroencephalography

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