INTRODUCTION

- Children with epilepsy are at risk for compromised cognitive outcomes.
- Traditional neuropsychological testing is time-consuming and costly to perform longitudinally.
- We investigated the ability of a computerized cognitive testing battery to detect differences before and after medication initialization.

METHODS

Patients
- Recruted from outpatient neuropsychology clinic at the Children’s Hospital of Pittsburgh
- Aged 8-17 years with a new epilepsy diagnosis
- Epilepsy medication-naïve at time of enrollment
- No history of developmental delay
- English as a first language
- Age-appropriate reading and computer skills

Behavioral Assessments
- Parents or guardians completed:
  - Strengths and Difficulties Questionnaire (SDQ)
  - Hague Side Effects Scale (HASES)

Cognitive Testing
- CNS Vital Signs
- 30-minute computerized battery
  - 7 tasks:
    - Verbal Memory Test (VBM)
    - Visual Memory Test (VM)
    - Finger Tapping Test (FTT)
    - Symbol Digit Coding Test (SDC)
    - Stroop Test (ST)
    - Shifting Attention Test (SAT)
    - Continuous Performance Test (CPT)

- Baseline testing completed before anticonvulsant therapy initiation
- Follow-up testing completed 2-12 months following baseline testing

RESULTS

Total enrolled (N = 29)

Baseline Domain Scores (N = 29)

Follow-up Domain Scores (n = 14)

Patients demonstrated significant improvements in composite memory and visual memory at the time of follow-up testing.

Memory Improvements Between Baseline and Follow-up

At follow-up, children aged 8 – 12 years (n = 6) had increased scores while children aged 13 – 17 (n = 6) had decreased scores in:
- Psychomotor Speed
- Cognitive Flexibility
- Executive functioning

Children ages 13 – 17 increased their visual memory scores more than children ages 8 – 12.

Acknowledgement: We thank CNSVS for providing us with technical support and equipment.

SUMMARY & CONCLUSIONS

Feasibility of Computerized Cognitive Testing:
- Computerized cognitive testing was well-tolerated and easily performed in our sample of children with new-onset epilepsy in the clinic setting.

Clinical Significance:
- Children with epilepsy significantly improved their scores on the visual memory domain at the time of follow-up testing.
- CNS VS may be able to detect cognitive improvements associated with initiation of anti-epileptic medications.
- Baseline cognitive impairments were associated with parent reports of greater behavioral problems.
- Cognitive testing may be relevant to real-world difficulties.

Serial screening using computerized cognitive testing may offer a rapid and efficient method to quantify changes associated with anti-epilepsy therapy.

Bibliography


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