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NEUROMETRIC EVALUATION

PATIENT: V, M
DATE OF BIRTH: 2/5/88
TEST DATE: 6/1/2000
TECHNICIAN: David Cantor, Ph. D.
REFERRING PHYSICIAN: R. M, M. D.
CURRENT MEDICATIONS: None (Adderall, Risperdal and Zoloft have been taken in the past)
PRELIMINARY DIAGNOSES: ADHD; possible schizophrenia; violent behavior; depression; seizures; LD; possible right hemisphere trauma due to physical abuse; compulsive overeating; decline in cognitive functioning.

REASON FOR REFERRAL: The patient is referred for a neurofunctional evaluation to rule out organic brain syndrome.

BEHAVIORAL/TECHNICAL OBSERVATIONS: M V is a 12-year-old male adolescent. He was awake, alert and cooperative for the first 5 minutes of the test but then became somewhat drowsy.

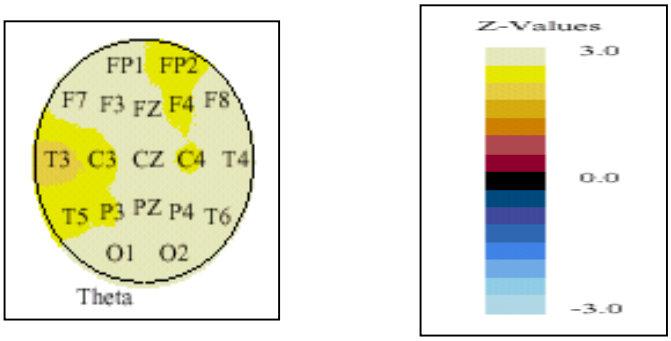
CLINICAL CORRELATE SUMMARY CHART

Brain Region	Measures	Severity Indicators
Widespread	Increased theta	significant
Left Frontal		
Right Frontal		
Left Temporal	Decreased alpha; delta incoherence	Trend; significant
Right Temporal	Decreased alpha; delta incoherence	Trend; significant
Left Central		
Right Central		
Left Parietal	Decreased alpha	Trend
Right Parietal	Decreased alpha	Trend
Left Occipital	Decreased alpha	Trend
Right Occipital	Decreased alpha	Significant

Significant History	Clinical Observations/Data	Correlating QEEG Features
ADHD		Discriminant function analysis does not suggest ADD
ADHD		Diffuse increased theta (R/O drowsiness or metabolic factors)
ADHD		Increased theta:beta, maximal Cz (>9:1)
Possible schizophrenia		Increased theta, decreased alpha (R/O drowsiness or metabolic factors)
Seizures	No epileptiform activity in EEG	
Depression		Increased theta (R/O drowsiness or metabolic factors)
Possible right hemisphere trauma		No significant asymmetry
Decline in cognitive functioning	Psychological reports	No baseline for comparison
LD		Diffuse slowing could affect a variety of cognitive skills (R/O drowsiness or metabolic factors)

Imported Maps

Theta relative power Z-Values



FOLLOW-UP/TREATMENT CONSIDERATIONS:

- The patient was reportedly drowsy during testing so caution should be used in interpreting the increased theta profile.
- A possible metabolic disorder should be ruled out as a contributing factor to the increased theta profile.
- If drowsiness or metabolic factors are not affecting the data, the QEEG profile of diffusely increased theta has been reported to be responsive to anticonvulsant medications such as Tegretol or Depakote when the major symptom profile is ADHD (see Clinical Electroencephalography, 1995 Volume 26 No.2).
- If schizophrenia has not been ruled out, further evaluation and/or other medications could be considered.
- The patient may be a candidate for neurofeedback training since theta:beta is increased diffusely <3:1. Consider an initial site of Cz where the ratio is <9:1 and target should be 2:1.

II. DETAILED NARRATIVE

QUANTITATIVE DATA

QUANTITATIVE NEUROMETRIC ASSESSMENT (QEEG):

Twenty-one electrodes using an electro-cap consistent with the International 10/20 systems were placed. Routine EEG was recorded on a Cadwell Easy II using a linked ear montage and with electrodes digitally referenced to the Cz electrode allowing for retrospective montage analysis of all data. Using data gathered under technical conditions as listed above, 96.11 seconds of EEG were selected and subjected to quantitative analysis of absolute power, relative power, power asymmetry and coherence. These measurements are logarithmically transformed and referenced to age-adjusted population norms.

Analysis of the monopolar data shows no significant scores in the absolute power distribution. Theta:beta is increased diffusely, maximal at Cz (9.5:1). The relative power distribution shows significantly increased theta in all regions. Alpha power is decreased in posterior regions, significant in right occipital regions. No significant asymmetries occur between or within hemispheres with no strong trends. Significant interhemispheric beta incoherence occurs in fronto-temporal regions. Temporal regions show significant delta incoherence. No significant intrahemispheric coherence scores occur. Mean delta frequency is significantly increased in right fronto-temporal regions with widespread trends. Mean theta frequency is significantly increased in parietal, occipital, posterior-temporal and midline regions with diffuse trends. Mean alpha frequency is significantly decreased in occipital, right and midline parietal and left posterior-temporal regions with widespread trends. Selected multivariate measures (which take into account intercorrelation of measures) show significant combined absolute power scores in central, posterior and overall regions, significant relative power theta scores diffusely, significant posterior and overall mean theta frequency scores and a significant posterior combined mean frequency score.

Analysis of the bipolar data shows significantly increased theta in all regions. Alpha is significantly decreased in right parieto-occipital regions with a trend in the left homologous derivation. Parieto-occipital regions show significantly decreased total absolute power. No significant asymmetry or coherence scores occur. The multivariate measures (which take into account intercorrelation of measures) show no significant scores. Discriminant function analysis does not suggest ADD.

Impression: QEEG with diffuse significantly increased relative theta and decreased posterior alpha. The QEEG should be interpreted with caution since the patient was drowsy during testing. Further evaluation may be warranted.

QUALITATIVE ELECTROENCEPHALOGRAPHIC EVALUATION: The following represents impressions based upon visual examination of the EEG. Specific abnormalities such as sharp waves, asymmetries, or unusual responses to evocative procedures are described when observed in order to alert the clinician to possible abnormalities other than those detected in the quantitative analysis. This visual impression is not intended as a substitute for a conventional neurological EEG. Should the clinician be concerned about the presence of epilepsy, neurological abnormalities or the findings described below referral for a conventional EEG may be warranted.

The patient was cooperative with testing procedures and recording was achieved in awake, alert, resting conditions. Hyperventilation and photic evocative procedures were employed.

Visual examination of more than 15 minutes of available EEG with multiple montages reveals a moderate background voltage of 40 to 45 micro-volts and a posterior alpha frequency of 8 to 9 cycles per second. No gross asymmetries or epileptiform activity is noted. Evocative procedures add no further information. Photic driving is noted.

Impression: The EEG appears to be qualitatively within normal limits.

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Date:

Report reviewed by: