2015 myRESEARCH™
Science Internship Program: Applied Medicine

Civic Education
Office of Government and Community Relations
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Science Internship Program: Applied Medicine
The Effect of Craniopharyngioma and Association with Weight Gain and Behavioral Problems

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Abstract

- Craniopharyngioma (CP) is a benign brain tumor found mainly in pediatric patients. The tumor causes intracranial pressure, endocrine dysfunction, visual impairment, and occasionally hypothalamic obesity. This study looks at how craniopharyngioma affects weight change and behavioral issues.
Background

• The hypothalamus’ function is to regulate hunger.
• General brain damage from CP can lead to behavioral disorders, including depression, anxiety, and bipolar disorder.
• Other damage to the hypothalamus can also cause hypothalamic obesity.
• It is possible for CP’s or other tumors to reappear after the initial CP has been removed.
Problem/Purpose

- Identify correlations between CP and weight gain in the following areas:
  - Before diagnosis, during treatment, and long term outcome
- Identify if there is a correlation between behavioral problems and weight gain in patients with CP
Hypothesis

• Patients diagnosed with CP will be at increased risk for diabetes, insulin resistance, behavioral problems, and hypothalamic obesity.

• CP patients who develop hypothalamic obesity will have consistent weight gain after diagnosis.
Methodology

- 113 pediatric patients diagnosed with CP in the past decade were analyzed on the following:
  - Diabetes mellitus, pituitary deficiencies, insulin resistance before/after diagnosis, behavioral problems before/after diagnosis, hypothalamic obesity/BMI before/after diagnosis
Data

Pituitary Deficiencies

- Growth Hormone Deficiencies (14.2%)
- Hypogonadism (1.8%)
- Central Hypothyroidism (13.3%)
- Adrenal Insufficiencies (5.3%)
- Diabetes insipidus (15.9%)
- None (61.9%)
• Three patients had diabetes, all type 2
• Insulin resistance before diagnosis: 0%
• Insulin resistance after diagnosis: 0%
Data (cont.)

Time from Craniopharyngioma diagnosis to behavioral issue diagnosis

- Median: 3 years
- Generally in the first 4 years
Hypothalamic Obesity

The Effect of Time After Diagnosis on % of 95th BMI Percentile
Results

- 8% had a tumor regrowth
- 23.9% developed behavioral issues after diagnosis
- 32% of patients with hypothalamic obesity had behavioral issues
- Direct correlation between the time from diagnosis and increased BMI
Conclusions

• No apparent correlation with diabetes mellitus, insulin resistance or tumor reappearance
• Positive correlation with pituitary deficiencies and behavioral issues
• BMI and weight gain will increase after diagnosis
• Obesity correlated with behavioral issues
Recommendations

• Larger sample size
  – Include more clinical centers
  – Larger time span
• Examine BMI/weight gain of all patients
• Heightened awareness of behavioral issues
• Routine monitoring of weight/BMI
References


References (cont.)


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