

ASSOCIATION BETWEEN PRECOCIOUS PUBERTY AND PSYCHIATRIC DISORDERS: LARGE-SCALE RETROSPECTIVE CLAIMS ANALYSIS OF FLORIDA MEDICAID-ENROLLED CHILDREN

Cheryl S. Hankin, PhD¹; Lawrence Silverman, MD²; Amy Bronstone, PhD¹; Zhaohui Wang, MS¹¹BioMedEcon, LLC, Moss Beach, CA; ²Goryeb Children's Hospital, Morristown, NJ

ABSTRACT

Purpose: We conducted a large-scale claims analysis to confirm case reports suggesting associations between precocious puberty and psychiatric disorders.¹⁻³

Methods: This analysis compared Florida Medicaid-enrolled children (1997-2004), aged 3-7 years, with or without precocious puberty (ICD-9 259.1, precocious sexual development and puberty, including premature thelarche and adrenarche).

Results: Among 730,921 children, 1,644 (0.23%) were diagnosed with precocious puberty. Adjusting for age, sex and race, compared to those without the disorder, children with precocious puberty were 4 times more likely to be diagnosed with any psychiatric disorder (OR 3.8, 95% CI 3.4-4.2, p<0.0001); 26 times more likely to have an organic brain disorder (OR 25.8, 95% CI 11.8-56.4, p<0.0001); 13 times more likely to have a substance abuse disorder (OR 12.7, 95% CI 6.5-24.8, p<0.0001); and 5 to 10 times more likely to be diagnosed with an eating (OR 10.0, 95% CI 5.7-17.9, p<0.0001), tic (OR 10.5, 95% CI 5.4-20.3, p<0.0001), sleep (OR 9.1, 95% CI 4.8-17.1, p<0.0001), somatization (OR 7.7, 95% CI 4.4-13.7, p<0.0001), or impulse control disorder (OR 6.6, 95% CI 4.3-10.1, p<0.0001).

Conclusions: This is the first large-scale analysis to show a strong association between precocious sexual development and psychiatric disorders. Increased rates of psychiatric disorders could be attributable to organic brain lesions sometimes coexisting with precocious sexual development, attendant hormonal imbalances, other pathophysiological causes, or psychosocial distress associated with illness presentation. Results suggest that patients with signs of precocious sexual development should be evaluated for co-occurring psychiatric disorders.

BACKGROUND: Description of CPP

Central precocious puberty (CPP), also known as gonadotropin-dependent precocious puberty, is caused by premature activation of the hypothalamic-pituitary-gonadal (HPG) axis that, in turn, activates the development of secondary sexual characteristics, accelerated growth, and accelerated bone maturation. A small body of research links CPP with increased risk for central nervous system and congenital disorders, but little is known about the association of CPP with psychiatric conditions. We examined potential associations between diagnoses of precocious puberty and psychiatric disorders in a large sample of children.

METHODS

Overview: Florida Medicaid provides access to health care for more than two million low-income individuals, with more than half of enrollees under 21 years of age. Computerized Florida Medicaid claims records contain basic demographic information, such as sex, age and race/ethnicity; ICD and CPT diagnosis and treatments codes; and payment data. Information is patient de-identified and fully compliant with the HIPAA Privacy Rule. Subjects were identified from enrollees in the Florida Medicaid program who had a paid claim from July 1997 through June 2004.

Data Analysis: We conducted a seven-year (1997-2004) analysis of Florida Medicaid-enrolled children, aged 3-7 years, which compared those with precocious puberty (ICD-9 259.1, which may include premature thelarche and adrenarche) to those without while controlling for age, sex and race. ICD-9 diagnoses were used to classify disease groups. Logistic regression examined likelihood estimates for psychiatric diagnoses associated with precocious puberty diagnosis.

CONCLUSIONS

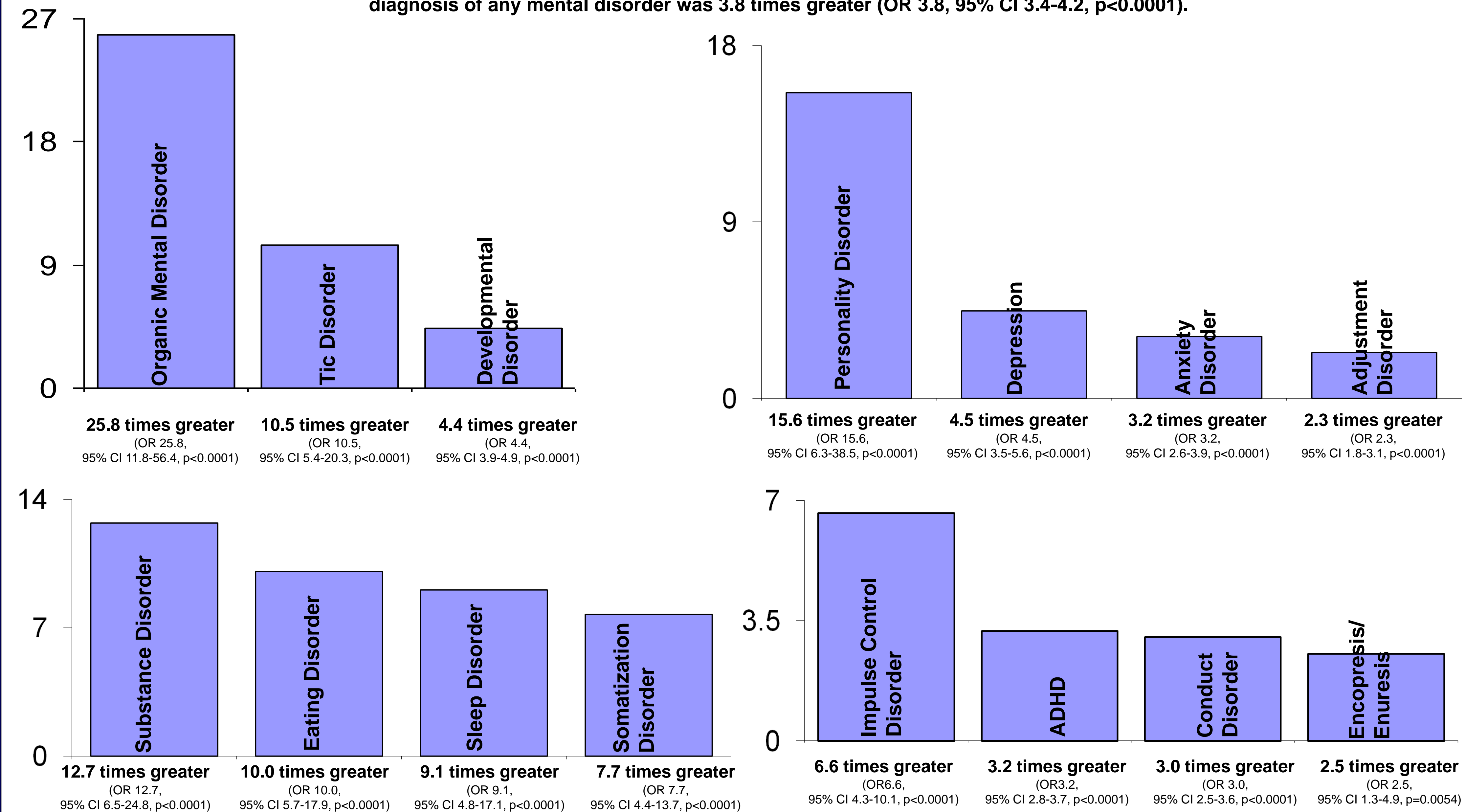
This is the first large-scale analysis to show a strong association between ICD-9 claims-based diagnoses of precocious puberty (which may include premature thelarche and adrenarche in addition to CPP) and psychiatric disorders. It is unclear whether increased rates of psychiatric disorders could be attributable to organic brain lesions that sometimes coexist with CPP, attendant hormonal imbalances, other pathophysiological causes, or psychosocial distress associated with the illness presentation. Given the potential for complex psychiatric comorbidity, patients with precocious puberty may benefit from evaluation for co-occurring psychiatric disorders.

REFERENCES

1. Yoshimura K, Naiki Y, Horikawa R, Tanaka T. Three patients with autism and central precocious puberty. *Clin Pediatr Endocrinol* 2005; 14:55-7.
2. Rosenberg DR, Crowner S, Thomas C, Gourash L. Psychosis and idiopathic precocious puberty in two 7-year-old boys. *Child Psychiatry Hum Dev* 1992; 22:287-92.
3. Mouridsen SE. Pervasive developmental disorder and idiopathic precocious puberty in a 5-year-old girl. *J Autism Dev Disord* 1989; 19:351-3.

RESULTS

Adjusting for age, sex and race, compared to patients without precocious puberty, the likelihood of patients with precocious puberty receiving a diagnosis of any mental disorder was 3.8 times greater (OR 3.8, 95% CI 3.4-4.2, p<0.0001).



All analyses were adjusted for age, sex and race and show, compared to patients without precocious puberty, the increase in likelihood of receiving a diagnosis in patients with precocious puberty.

FOR FURTHER INFORMATION

Please contact: Cheryl Hankin, PhD, BioMedEcon, LLC.; P.O. Box 129, Moss Beach, CA 94038; 650-563-9475; cherylhankin@biomedecon.com; www.biomedecon.com