Occult Mood Disorders in 104 Consecutively Presenting Children Referred for the Treatment of Attention-Deficit/ Hyperactivity Disorder in a Community Mental Health Clinic

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Objective: To ascertain the prevalence of mood disorders among consecutively evaluated prepubertal children presenting for the treatment of attention-deficit/ hyperactivity disorder (ADHD) in a community mental health clinic.

Method: 104 children received systematic assessments designed to identify individuals meeting the DSM-IV criteria for major depressive disorder (MDD), mania, and ADHD. "Standard" and "modified" criteria for mania were employed. Modified criteria, in an effort to minimize false-positive diagnoses of mania, required the presence of euphoria and/or flight of ideas. A child meeting the criteria for MDD or either set of criteria for mania was categorized as having a mood disorder. Mood disorders in first-degree relatives were assessed using a systematic interview. Data were gathered from 2000 to 2002.

Results: Sixty-two children (59.6%) had a mood disorder. Compared with those who did not have a mood disorder, they were 3.3 times more likely (54.8% vs. 16.7%) to have a family history of any affective disorder (p < .0001) and 18.3 times more likely (43.5% vs. 2.4%) to have a family history of bipolar disorder (p < .0001). Twenty (32.3%) of the children with and none without a mood disorder had psychotic features (p < .0001). Compared with those meeting only the standard criteria for mania, those meeting the modified criteria were 9.1 times more likely (69.8% vs. 7.7%) to have a family history of an affective disorder (p < .0001) and 7.3 times more likely (55.8% vs. 7.7%) to have a family history of bipolar disorder (p = .002).

Conclusion: Children who presumably have ADHD often have unrecognized affective illness. Our findings support the view that children meeting the modified criteria for mania have veritable bipolar disorder. These findings, which were derived in the course of delivering routine clinical services in a community mental health clinic, are consistent with those obtained in research settings suggesting that children presenting with ADHD often have occult mood disorders, especially unrecognized bipolarity. We suggest that clinicians encountering children with prominent features of ADHD inquire about the presence of euphoria and flight of ideas. We submit that the presence of these "classic" manifestations of mania strongly suggests the presence of occult bipolarity, even if course of illness otherwise markedly deviates from "classic" descriptions.

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S keptics have long scoffed at the idea that bipolar disorder truly exists among children and adolescents. However, this view is now being subjected to progressive erosion by a growing body of findings presented by an impressive cadre of investigators using sound methods of empiricism.¹⁻¹⁴ The picture emerging from the efforts of these pioneers is that attention-deficit/hyperactivity disorder (ADHD) and bipolar disorder are often comorbid syndromes with overlapping defining features. Given that most clinicians are more familiar with ADHD than pediatric bipolarity, the latter is all too likely to be unrecognized and hence go untreated.

The content of this report differs from that in previously published research contributions by virtue of the fact that the data in the study were obtained solely in the course of delivering routine clinical services in a community mental health center. We reasoned that the stark contrast between the methods used in research-oriented settings (where there is emphasis on the use of cumbersome diagnostic instruments) and the clinical procedures used to collect these data lends credibility to the conclusion that prepubertal bipolarity is readily recognizable in the most ordinary of clinical settings in a physician-friendly fashion.

METHOD

One of us (H.S.A.) has devoted his entire career to the cause of collecting systematic data in routine clinical practice in the setting of a mood disorders clinic. Among the

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many contributions from such a mood disorders clinic base is a report delineating the psychopathology of the juvenile offspring of adult manic-depressive patients enrolled in that clinic.¹ Therefore, it was natural for us to collaborate on this report.

This report derives from a systematically recorded database of 650 consecutively presenting prepubertal children, adolescents, and adults for the purpose of identifying children between the ages of 5 and 11 years who had been referred due to presumed ADHD. The inclusion criteria required that the referral source not simultaneously view the child as having a core feature of affective illness. For instance, a child referred by a school counselor because "he is too active and seems sad all of the time" was excluded. Referral sources included parents, school authorities, and other mental health professionals. The subjects were all evaluated by the same psychiatrist (S.C.D.) in the context of a local, community-controlled public sector clinic. The data were collected from 2000 to 2002 in and through the process of delivering standard, routine clinical services rather than in the course of carrying out procedures mandated by a research protocol. Consequently, informed consent was not needed.

The patients had all received systematic assessments using checklists designed to ascertain the current or past presence of major depressive disorder (MDD), mania, and ADHD as defined in the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (DSM-IV).¹⁵ The mental status examination included a search for the presence of psychotic features. These include delusions, hallucinations, and formal thought disorder. None of the children had formal thought disorder. Thus, those categorized as having psychotic features had delusions and/or hallucinations. The diagnostic interview schedule is available from the authors on request.

Many skeptics maintain that children with ADHD are likely to be erroneously viewed as being in the midst of a manic episode consequent to overlapping criteria. Both include increased psychomotor activity (excessive, purposeless movement or psychomotor agitation) and distractibility as defining features. However, the diagnostic criteria for ADHD do not require the presence of affective instability. In contrast, the diagnostic criteria for mania demand the presence of brittle or unstable affect. However, in deference to the dubious, we chose to take steps to minimize the likelihood that a child with ADHD would erroneously be concluded to meet the criteria for mania.

Investigators have differed in the strategies utilized to minimize the risk of falsely categorizing a child as having bipolar illness. We considered 3 classic features of mania as characteristics that might be useful in identifying patients with "veritable" bipolarity or mania.

One of us (H.S.A.) has used the presence of grandiosity (inflated self-esteem) and psychotic features as characteristics differentiating children with ADHD alone from children with bipolar disorder alone or bipolar disorder and comorbid ADHD in his mood disorders clinic. In this report, psychosis will be examined for its utility in making this differentiation.

The rationale for using grandiosity as a distinguishing feature gains support from a study by Geller et al.,⁷ who reported that the presence of delusions of grandeur differentiates children who have both bipolar disorder and ADHD from those who have ADHD alone. However, we chose not to use grandiosity as a defining feature of "veritable" mania in this report, as it is our preliminary impression that ascertainment source confounds this symptom; this is suggested by the results of a preliminary study¹⁶ conducted by one of us that focused on the relationship between the assignment of the diagnosis of MDD by triage staff or referral source and occult bipolarity. The database included 13 patients. One met the criteria for MDD, and 12 met the criteria for mania. All 12 were in mixed states, and 9 (75%) of these 12 were grandiose. In contrast, confidently concluding that the children in the database used in the preparation of the present report were grandiose proved difficult, suggesting that the usefulness of treating grandiosity as a defining characteristic of "veritable" mania may be contingent on the ascertainment source.

Grandiosity appears to be a very useful criterion of "veritable" bipolarity when used to characterize patients in samples consisting of children referred due to the presence of depressive symptomatology. However, it may lack this value in the quest to study bipolarity among groups of subjects with prominent features of ADHD who are not also viewed as having prominent features of affective illness by referral sources. This consideration led us to select "modified criteria" for mania using readily observable features generally regarded to characterize classic episodes of mania.

The modified criteria required that a subject categorized as having "veritable" mania or bipolarity was in an elevated/euphoric state as inferred from the observation of affect or flight of ideas. Use of these features as the defining characteristics of "veritable" mania, in our judgment, introduced a degree of objectivity that use of the presence of inflated grandiosity or self-esteem would not.

Children with pure and depressive mania (i.e., in a mixed state) were categorized as meeting the criteria for mania. Subjects who met the DSM-IV criteria for mania but who did not have elevated/euphoric mood and/or flight of ideas were categorized as meeting "standard criteria" for mania. A child who met the modified criteria also met the standard criteria, but not vice versa. Children diagnosed as having ADHD could meet the criteria for either variant of the manic syndrome.

The categorization of a child as having a first-degree relative with a mood disorder was based on the results of a systematic interview (available from the authors on request). If the parent(s) accompanying the child to the clinic met or had met the criteria for MDD or mania as defined in the DSM-IV, based on the results of the interview, the child was classified as having a first-degree relative with a mood disorder. The presence of a mood disorder among first-degree relatives not accompanying a child to the clinic was determined by systematically querying the accompanying parent(s) about the presence of the features defining MDD and mania among these persons. Positive findings in the course of either of these segments of the assessment of family history sufficed to classify a child as having a first-degree relative with a mood disorder.

The Fisher exact test was used to determine whether the distribution of subjects between any 2 groups (e.g., those with and without a mood disorder) significantly differed with respect to the presence of a feature. The critical value of alpha was set for p = .05, 2-tailed. All measures in variance in sample means refer to the standard deviation of the mean (SD).

RESULTS

One hundred four subjects, 12 girls (11.5%) and 92 boys (88.5%), met the inclusion criteria. Their mean ages were 8.2 ± 1.9 years (range, 5–11 years) and 8.3 ± 1.5 years (range, 5–11 years), respectively.

Forty-two subjects (40.4%), 7 (58.3%) of the 12 girls and 35 (38.0%) of the 92 boys, did not meet the criteria for a mood disorder. Their mean ages were 8.5 ± 1.8 years (range, 5–11 years) and 7.9 ± 1.7 years (range, 6–11 years), respectively. Seven (16.7%) of these 42 subjects, 1 (14.3%) of the 7 girls and 6 (17.1%) of the 35 boys, had a family history of an affective disorder. One (2.4%) of these 42 subjects, a boy, had a family history of bipolar disorder. None of these patients had psychotic features. Twenty-seven (77.1%) of the boys and all (100%) of the girls met the criteria for ADHD.

Six (5.8%) of the subjects met the criteria for MDD. Their mean age was 9.0 ± 2.0 years (range, 6–11 years). Three (50.0%) of these subjects had a family history of an affective disorder. Two (33.3%) had a family history of bipolar disorder. Two subjects (33.3%) had psychotic features, and both of them had a family history of bipolar disorder. Three (50.0%) of the 6 subjects with MDD met the criteria for ADHD.

Thirteen (12.5%) of the subjects, 1 girl (8.3%) and 12 boys (13.0%), met only the standard (not modified) criteria for mania. The girl was 10 years of age. The mean age of the boys was 7.6 ± 1.8 years (range, 5–10 years). One subject (7.7%), the girl, had a family history of bipolar disorder. Eleven (84.6%) of the 13 subjects had pure mania, and 2 (15.4%) of the subjects, both boys, had depressive mania. Two subjects (15.4%), both boys, had psychotic features. Twelve (92.3%) of the subjects, the girl and 11 (91.7%) of the boys, met the criteria for ADHD.

Table 1. Diagnostic Characteristics and Age of 104 Chil	dren	
Referred for ADHD Treatment ^a		

	Girls	Boys
Characteristic	(N = 12)	(N = 92)
Age, mean ± SD, y	8.2 ± 1.9	8.3 ± 1.5
Met criteria for any mood disorder ^b	5 (41.7)	57 (62.0)
Did not meet criteria for a mood disorder	7 (58.3)	35 (38.0)
Met criteria for MDD	0 (0)	6 (6.5)
Met only the standard (not modified) criteria for mania	1 (8.3)	12 (13.0)
Met the modified criteria for mania	4 (33.3)	39 (42.4)
^a Values are shown as N (%) unless otherwis	se noted.	

^bSubjects met the criteria for MDD, the standard criteria for mania alone, or the modified criteria for mania.

Abbreviations: ADHD = attention-deficit/hyperactivity disorder, MDD = major depressive disorder.

Forty-three subjects (41.3%), 4 girls (33.3%) and 39 boys (42.4%), met the modified criteria for mania. Eight (18.6%) had euphoric mood alone, 9 (20.9%) had flight of ideas alone, and 26 (60.5%) had both euphoric mood and flight of ideas. The girls were 7, 8, 9, and 10 years of age. The mean age of the boys was 8.4 ± 1.9 years (range, 5–11 years). Thirty (69.8%) of these subjects, 2 (50.0%) of the girls and 28 (71.8%) of the boys, had a family history of an affective disorder. Twenty-four (55.8%) of the subjects, 1 girl (25.0%) and 23 boys (59.0%), had a family history of bipolar disorder. Twenty-one subjects (48.8%), all boys (100%), had pure mania, and 22 subjects (51.2%), all 4 girls (100%) and 18 boys (46.2%), had depressive mania. Sixteen subjects (37.2%), 2 (50.0%) of the girls and 14 (35.9%) of the boys, had psychotic features. The results of the systematic screen for ADHD are not available for 1 of the boys. All (100%) of the girls and 37 (94.9%) of the boys for whom the results of the screen were recorded met the criteria for ADHD.

The demographic characteristics of the subjects as a function of diagnostic group are presented in Table 1.

The subjects meeting the criteria for a disorder of mood were 3.3 times more likely to have a family history of mood disorder than those who did not (54.8% vs. 16.7%, respectively; p < .0001). Subjects who met criteria for a mood disorder were also 18.3 times more likely to have a family history of bipolar disorder (43.5% vs. 2.4%, respectively; p < .0001). Subjects meeting the modified criteria for mania were 9.1 times more likely to have a family history of mood disorder than those meeting the standard criteria alone (69.8% vs. 7.7%, respectively; p < .0001). Subjects who met the modified criteria for mania were also 7.3 times more likely to have a family history of bipolar disorder compared with those who met the standard criteria alone (55.8% vs. 7.7%, respectively; p = .002).

The differences in the rates of affective illness in general and of bipolar disorder in particular among the firstdegree relatives of subjects who did and did not meet the criteria for a disorder of mood are highlighted in Table 2.

Table 2. Family History of Mood Disorders in 104 Children
Referred for ADHD Treatment Who Did (N = 62) and Did No
(N = 42) Meet the Criteria for Any Mood Disorder ^{a,b}

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Subjects With a Family History of Any Mood Disorder (N = 41)	Subjects With a Family History of Bipolar Disorder (N = 28)	
34/62 (54.8)	27/62 (43.5)	
7/42 (16.7)	1/42 (2.4)	
3.3	18.3	
	Subjects With a Family History of Any Mood Disorder (N = 41) 34/62 (54.8) 7/42 (16.7) 3.3	

^aSubjects with "any mood disorder" met criteria for major depressive disorder, the standard criteria for mania alone, or the modified criteria for mania.

^bCompared with those who did not meet mood disorder criteria, subjects who met criteria for a mood disorder were significantly more likely to have a family history of an affective disorder (p < .0001) and to have a family history of bipolar disorder (p < .0001).

Abbreviation: ADHD = attention-deficit/hyperactivity disorder.

Table 3. Family History of Mood Disorders in Children Referred for ADHD Treatment Who Met the Standard Criteria (N = 13) or the Modified Criteria (N = 43) for Mania^a

inalina cinterna 19pe	(N = 31)	(N = 25)
Met only the standard (not modified) criteria for mania (N = 13), N/N (%)	1/13 (7.7)	1/13 (7.7)
Met the modified criteria for mania (N = 43), N/N (%)	30/43 (69.8)	24/43 (55.8)
Ratio of subjects meeting the modified criteria for mania to subjects meeting only the standard criteria for mania	9.1	7.3

^aCompared with those who met only the standard criteria for mania, subjects meeting modified criteria for mania were significantly more likely to have a family history of an affective disorder (p < .0001) and to have a family history of bipolar disorder (p = .002). Abbreviation: ADHD = attention-deficit/hyperactivity disorder.

The corresponding differences in these rates between subjects meeting the standard criteria for mania alone relative to those meeting the modified criteria are presented in Table 3.

The subjects meeting the modified criteria were 3.3 times more likely to have depressive mania than those meeting the standard criteria alone (51.2% vs. 15.4%, respectively; p = .019). This is an important observation that receives attention in the Discussion. The relationship between the criteria used to define the manic syndrome (i.e., the standard criteria alone vs. the modified) and subtype of the manic syndrome (i.e., pure vs. depressive mania) is depicted in Table 4.

Twenty (32.2%) of the subjects with a mood disorder and none of the subjects without a mood disorder had psychotic features (p < .0001). Fifteen (75.0%) of the 20

Mania Criteria Type	Subjects Who Met the Criteria for Pure Mania (N = 32)	Subjects Who Met the Criteria for Depressive Mania (N = 24)
Met only the standard (not modified) criteria for mania (N = 13), N/N (%)	11/13 (84.6)	2/13 (15.4)
Met the modified criteria for mania (N = 43), N/N (%)	21/43 (48.8)	22/43 (51.2)
N/N (%) aSubjects meeting the modi	fied criteria for man	ia were significantl

more likely to meet the criteria for depressive mania than those meeting the standard criteria alone (p = .019). Abbreviation: ADHD = attention-deficit/hyperactivity disorder.

Table 5. The Relationship Between a Positive Family History for a Mood Disorder and the Presence of Psychotic Features in Children Referred for ADHD Treatment Found to Have a Mood Disorder^a

Family History Status	Subjects With Psychotic Features (N = 20)	Subjects Without Psychotic Features (N = 42)
Had a family history of an affective disorder (N = 34), N/N (%)	15/34 (44.1)	19/34 (55.9)
Had no family history of an affective disorder (N = 28), N/N (%)	5/28 (17.9)	23/28 (82.1)

^aThe difference between the proportions of patients with psychotic features who did and did not have a first-degree relative with major depressive disorder or bipolar disorder was significant (p = .02). Abbreviation: ADHD = attention-deficit/hyperactivity disorder.

subjects with psychotic features had a family history of either MDD or bipolar disorder.

Fifteen (44.1%) of the 34 affectively ill subjects with a family history of any affective disorder (either MDD or bipolar disorder) had psychotic features. In contrast, only 5 (17.9%) of the 28 affectively ill subjects lacking a family history of a mood disorder had psychotic features. Thus, affectively ill subjects with a family history of a mood disorder were 2.5 times more likely to have psychotic features than those who did not. This difference is significant (p = .02). Thus, having a family history of an affective disorder is associated with a significantly increased risk of having psychotic features. The data are depicted in Table 5.

Fourteen (51.9%) of the 27 subjects with an affective disorder who had a family history of bipolar disorder had psychotic features. In contrast, only 6 (17.1%) of the 35 subjects with a mood disorder who lacked a family history of bipolar disorder had psychotic features. The affectively ill subjects with a family history of bipolar disorder were 3.0 times more likely to have psychotic features than those affectively ill subjects who did not. This difference is significant (p = .004). The data are presented in Table 6.

Family History Status	Subjects With Psychotic Features (N = 20)	Subjects Without Psychotic Features (N = 42)
Had a family history of bipolar disorder (N = 27), N/N (%)	14/27 (51.9)	13/27 (48.1)
Had no family history of bipolar disorder (N = 35), N/N (%)	6/35 (17.1)	29/35 (82.9)
^a The difference between	the proportions of patient	nts with psychotic

Table 6. Family History of Bipolar Disorder and Presence of Psychotic Features in Children Referred for ADHD Treatment Who Had a Mood Disorder^a

features who did and did not have a disorder was significant (p = .004). e a first-degree relative with bipola

Abbreviation: ADHD = attention-deficit/hyperactivity disorder.

There are too few subjects in the database to address the interesting and important question of whether the risk of patients having psychotic features is related to the polarity of the illness of their first-degree relatives.

DISCUSSION

Systematic observations of the children of adult manic-depressive patients by the senior author,^{1,2} also conducted in the course of delivering standard care, and seminal contributions by Weller and associates,^{3,4} Biederman and collaborators,^{5,9} Faraone and colleagues,⁶ Geller and coworkers,⁷ Reddy and Srinath,⁸ and others seem to be in the process of relegating the notion that bipolarity is a rare phenomenon among children to the category of myth. Faedda et al.,¹⁰ as early as 1995, went so far as to state that pediatric-onset bipolar disorder is a neglected public health problem. More recently, Papolos and Papolos¹⁷ came to the same conclusion. This concern is not misplaced. Untreated bipolar illness leads to tremendous personal costs. Children with unrecognized bipolar illness suffer greatly, and many, as described in a recent report by one of us,¹⁶ are disdainfully viewed as being social deviants and dealt with punitively. Indeed, the relationship between untreated bipolar illness and "deviance" is no longer reasonably deniable.16-19

Ineffectively treated bipolar illness is also economically costly for both the afflicted persons and society. It is, worldwide, the sixth leading cause of disability among persons between 15 and 44 years of age.²⁰ Deviance itself exacts a heavy economic toll for society. Deviance and disability render childhood-onset bipolar disorder a disease carrying as yet inestimable but partially avoidable indirect costs.

Previous contributions indicate that childhood-onset bipolar disorder is a common phenomenon among youths receiving care in the context of university-based research centers.^{3-14,21,22} However, evidence that it is also common among children receiving care in the context of one of the hundreds of ordinary community mental health clinics

scattered across America has not, to the best of our knowledge, previously been presented. The findings of this report compel us to conclude that clinicians working in these settings need to be ever vigilant in their efforts to detect affective illness among children referred for the treatment of ADHD. This vigilance is essential, even in the course of assessing children who are not recognized as having symptoms of affective illness by parents and other referral sources.

Sixty-two (59.6%) of 104 consecutively evaluated patients referred for the treatment of ADHD were found, following our systematic assessment, to meet the criteria for a mood disorder. Even with the strict application of criteria for the manic syndrome that required the presence of classic features of mania, 43 (41.3%) of the subjects merited classification as having bipolar disorder. The family history data strongly suggest that these individuals have veritable bipolar disorder (69.8% have a family history of MDD and/or bipolar disorder and 55.8% have a family history of bipolar disorder). The high rate of psychosis among these persons (37.2%) is also consistent with this perspective.

The observation that the subjects meeting the modified criteria for mania are significantly more likely to have depressive mania than subjects meeting the standard criteria alone is noteworthy (51.2% vs. 15.4%). The literature suggests the possibility that mixed states are particularly common among bipolar prepubertal children. They commonly have nonepisodic, chronic, protracted courses of illness characterized by features of both manic and depressive syndromes that rapidly fluctuate in severity. It has been proposed that this clinical picture distinguishes prepubertal children with true mania from those who simply have ADHD.⁷

The subjects with a disorder of mood were 3.3 times more likely to have a family history of MDD and/or bipolar disorder than those who did not. They were 18.3 times more likely to have a family history of bipolar illness than those who did not. These findings suggest that in general, the patients classified as having a disorder of mood do indeed have affective disorders.

The patients meeting the modified criteria for mania were 9.1 times more likely to have a family history of affective illness and 7.3 times more likely to have a family history of bipolar illness than those meeting the standard criteria alone. This finding strongly suggests that the modified criteria are useful in identifying a segment of the pediatric population presenting with features of ADHD who have veritable bipolar disorder.

The subjects who met the criteria for a disorder of mood were significantly more likely to have psychotic features than those who did not. This is important because affective disorders, unlike ADHD, are associated with psychosis. The observation that the rate of psychosis among those affectively ill subjects who have family histories of disorders of mood disorder is 2.5 times greater than that of those who do not is also important. It is consistent with the hypothesis that degree of genetic loading is related to severity of illness. The concept is, *ceteris paribus*, the greater the degree of genetic loading, the greater the severity of illness and the greater the severity of illness, the greater the risk of psychosis.²³ This idea rests on the assumption that psychosis is a correlate of severity.

All of the subjects received care in the context of a community mental health clinic rather than in an academic setting. This fact has bearing on both the limitations and merits of the contribution of this study. The subjects did not receive assessment using the rigorous, exacting methods of evaluation routinely employed in research settings (e.g., see Geller et al.¹³). Nonetheless, all of the subjects received systematic assessments utilizing checklists that included all of the features entering into the operational criteria for all of the relevant disorders.

Standardization of such screening effort for occult bipolarity in the course of providing routine care is, in our judgment, sufficiently important as to constitute a minimum standard of care. It may, for example, be important to avoid the use of antidepressants in the treatment of patients in mixed states and to employ them cautiously in the treatment of a child who is currently in the midst of a depressive syndrome but has a history of mania.²⁴⁻²⁷ Potential adverse effects of stimulants in children with ADHD and comorbid bipolar disorder also require cognizance. Faedda and colleagues²⁸ recently reported that the onset of mania was temporally linked to the start of treatment with stimulants in 17 (20.9%) of 82 juveniles. However, treatment guidelines endorse concurrent treatment with mood stabilizers and stimulants in the management of youths with ADHD and comorbid bipolar disorder.29-31

Our findings indicate that in the course of delivering standard, routine clinical care to children presenting in a nonacademic setting for the treatment of ADHD who are not perceived to have features of affective illness it is critical to conduct a formal, systematic screen designed to identify those with occult disorders of mood. The results also indicate that the exertion of an assiduous, disciplined effort of this nature is likely to be liberally rewarded. These children may well have treatment needs that children with ADHD devoid of comorbid affective disorders do not. The potential treatment implications of the findings are in need of thorough, methodical empirical study.

Disclosure of off-label usage: The authors have determined that, to the best of their knowledge, no investigational information about pharmaceutical agents has been presented in this article that is outside U.S. Food and Drug Administration–approved labeling.

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