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Research report

"Mixed hypomania" in children and adolescents: Is it a pediatric bipolar phenotype with extreme diurnal variation between depression and hypomania?

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ABSTRACT

Background: Although DSM-IV and the literature on pediatric bipolarity recognize mania and mixed phases neither recognizes states of "mixed hypomania." There has been preliminary presentation of the latter phenomenon in the adult bipolar literature. The authors herein describe this phenomenon in a consecutive clinical series of bipolar children and adolescents.
Methods: This exploratory study involved 47 consecutive bipolar patients between the ages of 7 and 17 years presenting to an outpatient clinic. They were evaluated using a structured instrument designed to ascertain the presence of major depressive episodes (MDE), hypomania, mania, psychotic disorders, behavioral disorders such as oppositional defiant disorder and conduct disorder and substance use disorders. We defined mixed hypomania as MDE and hypomania coexisting over at least 2 weeks.
Results: Of 47 patients, 9 girls (42.9%) and 9 boys (34.6%) were bipolar II mixed. This paper focuses on them. The mean ages of the bipolar II girls and boys were 14.3 (1.9) years and 12.0 (3.4) years, respectively ($p<0.05$, $t=2.45$, df = 17). This mixed subgroup tended to experience rising mood in the evening, often with spikes of euphoria; a history of late afternoon to evening increased talkativeness or pressured speech was common. Some patients exhibited flight of ideas. Psychomotor acceleration, heightened level of energy, and increased goal directed activity between 1900 and 0300 were frequently reported. Retrospectively obtained circadian information revealed, in most cases an age inappropriate phase delay of sleep onset: After falling asleep in the early hours of the morning the patients awoke feeling depressed, lethargic and as if they could sleep throughout much of the day.
Limitation: Cross-sectional, exploratory study based on a relatively small sample size and in need of replication in other clinical settings.
Conclusion: Mixed hypomania was a common phenomenon in pediatric bipolar II patients. It is apt to go unrecognized in cross-sectional assessments done in the morning or in the early or mid-afternoon. Those with this proposed phenotype would appear "depressed" at these times. Alternatively, what we have proposed can also be described as severe diurnal variation between depression and hypomania in the evening. Further study is required combining 24-hour clinical observation and state of the art technologically derived data.

1. Introduction

The DSM is an evolving series of documents designed to serve clinical utility and guide research rather than encompass the entire scope of psychopathology. The current version,

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DSM-IV-TR formally recognizes the existence of the "mixed state" (American Psychiatric Association Press, 1994). The mixed state is defined as the amalgam of a manic episode and a major depressive episode (MDE) of at least one week's duration. It does not recognize the existence of "mixed hypomania." Such a phenomenon, to the best of our knowledge, has only been relatively recently been described in the adult literature (Akiskal and Benazzi, 2005b; Benazzi, 2007a,b; Bauer et al., 1994; Suppes et al., 2005).

Over the last decade growing attention has been given to the topic of pediatric bipolarity. This literature derived from work conducted in academic, tertiary care centers located in urban settings consistently emphasizes that pediatric bipolarity is characterized by mixed features, a concept essentially limited to mixed mania. In this paper we present data which suggest that in non-academic, non-tertiary centers children and adolescents may have alternative presentations where mixed features involve *hypomania* rather than mania.

2. Methods

2.1. Patients

Forty-seven consecutive bipolar patients between the ages of 7 and 17 years presenting during 2000–2001 to a public sector, non-research, outpatient clinic for the destitute were evaluated using a structured instrument described elsewhere (Dilsaver et al., 2003). The assessment of all patients allowed one to recognize the presence of mania, hypomania, MDE, oppositional defiant disorder, conduct disorder, attention-deficit hyperactivity disorder and psychotic disorders. The clinic provided services to children and adolescents with any and all DSM-IV defined psychiatric disorders which might occur among them.

Each patient was classified as being: bipolar I depressed; bipolar I mixed; bipolar II hypomanic; bipolar II depressed; or bipolar II mixed. For the purpose of this study, patients were considered "bipolar II mixed" only if they simultaneously had the features defining a MDE and hypomania within the course of the 24-hour cycle for at least two week consecutive weeks with a one critical departure from the DSM-IV criteria. The patients did not need to have persistently irritable, depressed or elevated/euphoric mood throughout the day that existed concurrently with other features of the depressive and hypomanic syndromes as set-forth in the DSM-IV. It sufficed for them to have highly prominent irritable, depressed or elevated/euphoric mood during an extended period within the course of the same 24-hour cycle concurrent with the symptoms defining a MDE or hypomania as described below. This definition contrasts with those used in the adult literature as reviewed in Section 4.1. A two week period was deemed appropriate for diagnostic purposes in light of the convention that a mixed state as defined in the DSM-IV-TR need be of only one week in duration.

None of the youths classified as being bipolar II was impaired enough to be regarded as being bipolar I. All of the patients classified as being bipolar II had or had previously (in the cases of the individuals classified as being bipolar II depressed) periods of nocturnal rising of or euphoric mood with a minimum of three additional features of hypomania or irritable mood with at least four of the features of hypomania stipulated in the DSM-IV.

None of these patients had psychiatric or non-psychiatric (medical) disorders that would account for the psychopathological findings described in this report. None was taking medications or abusing drugs standing to produce the chronobiological profile described below.

The clinical diagnoses were rendered solely in and through the process of delivering routine clinical service. While the present data were obtained by retrospective review of medical records all patients had received structured diagnostic screening for each of the clinical diagnoses under consideration and detail of experience and behavior over 24-hour periods across weeks was noted. Only the first-author (SCD) knows the identity of the patients; indeed, SCD was the only public sector psychiatrist providing services to youths in the County of pertinence. The patients were all residents of Texas living on the Mexican border.

Student's two-sample *t*-test was used to assess significance of the difference in mean ages and Fisher's exact test was used to determine whether the distribution of categorical data differed significantly.

3. Results

The sample included 21 girls (44.7%) and 26 boys (55.3%). Their mean ages were 12.2 (3.2) (range = 7–17) and 14.4 (2.0) years, respectively (range = 7–17 years). A 17 year-old girl met the criteria for MDE and hypomania as defined in this article for less than two weeks and is therefore not counted as being in a state of mixed hypomania for the purposes of this descriptive study.

Eight (38.1%) of the girls and 14 (53.80%) of the boys were bipolar I mixed. One of the 21 girls (4.8%) and one of the 26 boys (3.8%) was bipolar II depressed. One boy was bipolar II hypomanic (3.8%). Two girls (9.5%) and two boys (7.7%) were bipolar I depressed. Overall, 40 of the 47 youths were either bipolar I mixed or bipolar II mixed (85.2%).

Nine of the 21 girls (42.9%) and 9 of the 26 boys (34.6%) were classified as being bipolar II mixed. The mean ages of the bipolar II mixed girls and boys were 14.4 (1.9) and 12.0 (3.4) years, respectively ($p<0.05$, $t=2.45$, df = 17). This paper focuses on these 18 bipolar II mixed juvenile patients.

Mixed hypomania was characterized by marked ultradian cycling between morning depression and some combination of nocturnal rising of or elated mood, pressured speech, flight of ideas, psychomotor activation, heightened level of energy, and increased goal directed activity between approximately 1900 and 0300. Three of the nine (33.3%) of the girls and 2 of the 9 (22.2%) of the boys exhibited a reversal (inversion) of the sleep–wake cycle (i.e., a strong propensity to sleep all day and to be awake all night if permitted to do so). A phase-delay in the onset of sleep due to genuine hyposomnia and marked increased level of energy or severe insomnia were highly prominent characteristics of presentation.

When seen in the morning, the patients appeared depressed and there was no concrete evidence of the concurrence of a mixture of depressive and hypomanic symptoms apart from irritability. When seen in the mid to late afternoon patients were often emerging from a classic state of "pure depression" and exhibited irritability, distractibility, and the emergence of psychomotor activation and loquaciousness (relative to earlier in the day). Thus it is our impression that transitional states