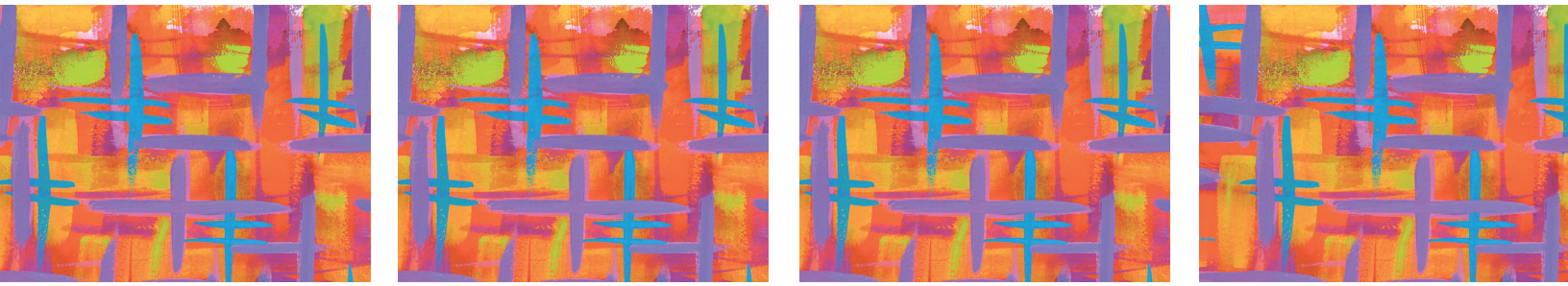
Comorbidity and Adult ADHD Newsletter October 2011 Issue No. 4: The Relationships between ADHD and Generalized Anxiety Disorder



Behavioral regulation in ADHD children can be aggravated by comorbid anxiety disorder.

Anxiety is one of the most prevalent comorbidities in children with ADHD, with a frequency of approximately 25%.[1,2] Of the various anxiety disorders, generalized anxiety disorder (GAD) is believed to be the most common disorder in children with ADHD (13%), followed by social phobia and separation anxiety disorder (both 4%). Also, some children can have more than one type of anxiety disorder.[2] Children with comorbid anxiety disorders and ADHD have more severe symptoms and overall impairment than children with either condition alone.[3]

Some researchers speculate that children with both disorders are characterized by a different symptom cluster than children with classic ADHD.[4] For example, the coexistence of an anxiety disorder in an individual with ADHD may lead to a lower level of impulsivity. Relatively speaking, a child with ADHD and comorbid anxiety may have less impulsivity but more inattention.[5] Clinically anxious children are often preoccupied with fears, which impair their ability to focus on tasks. Children with an anxiety disorder who do not have ADHD have a different longitudinal course: when their anxiety improves, their attention improves. Conversely, children with comorbid ADHD and anxiety will continue to struggle with inattention even in the absence of anxiety.

A recent study in Norwegian children revealed that behavioral dysregulation in ADHD children is aggravated by comorbid anxiety.[6] The results of this study indicate that anxiety symptoms do not necessarily protect children with ADHD against the poor inhibitory control normally seen in children with ADHD. This finding is at variance with several papers which suggest that comorbid anxiety may be protective with regard to impulsivity.[7]

The idea that symptoms of an anxiety disorder can have a positive effect on behavioral dysregulation in children with ADHD is extrapolated from the theoretical model of Jeffrey Gray regarding the role of the Behavioral Inhibition System (BIS), which works to counteract the activity of the Behavioral Activation System (BAS). The Gray model suggests that anxious children are highly introverted and hypersensitive to signals of punishment. This temperamental trait is associated with a repressed behavior in new and challenging settings.[8,9] On the other hand, ADHD children are not particularly sensitive to expectations from the surroundings, such as signals of punishment. The dissimilarity between the two diagnostic groups is supported by Barkley's observation that children with ADHD have a primary deficit in inhibiting their impulses,[10] whereas children with anxiety disorder display an enhanced ability to inhibit their impulses.[11] However, other emotional characteristics of a child with an anxiety disorder do not ensure that their symptoms will have a positive effect on behavioral regulation. The inhibited behavior of children with anxiety disorders may be associated with a disorganized and inflexible approach in unfamiliar and stressful situations,[12] which could negatively impact their attention, culminating in an inattentiveness that likely will have a non-constructive influence on their ability to regulate their behavior.

In the aforementioned Norwegian study, anxious children with ADHD scored significantly higher on the Inhibit scale by their parents than children with a "pure" ADHD or a "pure" anxiety disorder.[6] Hence, the comorbid group demonstrated a distinct symptom pattern of impaired inhibitory control function, whereas the comorbid group's abilities to shift attention, control emotional processes, and use their working memory capacity were similar to the abilities shown in the "pure" disorder groups.

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Statement of Need
The National Comorbidity Survey Replication (NCSR) showed that adults meeting the criteria for DSM-IV ADHD were almost twice as likely than adults without attention-deficit hyperactivity disorder (ADHD) to have experienced an anxiety disorder (47% vs. 20%).[1] Similarly, approximately 25% or more children with ADHD exhibit an anxiety disorder, making anxiety one of the most frequently comorbid disorders in children with ADHD.[2] While the diagnoses of ADHD and anxiety disorders have overlapping characteristics, they are also distinct. Children with ADHD have a primary deficit in inhibiting their impulses,[3] whereas children with an anxiety disorder display a heightened ability to inhibit certain impulses.[4] Nevertheless, the question of whether individuals with ADHD + anxiety disorders are less impulsive than those with ADHD who do not have an anxiety disorder has been controversial. Research has shown that youth with ADHD and comorbid anxiety disorders are less impulsive than either those with ADHD alone, or those with ADHD and comorbid behavior disorders.[5] Yet, other research indicates that efforts to stabilize the behavior of individuals with ADHD can be undermined when a comorbid diagnosis of anxiety exists.[6] In addition, studies have shown that while overall rates of individual anxiety disorders, as well as age of onset and severity of illness, are not significantly different in the presence of comorbid ADHD, school functioning in children with anxiety disorders is negatively affected by the presence of comorbid ADHD.[7] Also, the frequency of psychiatric treatment in patients with anxiety disorders is significantly increased in the presence of comorbid ADHD, and ADHD has limited impact on the manifestation of anxiety disorders in children.[7]

Treating patients with ADHD and comorbid anxiety disorders can be complicated. One type of anxiety disorder, generalized anxiety disorder (GAD) is a chronic condition associated with high rates of comorbidity, significant psychosocial impairment, and decreased quality of life.[8-10] Although many treatments such as selective serotonin reuptake inhibitors (SSRIs) or serotonin-norepinephrine reuptake inhibitors (SNRIs) have proved to be efficacious as first line treatments, only a small percentage of patients achieve complete remission from symptoms.[11]

ADHD patients may appear anxious because of their failures to meet the demands of daily living. However, when the focus of anxiety goes beyond performance situations, it is useful to consider the possibility that GAD may also be present. This observation underscores the complexity of identifying and treating comorbid anxiety, and supports the observation that the relationship between ADHD and GAD is a multifaceted one, having biological, genetic, and psychosocial correlates. Understanding the nature between ADHD and anxiety disorders likely has important diagnostic and prognostic implications, and recognizing the comorbid condition, when present, may alter the clinical approach used to optimize treatment.

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Learning Objectives
After completing this material, the reader will be better able to:

1. Compare and contrast the similarities and differences of ADHD and generalized anxiety disorder (GAD).
2. Cite the recent studies that have assessed the use of various medications in patients with ADHD and comorbid anxiety.
3. Identify the differences in sleep disorders in children with ADHD versus those with anxiety disorder.
4. Provide an overview of the current literature as it pertains to ADHD and comorbid anxiety disorders.

The study's findings suggest that a comorbid anxiety disorder in children with ADHD aggravates problems related to inhibition, adjustment to novel settings, and emotional control. These heightened difficulties among anxious children with ADHD underscore the importance of including more valid measures of everyday life functioning into clinical trials.

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Consider the following question before proceeding with the article. Please find the answer for this question on page 9 of the article.

1. Which of the following statements it true is based on the aforementioned article?
   - A. Anxious children are highly extroverted.
   - B. Anxious children are hypersensitive to punishment signals.
   - C. Children with ADHD are hypersensitive to punishment signals.
   - D. Anxious children are characterized by an impulsive behavior.

Drug roundup – what works in comorbid anxiety and ADHD?

Researchers have been grappling for appropriate medications that can control both ADHD and comorbid anxiety disorders. Here, we look at studies that used methylphenidate, mixed amphetamine salts, or atomoxetine in patients with ADHD and comorbid anxiety.

Methylphenidate (MPH)

One study showed that, over a three-month treatment with MPH in 45 treatment-naïve children with ADHD ages 8 to 14 years, trait anxiety (P=0.005 for months 2 and 3) along with depression (P =0.004) and checking compulsion symptoms (P=0.001) decreased and quality of life appeared to improve along with symptoms of inattention, hyperactivity and impulsivity (P<0.02).[1] Additionally, parents reported significant improvements in psychosocial (P=0.001) and total scores (P=0.009) of quality of life, despite no change in physical health scores (P>0.05). Children's ratings of quality of life measures showed no significant changes in physical health and psychosocial scores (P>0.05), while total scores significantly improved (P=0.001) after the treatment.

Another study sought to determine if comorbid anxiety disorder is associated with differential response to immediate release methylphenidate (MPH-IR) in children with both ADHD and chronic multiple tic disorder (CMTD).[2] Children with (n=17) and without (n=37) diagnosed anxiety disorder (ANX) as well as ADHD and tic disorder were evaluated in an 8-week, placebo-controlled trial. The anxiety-positive group (+ANX) group had more severe parent, teacher, and child ratings of anxiety and more severe parent ratings of depression, tics, oppositional defiant disorder (ODD), and peer aggression than the anxiety-negative (–ANX) group. Treatment with short-term MPH-IR was associated with improvement in ADHD, ODD, and peer aggression in the +ANX group. MPH-IR did not significantly contribute to improvement in anxiety or depression symptoms in the +ANX group. According to the investigators, these findings suggest that the co-occurrence of diagnosed CMTD+ADHD+ANX represents a particularly taxing clinical phenotype, at least in the home setting. Comorbid anxiety disorder was associated with a favorable response to MPH-IR in children with ADHD, but, say the researchers, replication with larger samples is warranted before solid conclusions can be drawn about potential group differences.

Atomoxetine (ATX)

In a study of adults with ADHD and comorbid anxiety disorder, atomoxetine monotherapy effectively improved symptoms of the disorders.[3] In the randomized, double-blind, placebo-controlled study, subjects received 40-100 mg ATX (n=224) or placebo (n=218) for 14 weeks following a 2-week

placebo lead-in period. Efficacy measures included the Conners' Adult ADHD Rating Scale: Investigator-Rated: Screening Version (CAARS:Inv:SV), Liebowitz Social Anxiety Scale (LSAS), Clinical Global Impression-Overall-Severity (CGI-O-S), State-Trait Anxiety Inventory (STAI), Social Adjustment Scale-Self Report (SAS), and Adult ADHD Quality of Life Scale-29 (AAQoL). ATX mean change was 8.7 lower from baseline (29.6) on CAARS:Inv:SV. Total ADHD Symptoms score was significantly greater than placebo; mean change was minus 5.6 points from baseline (31.2; P<0.001). ATX mean change was 22.9 points below that of baseline (85.3) on the LSAS. Total score was significant compared to placebo mean change (-14.4+/-20.3) from baseline (82.1+/-21.3; P<0.001).

When the study subjects do not have ADHD, the responses seem to be different. In a randomized controlled trial of ATX in adults with generalized social anxiety disorder (GSAD) without ADHD, there were few responders and little clinical efficacy compared with placebo as scored by the Liebowitz Social Anxiety Scale.[4] The low response rates for ATX and placebo suggest that in the absence of comorbid ADHD, ATX monotherapy is unlikely to be an effective agent for the treatment of GSAD.

An open-label study of adjunctive ATX to selective serotonin reuptake inhibitors (SSRIs) or serotonin norepinephrine reuptake inhibitors (SNRIs) demonstrated that ATX could be used as an adjunctive treatment in 29 adult patients with ADHD and comorbid partially responsive anxiety symptoms.[5] All patients had significant comorbid anxiety symptoms as measured by the Hamilton Anxiety Scale (HAM-A >7) and failed to respond to 8-week trials of SSRIs or SNRIs. All patients were treated with atomoxetine as adjunctive to the antidepressants and were followed for at least 12 weeks. Significant resolution of symptoms of all outcome measures was observed, including the symptoms of anxiety, as shown by changes from baseline in HAM-A, adult ADHD Self-Report Scale (ASRS-v1.1), and Clinical Global Impression severity subscale (CGI) at 12 weeks (P<0.001). Also, there was significant reduction in the disability score, as measured by Sheehan's Disability Scale, at 12 weeks.

Mixed amphetamine salts, extended-release (MAS-XR)

In a study of 32 adult ADHD patients with comorbid refractory anxiety, MAS-XR was given in addition to SSRIs and SNRIs to quell the symptoms of both disorders.[6] As in the previous study, all patients had significant comorbid anxiety symptoms as measured by the Hamilton Anxiety Scale (HAM-A >7) and failed to respond to 8-week trials of SSRIs or SNRIs. All patients were treated with MAS-XR as adjunctive to the antidepressants and were followed for at least 12 weeks. A significant and robust resolution of symptoms of both ADHD and anxiety were seen, as shown by changes from baseline in HAM-A, ASRS-v1.1, and CGI at 8 weeks. Also noted was a significant reduction in the Sheehan's Disability Scale score at 12 weeks. Larger controlled studies are required to confirm the effectiveness of mixed amphetamine salts in patients with ADHD and comorbid anxiety symptoms. This suggests that treatment of adults with ADHD and comorbid anxiety disorders must target ADHD symptoms effectively to achieve better resolution of anxiety symptoms.

Bottom line

If an individual has comorbid ADHD and anxiety, initial treatment typically should be with a psychostimulant or atomoxetine.[7] In cases where ADHD symptoms improve but anxiety symptoms continue, psychotherapy targeting the anxiety symptoms should be added. If anxiety is severe, specific treatment for anxiety symptoms with a medication, psychotherapy, or both should be started first; and ADHD should be treated next, with either a stimulant or atomoxetine.

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Consider the following question before proceeding with the article. Please find the answer for this question on page 9 of the article.

2. If anxiety is severe in a patient with ADHD, how would you proceed to treat?
   - A. Treat anxiety symptoms first
   - B. Treat ADHD symptoms first
   - C. Treat ADHD coupled with psychotherapy
   - D. Treat anxiety with atomoxetine monotherapy but not a psychostimulant

Children with ADHD and anxiety disorder have more sleep problems.

ADHD[1] and anxiety disorders[2] are both associated with sleep disorders in pediatric populations. A breakdown of normal sleep architecture is associated with behavioral, cognitive, and emotional problems, and erodes both academic and social functioning.[3-5]

A newly published cross-sectional case–control study compared sleep irregularities in consecutively referred children ages 7 to 13 years who met DSM-IV TR criteria for anxiety disorder, ADHD, comorbid anxiety disorder and ADHD, and a group of control children of similar age and gender.[6] Diagnoses were assessed with the Kiddie-SADS PL interview, parent form, and the sleep problems with a standardized sleep questionnaire, the Children's Sleep Habits Questionnaire (CSHQ), as reported by the mother. One hundred and forty one children were included; of these, anxiety disorder was present in 29% (n=41), ADHD in 28% (n=39), and the comorbid condition in 18% (n=25); 26% were controls (n=36).

Sleep problems were the rule rather than the exception in children with anxiety disorders, with as many as 82% demonstrating sleep problems. The high total sleep problem score was not explained by comorbidity with other psychiatric conditions, or by an inflation of the association between anxiety disorders and sleep problems due to overlapping symptoms. Children in the clinical groups had more sleep problems than controls. Children with anxiety disorders and children with the comorbid condition were reported to have more sleep problems than children with ADHD alone. Night waking was associated with comorbid anxiety disorder and ADHD. Bedtime resistance was associated with anxiety disorder, while daytime sleepiness affected all clinical groups. Clinical management of children with ADHD and anxiety disorders should include an evaluation of sleep abnormalities. In children with ADHD and bedtime resistance, careful assessment of comorbid anxiety disorder is recommended.

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Case study - Male, 45, presents for evaluation of anxiety

Jeff is a 45 year old male who presents for evaluation of anxiety. At age 12, he was originally diagnosed with ADHD-inattentive by his pediatrician. However, he was not treated for ADHD because his mother did not want him on medication. His mother knew he was intelligent, yet he managed to get mostly B's in high school. Similarly, his college GPA was a mediocre 2.5.

Childhood

As a child, and even through adolescence, he spent an inordinate amount of time watching television at the expense of his schoolwork. When faced with tasks that he found boring or repetitive, he would be easily distracted or would day dream. His grades and work suffered because of chronic lateness, trouble starting projects, procrastination, losing things he needed and spending a long time looking for misplaced items. He was chronically late, was described as "missing parts of conversations" and "frequently needing to ask people to repeat items." He was and is often unable to remember what he has read and frequently needs to re-read passages of books, which contributes to the long time it takes to get work or assignments done. As a young child he did speak out of turn more than other children but was not thought to be hyperactive. Several of the above symptoms were noted to be present as early as age 7 by his mother, and were also verified in narrative reports on old report cards, which his mother saved and which he brought into the evaluation.

Adulthood

Many of the symptoms reported in childhood seem to have persisted into adulthood, and the toll they have taken on independent function has increased. Current symptoms were confirmed on interview with his wife, who also reported marital stress due to his apparent indifference to what she was saying, interrupting her in conversation, not finishing projects around the house, and under-achieving at work (with decreased earnings relative to what she thinks he is capable of earning).

Jeff's work history is uneven. He is often late for deadlines and has trouble keeping jobs. There have been seven job changes in last 10 years. Though he is seen as having the potential to be a good worker by virtue of being smart and intuitive, he has trouble getting the little things done and has therefore not been promoted as quickly as he might have been.

Recently, when passed over for a promotion at the company where he is a media buyer, Jeff developed a more acute sense of anxiety regarding his job performance. He has begun to focus on issues that have been present in his job performance over the past decade, and has begun to blame himself for his

past failures. He describes a sense of nervousness in his abdomen that is with him most of the time. He says that he worries a lot about his job, his kids, his marriage and his overall physical health. At the present time this sense of nervousness and worry overwhelms him so much that he has trouble concentrating on the task at hand. He frequently feels tense, keyed up, on edge, and can easily break out in a cold sweat when stressed or put on the spot at work. Right now he believes that his anxiety is his biggest problem.

He has no active medical problems, but has made multiple visits to his primary care physician (PCP) complaining of vague aches and pains in his chest and legs – all occurring during the time that the anxiety has escalated. Medical work up for these physical complaints is negative. He does have a history of GERD which his PCP says is secondary to his caffeine intake. He is on no medication, except for a proton pump inhibitor (PPI) for the GERD.

There are not clear vegetative symptoms of depression. However, there is low self-esteem and the patient reports trouble getting to sleep. The self-esteem issues are fairly long-standing, but there has been some recent exacerbation. There is no history of mania or hypomania. No hallucinations or delusions. No panic, agoraphobia, social phobia, or eating disorders. No history of substance use disorder. The patient does drink about 6 cups of strong coffee a day, which he thinks helps him get his work done. He has done this for years. He also gets headaches that his PCP thinks might be related to excessive caffeine use. At the same time, if he tries to decrease the caffeine intake he says he feels 'less sharp,' says that he gets less done, and feels sluggish. He also says when he drinks less coffee it adds to his overall nervousness.

History

Family psychiatric history is notable for ADHD in two of his sister's nephews. There is no family history of early or sudden cardiac death and he has no history of heart murmur or syncope.

Past psychiatric history: No history of psychiatric treatment, but he did describe a life-long history of inattention, distraction. The procrastination described above was related to his PCP, with the patient indicating that he thought he had ADHD.

Because of the history of symptoms suggestive of ADHD, and the current history of anxiety, the PCP discussed the case with his psychiatrist colleague - to verify the diagnosis and recommend a course of action. The PCP was hesitant about treating an adult for ADHD, but on the recommendation of the psychiatrist agreed to treat this patient using atomoxetine. He began treatment at a dose of 25 mg/day. This dose was increased to 40 mg/day to achieve better efficacy. However, the patient developed erectile dysfunction (ED) and stopped the medication a month prior to the current evaluation.

Mental status examination

He presents as a casually dressed male who made fair to poor eye contact throughout interview; he fidgeted and moved around a lot in his chair. Speech: increased rate and volume when describing anxiety and also work under-productivity. Thought: No thought disorder. No psychotic symptoms. No suicidal or homicidal ideation. Affect: Constricted range of affect, and low self-esteem, but not persistent depressed mood. Considerable anxiety both by self-report and by direct observation in the office. He is alert and oriented x3, but has some problems with immediate recall secondary to distraction and difficulty focusing.

Consider the following question before proceeding with the article. Please find the answer for this question on page 9 of the article.

3. What would be your diagnosis based on what you have learned so far?
   - A. ADHD, inattentive subtype
   - B. Generalized anxiety disorder
   - C. Comorbid conduct disorder and ADHD, inattentive subtype
   - D. Comorbid anxiety disorder and ADHD, inattentive subtype

Assessment

The diagnosis of ADHD, Inattentive subtype, is supported by a lifelong history of inattention symptoms and related impairments. There is a confirmed childhood onset and absence of other mental health disorder to better account for the symptoms and impairments. The patient also has co-morbid generalized anxiety disorder. Of note, the ADHD symptoms were antecedent to development of anxiety, but the anxiety is currently as impairing as the ADHD.

Consider the following question before proceeding with the article. Please find the answer for this question on page 9 of the article.

4. How would you initially treat Jeff?
   - A. Treat his anxiety first
   - B. Treat his ADHD first using atomoxetine
   - C. Treat his ADHD first using a stimulant
   - D. Treat his erectile dysfunction first

Plan

Jeff currently feels plagued by anxiety, though he recognizes that his concern about inattention and inadequate work performance, ADHD symptoms and possibly also his excessive caffeine intake, contribute to worsening of his anxiety. The patient wants to treat his anxiety now, and, when that is improved, to focus on the ADHD. Also, he does not want treatment with atomoxetine given the history of ED. We agree to proceed with treating anxiety and once this is improved, initiate a stimulant trial to target inattention, poor work performance and family stress secondary to ADHD symptoms.

He is started on buspirone 7.5 mg twice daily and is asked to return for a follow-up in 2 weeks. At the follow-up visit, some improvement in anxiety is noted, so the buspirone is increased to 15 mg twice daily and instructed to attempt to cut his caffeine intake by 50%.

At this follow-up visit, Jeff reports some additional improvement in anxiety, and also some improvement in his ability to stay on task, presumably because of decreased worrying and decreased agitation secondary to his decreased caffeine intake. Yet, he continues to experience inattentive symptoms and associated impairment. He agrees to start stimulant and we choose lisdexamfetamine (LDX) 30 mg once daily. At follow-up 2 weeks later, he notes significant improvement in his ability to stay on task and not be distracted, but continues to have issues with procrastination. Anxiety remains improved. He has lowered his caffeine intake to 2 cups/day and will discuss stopping his PPI with his PCP. Given residual ADHD symptoms, LDX is increased to 50 mg/day and also agrees to cognitive behavioral therapy (CBT) referral to work on anxiety and ADHD-related issues. No ED is noted. On buspirone 15 mg twice daily and LDX 50 mg/day both anxiety and ADHD appear to be significantly improved. He continues on CBT and is also starting to work on marital/job issues.

Key points

1) Patient has concomitant ADHD-inattentive and GAD
2) His longitudinal history is critical as anxiety symptoms clearly came after symptoms and impairments of ADHD
3) When co-morbidities present, treat most impairing condition first. Although atomoxetine was initiated first to treat both the anxiety and ADHD, the patient experienced inadequate improvement and adverse effects that resulted in treatment discontinuation. At the time of this consultation, the patient clearly wanted to treat his GAD rather than his ADHD, and this decision was appropriate.
4) Treatment of anxiety with buspirone produced some improvement in attention – either secondary to decreased anxiety, or perhaps from the partial dopamine agonist effects of buspirone.
5) The stimulant LDX did not worsen improvement in anxiety seen with buspirone. In fact, additional treatment of ADHD probably helped to decrease anxiety, as performance improved.
6) First trial of atomoxetine by PCP was reasonable given research which shows the agent improves ADHD as well as social anxiety.
7) Buspirone was effective in treating GAD and was shown when given with atomoxetine to have some potential ADHD specific effects.
8) Caffeine use was probably self-medication for ADHD, and may have been worsening anxiety. By treating ADHD, caffeine intake was cut in 2/3 which may have had further ameliorative effect on anxiety.
9) Stimulants can be combined with buspirone. ED is not commonly reported with stimulants, but has been reported with atomoxetine.

Journal Reviews

Screening instrument for common mental disorders holds promise in adult primary care arena.

Approximately 20% of primary care patients have a mental disorder and for many individuals these disorders remain undetected and untreated.[1] A brief self-report instrument may be useful in assisting the time-constrained primary care provider in arriving at a psychiatric diagnosis which would aid in referring patients to behavioral health specialists. The Provisional Diagnostic Instrument-4 is a short, 17-item tool that can be easily scored and used to help the PCP in flagging potential cases of generalized anxiety disorder (GAD), major depressive episode (MDE), past or present mania, and ADHD.[2] To test the validity of the instrument, primary care patients were evaluated during routine clinic visits with a self-report screening tool comprised of 85 DSM-IV symptom-based candidate questions. Patients with a physician-assessed provisional diagnosis of GAD, MDE, mania, and ADHD, or none of these, completed additional self-report clinical questionnaires. Patients then participated in a telephone interview conducted by a trained rater to provide a diagnosis (or no diagnosis) based on the Structured Clinical Interview Research Version (SCID) for Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) axis I disorders and the Adult ADHD Clinician Diagnostic Scale version 1.2 (ACDS). Analysis of the surveys resulted in the final 17-item instrument. A comparison of limited symptom-based versus full DSM-IV criteria-based diagnoses showed nominal differences for relative diagnostic accuracy. Respective sensitivities and specificities were 83% and 75% for GAD, 80% and 80% for MDE, 83% and 82% for mania, and 82% and 73% for ADHD. Additional cross-validation of this instrument is needed.

Comorbid anxiety can predict severe sensory processing problems in children with ADHD.

Sensory processing problems impact the nature of response to daily events. A child may have sensory hypersensitivity or hyposensitivity. For example, a child with tactile hypersensitivity could refuse to tolerate hair-brushing and/or haircuts. A child with auditory hyposensitivity is often non-responsive to instructions given orally, and can appear puzzled about where a sound originates.

The problem of sensory processing in children with ADHD is not a well-studied area. However, a recently published systematic review of the literature has amassed a level of knowledge from which several conclusions can be made.[3] First, sensory processing problems in children with ADHD are more common than in typically developing children. Second, sensory processing problems may differentiate children with ADHD from normally developing children. However, it does not mean that these problems are specific to ADHD. The sensory profiles of children with ADHD may be similar to the profiles seen in other disabilities such as autism. One study cited in the review noted that children with autism spectrum disorder (ASD) showed some decrease in sensory processing capacity over the course of childhood, while children with ADHD showed a significant increase in auditory processing ability as well as small increases in many aspects of sensory processing.[4]

Thirdly, sensory hypersensitivity in ADHD is often associated with anxiety. These children have a higher level of anxiety than those ADHD children without sensory hypersensitivity and non-ADHD children.[3] Therefore, co-morbidity with anxiety appears to be a predictor of more severe sensory processing problems in children with ADHD.

Says the author of the review, as parents are educated about ADHD symptoms in their child, they should also be apprised of the symptoms and behavioral management of sensory processing problems. One report indicated that occupational therapy improves sensory processing problems.[5] Although, there is some speculation that some medications such as risperidone may improve sensory problems,[6] it is not clear how much pharmacotherapy can improve sensory problems in ADHD. Efficacy of medications is an area that warrants further research.

Screening instrument assesses deficient emotional self-regulation in children with ADHD.

Emotional self-regulation is characterized as being able to appropriately regulate one's emotions. The process is complex in that it involves the initiating, inhibiting, or modulating the following aspects of functioning: 1) internal feeling states (i.e. the subjective experience of emotion); 2) emotion-related cognitions (e.g. thought reactions to a situation); 3) emotion-related physiological processes (e.g. heart rate, hormonal, or other physiological reactions); and 4) emotion-related behavior (e.g. actions or facial expressions related to emotion).[7] Thus, deficient emotional self-regulation (DESR) is characterized by deficits in self-regulating the physiological arousal caused by strong emotions.

The Child Behavior Checklist (CBCL) is a parent-report questionnaire on which the child is rated on various behavioral and emotional problems. The CBCL has been one of the most widely-used standardized measures in child psychology for evaluating maladaptive behavioral and emotional problems in preschool subjects aged 2 to 3 as well as subjects between the ages of 4 and 18.[8, 9]

A study examined whether a unique profile of the CBCL would help identify DESR in children with ADHD.[10] Study subjects included 197 children with ADHD and 224 children without ADHD. DESR was confirmed if a child had an aggregate cut-off score of >180 but <210 on the anxiety/depression, aggression, and attention scales of the CBCL (CBCL-DESR). This profile was selected because of its conceptual congruence with the clinical concept of DESR and because the extreme (>210) form has been associated with severe forms of mood and behavioral dysregulation in ADHD children. The results showed that 44% of children with ADHD had a positive CBCL-DESR profile versus 2% of controls (P<0.001). The CBCL-DESR profile was associated with elevated rates of anxiety and disruptive behavior disorders, as well as significantly more impairments in emotional and interpersonal functioning. The investigators concluded that the CBCL-DESR profile can aid in identifying a subgroup of children with ADHD who also have a psychopathological and functional profile consistent with DESR.

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Answers to the article questions:

1. B
2. A
3. D
4. A

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