

# Approach to attention deficit disorder in adults

Manuel Matas, MD, FRCPC

## ABSTRACT

**OBJECTIVE** To review the etiology, diagnosis, and management of attention deficit disorder (ADD) in adults.

**SOURCES OF INFORMATION** PsycINFO, PubMed, and Psychiatry 24x7.com were searched. Several books on ADD in adults were reviewed. I also drew on my own clinical experience assessing and treating adults with ADD for more than 20 years.

**MAIN MESSAGE** The classic triad of ADD symptoms are inattention, impulsiveness, and hyperactivity or restlessness. Although ADD is a well established brain disorder, the diagnosis remains controversial. Attention deficit disorder has been called a fad, not a legitimate diagnosis, but it is a well established, well documented, medical condition that can cause much suffering if left untreated. At one time we thought children would outgrow ADD at puberty, but we now know that many will continue to have residual symptoms throughout adolescence and adulthood. If left untreated, ADD can interfere with relationships, employment, and self-esteem. Treatment with stimulants and adjunctive care is often effective.

**CONCLUSION** Attention deficit disorder in adults represents a substantial burden of illness. It can be diagnosed and treated successfully.

## RÉSUMÉ

**OBJECTIF** Faire le point sur le trouble déficitaire de l'attention (TDA) chez l'adulte.

**SOURCES DE L'INFORMATION** PsycINFO, PubMed et Psychiatry 24x7.com ont été consultés. Plusieurs livres sur le TDA de l'adulte ont été révisés. L'auteur a aussi tiré avantage de son expérience clinique de plus de 20 ans dans l'évaluation et le traitement d'adultes souffrant de TDA.

**PRINCIPAL MESSAGE** Inattention, impulsivité et hyperactivité ou agitation constituent la triade classique des symptômes du TDA. Même si le TDA est un trouble cérébral reconnu, son diagnostic fait encore l'objet de controverse. On a dit du TDA que c'était une maladie à la mode, pas un vrai diagnostic, mais c'est une affection médicale bien établie et bien documentée qui peut causer bien des souffrances en absence de traitement. On croyait autrefois que le TDA disparaissait à la puberté, mais nous savons maintenant que plusieurs sujets continueront de présenter des symptômes à l'adolescence et à l'âge adulte. En absence de traitement, le TDA peut interférer avec les relations humaines, le travail et l'estime de soi. Un traitement comprenant des stimulants et certains soins d'appoint est souvent efficace.

**CONCLUSION** Chez l'adulte, le trouble déficitaire de l'attention représente un problème de santé important. On peut le diagnostiquer et le traiter avec succès.

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It is important for family physicians to be familiar with attention deficit disorder (ADD) and attention deficit hyperactivity disorder (ADHD). These fairly common conditions have a prevalence of 6% to 9% in children and 3% to 6% in adults. We once thought that children with ADHD would outgrow the condition at puberty. We now know, thanks to long-term follow-up studies, that about 40% to 70% of children with ADHD will continue to have residual symptoms throughout adolescence and adulthood.<sup>1-3</sup> In adulthood, the condition is usually referred to as attention deficit disorder (ADD) rather than ADHD.

## Case

Ms A., a 43-year-old married woman who lives with her husband and their 3 children, works as a chemist in a research laboratory. She came to her family physician concerned that she might have ADD. Her 10-year-old son had been recently diagnosed with ADHD, and she had noticed similar characteristics in herself. After her son was diagnosed, she read extensively on the subject and filled out a questionnaire on the Internet. She reported that she has always had trouble concentrating and that she is disorganized, impulsive, and forgetful. She frequently loses or misplaces objects. She has problems managing her time, especially as regards punctuality and procrastination. She has missed out on opportunities for promotion at work, and she feels like an underachiever. Although her husband is supportive and helps with the housework, she feels overwhelmed by her household chores. She calls her home a disaster area.

## Biologic cause?

Many authors have written about the biologic basis of ADD. Family studies, twin studies, and adoption studies all support a genetic risk of ADD, which is now considered to be one of the most heritable psychiatric disorders.<sup>4-8</sup> Environmental factors, such as maternal smoking and drinking during pregnancy, also have a role. Zametkin et al<sup>9</sup> postulated that the neurobiologic deficit in ADD was due to frontal cortex hypometabolism. Positron emission tomographic scans of adults with ADD who were diagnosed in childhood showed reduced cerebral glucose metabolism, both global and regional. The largest reductions were in the premotor cortex and the superior prefrontal cortex, areas involved in controlling attention and motor activity.

Much research on ADD has focused on dopaminergic pathways. The frontal lobes, which are rich in dopamine receptors, have been shown to be smaller in patients with ADD. Bush et al<sup>10</sup> concluded that the frontal-striatal circuitry is probably dysfunctional in patients with ADD. This circuitry includes the caudate, putamen, and dorsal anterior cingulate. The anterior cingulate fails to activate

in patients with ADD, leading to cognitive deficits. Blood flow is decreased in the frontal cortex, anterior cingulate, and caudate in ADD patients. The frontal cortex is thought to be involved with complex thought and working memory. Other executive functions affected include vigilance, planning, and organization.

## Sources of information

PsycINFO, PubMed, and Psychiatry 24x7.com were searched. Two works of Dr Edward Hallowell and Dr John Ratey,<sup>4,5</sup> who have written extensively on ADD in adults, were reviewed. I also drew on my own clinical experience, more than 20 years' assessing and treating adults with ADD.

## Diagnosis

In 1994, the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV),<sup>11</sup> subdivided ADHD into subtypes: predominantly inattentive type; predominantly hyperactive-impulsive type; and combined type. The DSM-IV lists the following diagnostic criteria for ADHD. Patients could have the first set, the second set, or both sets of criteria.

- Six or more symptoms of inattention, including having a short attention span; making careless mistakes; not seeming to listen; not following through; not finishing projects; being disorganized, impulsive, and forgetful; or frequently losing or misplacing objects.
- Six or more symptoms of hyperactivity-impulsivity, including being fidgety, not being able to sit still, having inner feelings of restlessness, being always on the go, talking too much, being impatient, blurting things out, or often interrupting.

Symptoms must be present before age 7; interfere with ability to function in occupational, academic, or social settings; persist for more than 6 months; manifest in multiple settings; and not be accounted for by other disorders.

## History of ADD

Books about ADD have become bestsellers in recent years, yet ADD is not a new condition. In 1930, it was called "minimal brain damage." It was postulated that the condition was caused by birth trauma or low birth weight. In 1960, the name was changed to "minimal brain dysfunction." In 1968, it was called "hyper-kinetic reaction of childhood." In 1980, the name was changed once again to ADD with or without hyperactivity. In 1987, the label ADHD was introduced. The name keeps changing, but the condition remains the same. Just as ADD is not a new disorder, use of stimulants to treat it is also not new. Amphetamines were first used to treat the condition in 1937. Methylphenidate has been on the market since 1955.

## Differences depending on sex

Girls and women with ADD are more likely to have the inattentive type, rather than the hyperactive-impulsive

**Dr Matas** practises psychiatry in Winnipeg, Man.

type.<sup>12</sup> Girls with ADD who are quietly daydreaming in school, staring out the window, not paying attention to the teacher, and not learning are much less likely to be diagnosed with ADD than boys are, since the girls are not causing a disturbance. Consequently, women never diagnosed with ADD in childhood are now seeking assessment and treatment after 1 or more of their children has been diagnosed with ADD and they notice similar characteristics in themselves. As age increases, the male-to-female ratio of ADD decreases.<sup>13</sup> In children, it is 5:1; in adults it is 2.5:1. Some adult outpatient psychiatry clinics have reported a male-to-female ratio of 1:1.

## Screening

Attention deficit hyperactivity disorder is a clinical diagnosis, based on presenting symptoms, personal history, and family history. While rating scales, collateral history, report cards, and psychological testing can prove helpful, they are not always available. Two brief screening questionnaires that can be filled out in a doctor's waiting room are the Wender Utah Rating Scale,<sup>13</sup> which is used to make a retroactive childhood diagnosis of ADHD, and the ADHD checklist.<sup>14</sup>

## Comorbid disorders

Biederman et al<sup>15</sup> have written extensively on comorbidity in adults with ADD; 75% of patients with ADD also have at least 1 comorbid disorder. In children with ADD, we often see mood disorders (major depression, bipolar disorder); tic disorders (including Tourette syndrome); anxiety disorders (social anxiety disorder, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder); conduct disorders; and learning disabilities. In adults, the most common comorbid disorders are mood disorders, anxiety disorders, substance use disorders, and antisocial personality disorders.

## Management

If patients have more than one comorbid condition, it is best to treat the condition causing the greatest impairment first. Patients with major depression and ADD might require both selective serotonin reuptake inhibitors for the depression and a stimulant for the ADD. Spencer et al<sup>16</sup> wrote a comprehensive review of treating comorbid ADD. Agents that elevate intrasynaptic norepinephrine or dopamine appear to be helpful.<sup>17,18</sup> Stimulants, tricyclic antidepressants, and bupropion block reuptake of norepinephrine and dopamine. Stimulants are the first-line treatment for ADD. More than 250 controlled studies have shown the effectiveness of stimulants in treating the core symptoms of ADD. About 80% of patients with ADD will respond to stimulants. Methylphenidate (MPH) is usually the first drug prescribed, because it has less potential for abuse than amphetamines. If MPH is ineffective, patients might respond to dextroamphetamine. When patients are switched from MPH to dextroamphetamine, their dose is halved.

Drug-drug interactions with stimulants are rare; monoamine oxidase inhibitors (MAOIs) are the only absolute contraindication. The most common side effects of stimulants are insomnia, nervousness, diminished appetite, weight loss, and dysphoria. Nausea, stomachache, and headache are usually mild and transitory. Side effects are dose-related and can be lessened or eliminated by lowering the dose. Stimulants should not be prescribed for patients with a recent history of substance abuse. Patients older than 40 should have a baseline electrocardiogram before stimulants are prescribed; heart rate and blood pressure should be monitored. The recommended starting dose for MPH is 10 mg twice daily (8:00 AM and noon). Dose is increased in 10-mg increments at weekly intervals until patients have side effects or better control of symptoms. A typical dose of MPH is 10 to 20 mg 3 times daily, although some patients require a much higher dose and others require a much lower dose. A single dose of MPH lasts 4 hours, with peak effects in 2 hours. Longer-acting MPH (Ritalin-SR) lasts 6 to 8 hours. There is less rebound anxiety with the longer-acting formula.

New medications include the long-acting preparations MPH HCl (eg, Concerta) and mixed amphetamine salts (Adderall XR). Adderall was taken off the market by Health Canada, but was recently allowed back on.<sup>19</sup>

Atomoxetine (Strattera) is the first nonstimulant medication approved for treating ADHD. It is not a controlled substance. It is a selective norepinephrine reuptake inhibitor<sup>20</sup> that is associated with an increase in dopamine activity in the frontal cortex. It takes 1 to 4 weeks to see improvement. The recommended starting dose is 40 mg once daily. The most common side effects are nausea, dry mouth, sedation or insomnia, appetite suppression, urinary hesitancy, and erectile dysfunction. In some instances, atomoxetine could be a first choice if a patient has a history of drug abuse or a tic disorder. Contraindications include angle-closure glaucoma or use of MAOIs.

Bupropion has been shown to be a safe and effective treatment for ADHD.<sup>21-23</sup> It can be considered a first choice if a patient is a smoker or has other addictions, because it has anticraving properties. Side effects are insomnia, agitation, and seizures. It should not be prescribed if patients have a history of seizure disorders or eating disorders. Tricyclics are effective, but they are not as effective as stimulants, and their usefulness is limited by side effects.<sup>24</sup>

Medication alone might prove insufficient. Patients with ADD might also require counseling, group therapy, family therapy, coaching, tutoring, structure, physical exercise, proper rest, and adequate nutrition. These patients often benefit from attending peer support groups. They might also require psychotherapy to help them deal with unresolved traumas or self-esteem issues.

## Resolution of the case

Ms A. was diagnosed with ADD, predominantly

inattentive type. She was treated with 10 mg of MPH twice daily, which was increased to 10 mg 3 times daily (8:00 AM, noon, and 4:00 PM). She and her husband agreed to seek couples counseling, and she also chose to attend a support group for adults. She reported that she was thinking more clearly and could have a conversation without interrupting other speakers. Her mind was no longer racing, she was sleeping better, and she was able to focus clearly. Concentration and memory were improved. She was making an effort to keep to a schedule, which included eating regular meals and getting sufficient sleep and physical exercise. She reported feeling much more in control and more satisfied with her life. Her self-confidence improved, and she applied for a promotion at work.

## Conclusion

Attention deficit disorder is frequently unrecognized in adults. It is worth identifying due to the substantial burden of illness it represents and the potential for improvement with treatment.



## Competing interests

None declared

**Correspondence to:** Dr Manuel Matas, 1200—233 Kennedy St, Winnipeg, MB R3C 3J5; e-mail [mmatas@mts.net](mailto:mmatas@mts.net)

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## EDITOR'S KEY POINTS

- Attention deficit disorder (ADD) in adults has only recently been acknowledged as a legitimate diagnosis. It has a strong hereditary component.
- Attention deficit hyperactivity disorder (ADHD) in children is much more common in boys, due to the hyperactivity component. Girls often have the inattentive type of ADHD. In adulthood, the prevalence of ADD among women is almost as high as it is among men.
- A diagnosis of ADD is made from a clinical history of symptoms and personal and family history. Use of symptom-rating scales can help confirm the diagnosis.
- Management includes treating comorbid conditions, such as depression. Use of stimulants (methylphenidate and dextroamphetamine are the most common) is well supported in the literature, and other adjunct treatments, such as counseling, tutoring, and attending to diet and exercise, are recommended.

## POINTS DE REPÈRE DU RÉDACTEUR

- Ce n'est que récemment que le trouble déficitaire de l'attention (TDA) chez l'adulte a été reconnu comme diagnostic véritable. Il a une forte composante héréditaire.
- Chez l'enfant, le trouble déficitaire de l'attention avec hyperactivité (TDAH) est beaucoup plus fréquent chez les garçons, à cause de la composante d'hyperactivité. Les filles ont souvent un TDAH de type inattentif. Chez l'adulte, la prévalence du TDA est presque aussi élevée chez la femme que chez l'homme.
- Le diagnostic du TDA est basé sur les symptômes et sur les antécédents personnels et familiaux. Une échelle d'évaluation des symptômes peut faciliter le diagnostic.
- Le traitement comprend celui de la co-morbidité, comme la dépression. L'utilisation de stimulants (les plus fréquents étant méthylphénidate et dextroamphetamine) est bien appuyée par la littérature; on recommande aussi certains traitements d'appoint, tels que le counseling, le tutorage et certaines précautions concernant l'alimentation et l'exercice.

[http://www.hc-sc.gc.ca/ahc-asc/media/nr-cp/2005/2005\\_92\\_e.html](http://www.hc-sc.gc.ca/ahc-asc/media/nr-cp/2005/2005_92_e.html). Accessed 2006 July 4.

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