

ADHD

DID WE MAKE A MISTAKE?

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ADHD- WHAT IS THE STORY?

ADHD stands for attention deficit hyperactivity disorder

The term actually covers a wide range of different types of behaviour in children

There are well defined criteria that are used to determine if a child has a form of ADHD, and these criteria are divided into two categories:

Inattention

Hyperactivity

The next few slides outline these criteria, and we will come back to them as we introduce the topic of sleep disordered breathing into the conversation, and something called auditory processing disorder

ADHD CRITERIA (CDC.GOV)

Inattention: Six or more symptoms children up to age 16, or five or more for those aged 17 year and older, and have been present for at least 6 months:

- Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or with other activities.
- Often has trouble holding attention on tasks or play
- Often does not seem to listen when spoken to directly.
- Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace.

Often has trouble organising tasks and activities.

ADHD CRITERIA (CDC.GOV)

Inattention:continued....

- Often avoids, dislikes, or is reluctant to do tasks that require mental effort over a long period of time (such as schoolwork or homework).
- Often loses things necessary for tasks and activities (e.g. school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones).
- Is often easily distracted
- Is often forgetful in daily activities

ADHD CRITERIA (CDC.GOV)

Hyperactivity and Impulsivity: Six or more symptoms of hyperactivity-impulsivity for children up to age 16, or five or more for those 17 years and older, have been present for at least 6 months to an extent that is disruptive and inappropriate:

- Often fidgets with or taps hands or feet, or squirms in seat.
- Often leaves seat in situations when remaining seated is expected.
- Often runs about or climbs in situations where it is not appropriate.
- Often unable to play or take part in leisure activities quietly.

ADHD CRITERIA (CDC.GOV)

Hyperactivity and Impulsivity continued...

- Is often "on the go" acting as if "driven by a motor".
- Often talks excessively.
- Often blurts out an answer before a question has been completed.
- Often has trouble waiting his/her turn.
- Often interrupts or intrudes on others (e.g., butts into conversations or games)

In addition, the following conditions must be met:

Several inattentive or hyperactive-impulsive symptoms were present before age 12 years.

Several symptoms are present in two or more setting, (e.g., at home, school or work; with friends or relatives; in other activities).

There is clear evidence that the symptoms interfere with, or reduce the quality of, social, school, or work functioning.

The symptoms do not happen only during the course of schizophrenia or another psychotic disorder. The symptoms are not better explained by another mental disorder (e.g. Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

THE 3 TYPES OF ADHS

- ***Combined Presentation:***
 - if enough symptoms of both criteria for inattention and hyperactivity-impulsivity were present for the past 6 months
- ***Predominantly Inattentive Presentation:***
 - if enough symptoms of inattention, but not hyperactivity-impulsivity, were present for the past six months
- ***Predominantly Hyperactive-Impulsive Presentation:***
 - if enough symptoms of hyperactivity-impulsivity but not inattention were present for the past six months.
- **Because symptoms can change over time, the presentation may change over time as well.**

NOW TO INTRODUCE SLEEP

Sleep is a basic necessity

Furthermore, it is the quality of sleep that is more important than the quantity

“4 good hours is better than 12 bad hours”

The most common sleep disturbance of children is an impairment in their ability to breathe at night

This is known as “sleep disordered breathing” (SDB)

The 2 most common manifestations are snoring and mouth breathing

Both of these are indicative of some form of airway obstruction

Having an airway that is even partly blocked is not a good thing....especially in children

SLEEP AND ADHD- WHAT'S THE LINK?

Sleep complaints in children with ADHD have been reported in up to 55% of cases.

Around 25% of all children experience some type of sleep problem and around 12% present with snoring and sleep apnoea.

Children undergoing evaluation for ADHD should routinely be screened for sleep disorders.

If there is a misdiagnosis of ADHD, this can be problematic when one considers the fact that medications used to treat ADHD, like Ritalin, are stimulants and can cause insomnia.

In some countries, a child can not be prescribed medication for ADHD until their breathing at night has been assessed

BUT DAD SNORES....?

Children are not mini adults

The causes of paediatric sleep disorders is complex

Factors that are not seen in adults must be considered

Such things include:

Small skeletal structure

Craniofacial malformations

Impaired neuromuscular tone

Large lymphoid tissue (tonsils and adenoids)

Allergic hay fever, causing swelling and nasal blockage

Impaired neural response and altered arousal threshold

The growing obesity epidemic also contributes to the prevalence of sleep apnoea in older children and adolescents.

IT IS NOT OK FOR KIDS TO SNORE- IT IS ACTUALLY A REALLY BAD THING FOR THEM

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THE SCIENCE AND RESEARCH

Attention deficit hyperactivity disorder and sleep disordered breathing in pediatric populations: A meta-analysis. Sedky K et al. Sleep Medicine Review 2014, 18(4), 349-356.

Examine the relationship between SDB and ADHD symptoms in paediatric populations and whether surgery makes a difference

Findings indicate that there is a medium relationship between ADHD symptoms and SDB

12 studies were identified assessing pre- versus post-surgery ADHD symptoms, with the results suggesting a medium effect, as adenotonsillectomy was associated with decreased ADHD symptoms at 2–13 months post-surgery.

THE SCIENCE AND RESEARCH

Sleep disordered breathing in a population-based cohort: behavioral outcomes at 4 and 7 years. Bonuck et al. Paediatrics 2012. 129(4):e857-65

Sleep disorders may contribute to behaviours that resemble ADHD

Analysed more than 11,000 children over a period of six years, beginning at 6 months of age

Children suffering from sleep-disordered breathing—including snoring, breathing through the mouth, and apnoea—had a higher incidence of behavioural and emotional issues such as hyperactivity, aggressiveness, depression, and anxiety.

In fact, they were 50 to 90 percent more likely to develop ADHD-like symptoms than were normal breathers.

BONUICK ET AL 2012.

Those children who suffered most severely from all three sleep-disordered breathing behaviours at around age 2½ had the highest risk for hyperactivity.

A lack of sleep can damage brain neurons, particularly in the prefrontal cortex region

This may be due to a decrease in oxygen and an increase in carbon dioxide levels; interference with sleep's restorative processes; and a disruption in the balance of cellular and chemical systems.

What can result is inattentiveness, hyperactivity, and impulsivity—the classic trademarks of ADHD.

When the disorder is suspected in a child, night time sleep patterns should be reviewed and specialist ENT input obtained as needed

THE SCIENCE AND RESEARCH

Symptoms of sleep-disordered breathing in 5-year-old children are associated with sleepiness and problem behaviours. Gottlieb DJ et al. Pediatrics. 2003 Oct;112(4):870-7.

A population-based, cross-sectional survey of 3019 children (1551 boys, 1468 girls) who were 5 years old

A parent-completed questionnaire was used to ascertain the presence and intensity of snoring and other SDB symptoms and the presence of daytime sleepiness and problem behaviours.

SDB was defined as frequent or loud snoring; trouble breathing or loud, noisy breathing during sleep; or witnessed sleep apnoea.

GOTTLIEB DJ ET AL. 2003

RESULTS:

Parents reported hyperactivity (19%) and inattention (18%) commonly, with aggressiveness (12%) and daytime sleepiness (10%) reported somewhat less often. SDB symptoms were present in 744 (25%) children.

Compared with children without snoring or other symptoms of SDB, children with SDB symptoms were significantly more likely to have parent-reported daytime sleepiness, and problem behaviours, including hyperactivity, inattention, and aggressiveness. In fact these things happened at twice the rate of those kids who had no problems with their breathing at night.

So basically, SDB symptoms are common in 5-year-old children and are associated with an increased risk of daytime sleepiness and with problem behaviours suggestive of ADHD.

THE SCIENCE AND RESEARCH

Allergic rhinitis in children with attention-deficit/hyperactivity disorder. Ann Allergy Asthma Immunol. Brawley A, et al.2004 Jun;92(6):663-7.

Allergic rhinitis is the medical term for hayfever

This study wanted to know how often those kids with a diagnosis of ADHD had hayfever

So they looked at kids aged 5 to 18 years of age who presented with a diagnosis of ADHD and were tested for allergies

BRAWLEY A, ET AL.2004

Quite astoundingly, 80% of those with ADHD reported hay fever symptoms, and 61% had at least 1 positive test result for allergies

43% showed typical physical signs of allergic rhinitis, 100% had a positive family history, and 53% had other associated disorders (such as eczema or asthma)

Most children with ADHD displayed symptoms and skin prick test results consistent with allergic rhinitis.

Nasal obstruction and other symptoms of allergic rhinitis could explain some of the cognitive patterns observed in ADHD, which might result from sleep disturbance known to occur with allergic rhinitis. Therefore, evaluation and treatment of allergic rhinitis could benefit patients with ADHD.

That paper was in 2004- finally someone thought about seeing what happens if we treat the hay fever in these kids...

Attention-deficit/hyperactivity disorder-related symptoms improved with allergic rhinitis treatment in children. Yang MT et al. Am J Rhinol Allergy. 2016 May;30(3):209-14

And guess what?

The kids with so called ADHD who were found to have hay fever- when the hay fever was treated- their so called ADHD improved....

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PARENTAL CHECKLIST – THESE ARE BAD

- Sleeps in an unusual position, with head off the bed or propped up with many pillows**
- SnORES loudly and often**
- Stops breathing for very short periods during the night**
- Snorts, gasps or completely wakes up after a pause in breathing**
- Sweats heavily during sleep**
- Has behaviour problems at school, day care or at home**
- Sleeps restlessly**

PARENTAL CHECKLIST – THESE ARE BAD

- Is difficult to wake up even after a long night of sleep**
- Has headaches during the day, especially in the morning**
- Is often grumpy, aggressive or simply "cranky"**
- Falls asleep or daydreams in school or at home**
- Has not outgrown bedwetting at the typical age**
- Sleeps with their mouth open**
- Grinds their teeth at night**

MY KID SNORES BUT DOESN'T HAVE ADHD

More than 25% of all children, not just those with ADHD, will have a sleep disorder at some point.

These have enormous and varying impacts on family dynamics, school success and other health issues.

It can affect not only their brain, but their heart, their blood pressure, their growth, their appetite, possibly their teeth and jaw development, and many other things.

So every parent should review the checklist of things to watch out for, and if you find them, do not take no for an answer- insist in seeing a paediatric ENT specialist that is knowledgeable in the field of sleep disordered breathing

Before we finish, there is one more thing to be aware of....

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AUDITORY PROCESSING DISORDER

This describes a condition where children have perfectly normal hearing, but have trouble understanding what is being said

As a result, they have trouble focussing on conversations, especially when there is background noise

The consequence of this is that they come across as being inattentive, and actually fulfil 5 of the criteria of the Inattentive ADHD list automatically!

The problem is these kids only have a standard hearing test, which they pass (their hearing is fine, it is their listening that is the issue). It may not be until they see a paediatric ENT specialist that the diagnosis is entertained and a special test called a CAP test is organised.

For these kids, they don't need drugs to help them concentrate, but rather need special listening devices (such as something called an FM system)

You can learn more about CAP tests at www.attune.com.au

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