



ADHD Linked to Missing Genes

ADHD is likely caused by a number of genetic changes brought on by missing segments of genes, say scientists.

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Parents of hyperactive children should not be blamed for poor parenting, according to scientists who found that attention deficit hyperactivity disorder (ADHD) is a genetic condition.

One in 50 children are affected by the disorder -- which makes children restless, disruptive and easy to distract -- and has often been attributed to bad parenting or too much sugar in the child's diet.

The evidence, published Thursday in the British medical journal *The Lancet*, derives from a comparison of the genetic code of 366 children with ADHD and 1,047 who do not have ADHD.

The study brought up telltale differences between the two groups.

Children with ADHD were more likely to have small but important segments of DNA that were either missing or duplicated in their genome compared to the "control" group.

These segments, known as copy number variations (CNVs), play an important role, acting rather like a control valve over genes, which make the body's all-important proteins. If CNVs are missing or duplicated, they can alter the dosage of genes by 50 percent, up or down.

"We've known for many years that ADHD may well be genetic because it tends to run in families in many instances. What's really exciting is that we've found the first direct genetic link," said Anita Thapar, a professor of neuropsychiatric genetics at Cardiff University, Wales.

Even more intriguing is the discovery that these CNVs appear to cluster in key areas, notably in Chromosome 16, that overlap with regions implicated in autism and schizophrenia -- two other enigmatic, but now firmly acknowledged, brain disorders.

"ADHD can be stigmatizing because there's a lot of public misunderstanding about it," Thapar said in a press conference webcast from London.

"For example, some people say it's not a real disorder or it's the result of bad parenting, and parents and children can encounter much stigma because of this. So finding this direct genetic link to ADHD should help clear this misunderstanding and address this stigma."

Despite the discovery, a long road lies ahead before ADHD is fully understood and a cure for the condition emerges, the authors caution. At present, ADHD is tackled by hefty medication and behavioral exercises.

"ADHD is not caused by a single genetic change but is likely caused by a number of genetic changes, including CNVs, interacting with as-yet unidentified environmental factors," said fellow researcher Kate Langley.

"Screening children for the CNVs that we have identified will not help diagnose their condition. We already have very rigorous clinical assessments to do just that."

Until now, the genetic link had been statistical or anecdotal, but not born out by direct evidence. For instance, it was found that in identical twins, if one child had ADHD, the other had a 75 percent chance of having it.
