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Genetic marker linked to problem behaviors in adults with developmental disabilities

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A common variation of the gene involved in regulating serotonin and norepinephrine in the brain may be linked to problem behaviors in adults with developmental and intellectual disabilities, new research indicates.

The findings were published in the July 2009 issue of the *American Journal on Intellectual and Developmental Disabilities* and are available online at http://tinyurl.com/mw8baj.

"Problem behaviors in these populations account for billions of dollars in intervention costs each year, but nearly all of these interventions occur after the fact," Craig Kennedy, a co-author of the study and professor of special education at Vanderbilt University's Peabody College of education and human development, said. "This research suggests one way we might predict which individuals are at risk of being aggressive and destructive and provide treatment before problems occur."

Fifteen to 20 percent of adults with developmental/intellectual disabilities have problem behaviors. For this study, the researchers focused specifically on aggression, self-injury or property destruction and set out to determine if there was a genetic underpinning for these behaviors. They focused on the gene that encodes monoamine oxidize A or MAOA. MAOA is involved in the regulation of the neurotransmitter serotonin, which is linked to appetite and mood, and the neurotransmitter and hormone norepinephrine, which is linked to the fight-or-flight response. Previous studies found that variations in MAOA were linked to violent behavior.

"We found that a common variant of the MAOA gene was strongly associated with problem behaviors in adults with developmental and / or intellectual disabilities," Kennedy said.

The researchers studied 105 white men between the ages of 18 and 50. The individuals were divided into three groups: those with developmental/intellectual disabilities and a history of more than 10 years of problem behavior, those with the disabilities but without problem behavior, and a typically developing control group. Only white men were sampled because the MAOA gene is linked to the X chromosome and also is shown to vary by ethnicity.

Forty-three percent of those with developmental/intellectual disabilities and behavior problems had the gene variant, compared to 20 percent of the same group with no behavior issues and 20 percent of a typically developing control group.

The same MAOA variation has also been linked to autism in children, autism severity and communication problems. The researchers suggest that problem behaviors linked to this variation may explain increased autism severity in individuals with it. It is not, however, linked to behavior problems in individuals with fragile X syndrome, pointing to the need for further research on genetic and other contributors to problem behavior in individuals with different developmental disabilities .

Source: Vanderbilt University (news : web)