Precipitation levels may be associated with autism

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Children living in counties with higher levels of annual precipitation appear more likely to have higher prevalence rates of autism, according to a report in the November issue of *Archives of Pediatrics & Adolescent Medicine*. The results raise the possibility that an environmental trigger for autism may be associated with precipitation and may affect genetically vulnerable children.

In the past 30 years, autism rates have increased from approximately one in 2,500 to one in 150 children, according to background information in the article. Some of the increase is likely due to more active monitoring and changes in diagnostic criteria. "Nevertheless, the possibility of a true increase in prevalence cannot be excluded," the authors write. "Despite the increase in prevalence and the resulting increased attention paid to the condition, knowledge about what causes autism is limited. It is understood that biological factors play an important role, but environmental triggers may also be important."

Michael Waldman, Ph.D., of Cornell University, Ithaca, N.Y., and colleagues obtained autism prevalence rates from state and county agencies for children born in California, Oregon and Washington between 1987 and 1999. Using daily precipitation reports from the National Climatic Data Center, they calculated average annual rainfall by county from 1987 through 2001—which spans the dates when the children were school-aged.

"Autism prevalence rates for school-aged children in California, Oregon

and Washington in 2005 were positively related to the amount of precipitation these counties received from 1987 through 2001," the authors write. "Similarly, focusing on Oregon and California counties with a regional center, autism prevalence was higher for birth cohorts that experienced relatively heavy precipitation when they were younger than 3 years." This corresponds to the time at which autism symptoms usually appear and when any post-natal environmental factors would be present.

Several potential explanations exist for the positive association, the authors note. Precipitation may be associated with more indoor activities, such as television and video viewing, that affect behavioral and cognitive development. The increased amount of time spent indoors also may expose children to more harmful chemicals, such as those in cleaning products, or decrease their exposure to sunshine, which helps the body produce vitamin D. "Finally, there is also the possibility that precipitation itself is more directly involved," the authors write. "For example, there may be a chemical or chemicals in the upper atmosphere that are transported to the surface by precipitation."

Because there is no direct clinical evidence of an environmental trigger for autism that is associated with precipitation, the results are preliminary, the authors note. However, "further research focused on establishing whether such as trigger exists and on identifying it is warranted," they conclude.

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