

Stress and Depression Worsen Childhood Asthma

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(PhysOrg.com) -- Young people with asthma have nearly twice the incidence of depression compared to their peers without asthma, and studies have shown that depression is associated with increased asthma symptoms and, in some cases, death.

How stress and depression play upon one another to worsen asthma is a lingering question.

A new study by researchers at the University at Buffalo has shown that depressed [children](#) with asthma exhibit a dysregulation of the autonomic nervous system along with increased airway compromise.

It is thought to be the first study to examine pathways linking emotional stress, depressive symptoms, autonomic nervous system dysregulation and airway function in childhood asthma.

The study appears in the July 2009 issue of *The [Journal of Allergy and Clinical Immunology](#)*.

Bruce D. Miller, M.D., and Beatrice L. Wood, Ph.D., professors of psychiatry and pediatrics in the UB School of Medicine and Biomedical Sciences, designed and carried out the study in collaboration with other UB researchers.

"The autonomic nervous system, or ANS, is composed of two opposing divisions -- the sympathetic and parasympathetic nerves, which check

one another and thus control critical body functions outside of conscious awareness," explained Miller, chief of the UB Division of Child & Adolescent Psychiatry and senior staff psychiatrist at Women & Children's Hospital of Buffalo, a UB-affiliated teaching hospital. "The ANS is influenced by stress and emotions."

"Children with asthma and high depression symptoms showed a preponderance of parasympathetic over sympathetic [nervous system](#) reactivity in the ANS," he continued. "This imbalance within the ANS could explain the increased airway resistance that we found in depressed asthmatic children in our study."

The study involved 90 children with asthma, aged 7-17. Forty-five asthmatic children with symptoms of depression were compared with 45 asthmatic children without symptoms of depression. Both groups viewed scary, sad (death) and happy scenes from the movie E.T.: The Extraterrestrial.

All children wore electrodes to collect data on heart and respiratory function, which showed the level of activation and reactivity of the sympathetic and parasympathetic divisions. The researchers assessed airway function before the movie, after the death scene and after the movie.

"The depressed group consistently showed greater parasympathetic activation along with decreased sympathetic activation in response to the emotional provocations - a pattern that would have a detrimental effect on the airways," said Miller.

"In contrast, the group without symptoms of depression showed consistent activation of the sympathetic pathway, which would support better airway function under stress. To our knowledge, this is the first report in the literature to demonstrate an association linking stress,

depression and increased airway resistance in asthmatic children."

Results also showed that bias toward parasympathetic reactivity was most pronounced in the children during scenes portraying family distress or loss, death and dying.

"These findings reinforce previous results from our laboratory that associated relational stress within the family with child depression and increased asthma activity," said Wood.

"Although these findings are promising and support our hypotheses," she continued, "we need further studies to replicate and extend these findings, and to examine whether treatment for [depression](#) reduces shift to the parasympathetic and improves lung function in children with asthma."

The authors believe these findings indicate the importance of screening children with asthma for depressive symptoms, of following these children closely and referring them for psychosocial counseling when indicated.

Co-authors on the study were Mark Ballow, M.D., an [asthma](#) specialist from the UB Department of Pediatrics; ChiunYu Hsu, a student in the UB Neuroscience Graduate Program, and JungHa Lim, Ph.D, formerly a UB post-doctoral student, and currently on the faculty at Korea University.

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Provided by University at Buffalo ([news](#) : [web](#))

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