Physical activity in adolescence associated with decreased risk of brain cancer in adulthood

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Christine B. Ambrosone, Ph.D., is a professor of oncology and chair of the department of cancer prevention and control at Roswell Park Cancer Institute. Credit: Christine B. Ambrosone, Ph.D.

While little is known about the causes of glioma, researchers at the National Cancer Institute have found that this rare but often deadly form of brain cancer may be linked to early life physical activity and height.

"Our findings suggest that biological factors related to energy expenditure and growth during childhood may play a role in glioma etiology. This clue could help researchers better understand important

features of glioma biology and the potentially modifiable lifestyle factors that could be important in preventing this disease," said Steven C. Moore, Ph.D., research fellow in the Nutritional Epidemiology Branch, NCI. Moore also added that "engaging in regular physical activity throughout the lifespan conveys many benefits." Results of this prospective study are published online first in Cancer *Research*, a journal of the American Association for Cancer Research.

Gliomas are the most common type of brain cancer, accounting for nearly 80 percent of brain and central nervous system cancers. Though little is known about the causes of glioma, some evidence suggests that early life exposures may play a role in disease etiology. Because the brain develops rapidly during childhood and adolescence, it may be more susceptible to environmental influences during this time.

Moore and colleagues examined whether markers of early life energy expenditure and intake (physical activity, body mass index and height) are related to glioma risk. Between 1995 and 1996, researchers distributed a baseline questionnaire about dietary intake and other lifestyle exposures to participants in the National Institutes of Health-AARP Diet and Health Study. Nearly 500,000 men and women answered questions about physical activity, body weight and height. The researchers then followed study participants for eight years, during which time 480 glioma cases occurred.

Participants who were physically active during adolescence had a decreased risk of glioma; their risk was about 36 percent lower than those who were inactive, according to the study. The researchers also found that those who were obese during adolescence had an increased risk of glioma; their risk was approximately three to four times that of individuals who were normal weight during adolescence. However, Moore cautioned that "we did not have many people in the study who were obese during adolescence." Moore and colleagues additionally

confirmed results of previous studies linking height to increased glioma risk; risk among taller participants was twice that of those considered shorter.

"Aside from our finding for height, which had been previously reported, these results were surprising," he said. "But, to our knowledge, no one has looked at glioma risk as related to energy balance in childhood and adolescence before."

The researchers found that the association between physical activity and glioma risk was not consistent across the lifespan. Neither physical activity nor obesity in adulthood were associated with glioma risk. Since the data were collected before the participants were diagnosed with cancer, it is unlikely that the participants would respond to the questionnaire differently because of their diagnosis, according to Christine B. Ambrosone, Ph.D., professor of oncology and chair of the Department of Cancer Prevention and Control at Roswell Park Cancer Institute. However, both Ambrosone and Moore commented that additional prospective studies are needed to confirm these findings, especially the association with obesity, which was in small numbers.

"These results highlight the potential importance of habits during childhood and adolescence for risk of brain cancer later in life. Additional research is needed to understand the biologic mechanisms that underlie these relationships," added Ambrosone, who is an editorial board member of *Cancer Research* and was not associated with this study.

Source: American Association for Cancer Research (news : web)