Exercise May Help Cut Colon Cancer Risk in Men

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BOSTON — An exercise program consisting of moderate to vigorous aerobic activity 6 hours per week was associated with reduced incidence of precancerous colon changes in men who participated in a year-long clinical trial looking at the effect of exercise on cancer biomarkers in colon tissue, Kristin Campbell, Ph.D., said at the annual international conference of the American Association for Cancer Research.

The same exercise intervention did not produce comparable results among women, suggesting that physical activity may play a stronger role in colon cancer risk reduction in men than in women, Dr. Campbell noted.

Alterations in the proliferation and apoptosis of colon crypt cells—the highly programmed cells in the indentations, or crypts, of the colon wall—are thought to play a crucial, early role in the development of colorectal neoplasia. In a previous study, Dr. Campbell and colleagues at Seattle's Fred Hutchinson Cancer Research Center showed that colon crypt cell proliferation decreased with exercise in men but not in women.

In the current study, which was funded by the National Cancer Institute and the National Institutes of Health, the investigators sought to determine the effect of an aerobic exercise intervention on both the proliferation and apoptosis of colon crypt cells. To do this, they measured colon cancer biomarkers—the apoptosis-stimulating Bax protein and the apoptosis-inhibiting bcl-2 protein—in 101 men and 98 women aged 40-75 years. Participants were randomized to a usual-lifestyle control group or the exercise intervention comprising 1 hour of aerobic activity 6 days per week.

All of the patients underwent flexible sigmoidoscopy to obtain stained tissue samples from the mucosal lining of the colon at baseline and 12 months.

For analysis purposes, the crypt was divided into three regions: bottom, middle, and top. Cellular proliferation in the bottom region is normal, but overproliferation can occur when apoptosis goes awry and cells are not dying on schedule and instead migrate up the sides of the crypt to the surface. Such overproliferation is linked to the development of precancerous and cancerous growths, said Dr. Campbell.

Among women patients, the same exercise intervention did not produce comparable results, though reasons for this discrepancy were not clear.

Among men in the study, significant increases in Bax density at the bottom of the crypt and significant decreases in cellular proliferation in the upper crypt were seen in the exercise group, compared with controls, Dr. Campbell reported. The changes represented "a substantial increase in the potential for cellular apoptosis in the area of the colon most vulnerable to colon cancer," she said.

Although men who exercised for the full 6 hours per week or more appeared to benefit the most, "even those who worked out an average of 4 or more hours per week, and those with the most robust aerobic fitness levels, demonstrated beneficial changes," Dr. Campbell said.

In contrast, there were no notable between-group changes in cellular proliferation or apoptosis markers among the women, she said.

It is unclear why female exercisers do not seem to reap the same benefits as men. Dr. Campbell reported having no conflicts of interest with respect to her presentation. ■

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