MedicalXpress

'Clumping' protein linked to return of ovarian cancer

December 15 2006

Johns Hopkins scientists have discovered that women treated for ovarian cancer are at increased risk of a rapid and potentially fatal recurrence if their tumor cells have high levels of a binding protein that triggers abnormal growth and slows down cell death, both hallmarks of malignancy.

"Now there's the possibility that testing for NAC-1 protein in cancer tissue removed during surgery might identify women most at risk for recurrence and guide doctors and patients to greater vigilance and extended therapy," said Ie-Ming Shih, M.D., Ph.D., associate professor of pathology at Johns Hopkins Kimmel Cancer Center. The research also suggests that drugs capable of blocking NAC-1 activity may be a useful strategy in preventing and treating recurrences as well.

A report on the research, the first to link NAC-1 to cancer, appears in the December 5 issue of the Proceedings of the National Academy of Sciences.

"Because recurrent cancers are often what really kill patients, and most ovarian cancer is diagnosed when it's already advanced, our findings offer women a better chance of catching or preventing recurrent disease early and increasing survival," says Shih.

An estimated at least 60 percent of advanced-stage ovarian cancer patients who appear to be disease-free after initial treatment develop recurrent disease, according to the researchers.

When the investigators compared levels of NAC-1 among primary and recurrent tumor samples taken from 338 ovarian cancer patients from two hospitals, they found that levels of NAC-1 were significantly higher in recurrent tumors compared with primary tumors taken from the same patient. Women whose primary cancers had high levels of NAC-1 were more likely to suffer a recurrence within one year.

Studying the functions of NAC-1, the researchers genetically modified cells so they made both NAC-1 and a component of the protein found at the ends of natural NAC-1 that is a binding site. In the modified cells, N130 capped off NAC-1 proteins disrupting their ability to bind with each other. This action can prevent tumor formation and kill cancer cells in experimental mice. Shih says that in the future, drugs that mimic N130 can be used to treat cancer.

Source: Johns Hopkins Medical Institutions