

Neurological and executive function impairment associated with breast cancer

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Women who survive breast cancer show significant neurological impairment, and outcomes appear to be significantly poorer for those treated with chemotherapy, according to a report in the November issue of the *Archives of Neurology*.

Breast cancer (BC) is one of the most common public health problems, with a worldwide estimated incidence of 39 per 100,000 individuals annually. Although primary BC has not been associated historically with neurological problems, a growing body of evidence suggests that patients are at increased risk for altered [brain structure and function](#), according to background information in the article.

Shelli R. Kesler, Ph.D., and colleagues at Stanford University School of Medicine, Stanford, Calif., conducted an observational study to determine whether profiles of [brain activation](#) differ among BC survivors treated with or without chemotherapy, compared with healthy control women. The study included 25 women with BC who received chemotherapy, 19 women with BC who did not receive chemotherapy, and 18 healthy female controls, all matched for age and other [demographic variables](#). The women were asked to perform various tasks, and the researchers used functional MRI to measure activation in several areas of the brain.

"Women with BC demonstrated significantly reduced activation in the left middle dorsolateral prefrontal cortex and premotor cortex compared with healthy controls," the authors report.

"The chemotherapy group also demonstrated significantly reduced left caudal lateral prefrontal cortex activation and increased perseverative errors and reduced processing speed compared with the other two groups," they write.

The study also found that the negative effects of chemotherapy on [brain function](#) may be exacerbated by such factors as increased age and lower educational level.

"This study provides further evidence that primary BC may cause measurable brain injury," the authors conclude. "Women treated with chemotherapy may show additional prefrontal deficits and have difficulty compensating for neurobiological changes such that they also show impaired executive function."

More information: *Arch Neurol.* 2011;68[11]:1447-1453.

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