

Studies Explore Depression, Cognitive Impairment, Dementia Links

People over 65 years with mild cognitive impairment (MCI) who have been treated for depression are more likely to have biological and brain imaging markers that reflect a greater vulnerability for developing dementia, according to a study published in *Molecular Psychiatry*.¹

The study analyzed blood samples from 80 older adults who had been treated for major depression and were now in remission. Some of the patients had MCI (n = 36), and the others had normal cognitive function (n = 44). Blood samples were analyzed for 242 proteins involved in biologic pathways associated with psychiatric and neurodegenerative disorders. Patients received brain scans to look for indicators of cerebrovascular disease, brain atrophy or shrinkage, or signs of Alzheimer disease.

Patients in the MCI group had more differences in the biologic activity of 24 proteins involved in the regulation of immune and inflammatory pathways, intracellular signaling, cell survival, and protein and lipid balance. Anatomic analyses revealed that those with MCI had a higher rate of cerebrovascular disease. There was no difference between the MCI group and the normal cognitive function group regarding evidence of Alzheimer disease.

"If you take these results altogether, they suggest that people with depression and cognitive impairment may be more vulnerable to accelerated brain aging, which in turn puts them at risk for developing dementia," Meryl A. Butters, PhD, the senior study investigator, said in a

press release.² "Ultimately, if we can understand what happens in the brain when people are depressed and suffer cognitive impairment, we can then develop strategies to slow or perhaps stop the impairment from progressing to dementia."

A different study found no evidence of a relationship between anatomic brain structures and depression.³ The study, published in *Neurology*, followed 1764 older patients who did not have cognitive impairment for a mean 7.8 years. Of the originally enrolled individuals, 582 died during follow-up. Their brains underwent uniform pathologic examinations to find evidence of anatomic abnormalities. Those researching the brains found no significant relationship between anatomic changes and depression diagnoses.

The studies agreed that MCI was associated with depression, but the latter study noted that depressive symptoms did not modify the association of neuro-pathologic markers with cognitive decline.

"In old age, depressive symptoms have an association with cognitive decline that is independent of the neuro-pathologic hallmarks of dementia," the study authors said.

1. Diniz BS, Sibille E, Ding Y, et al. Plasma biosignature and brain pathology related to persistent cognitive impairment in late-life depression [published online ahead of print August 5, 2014]. *Mol Psychiatry*. doi:10.1038/mp.2014.76.

2. Older adults with depression and mild cognitive impairment are more vulnerable to accelerated brain aging, Pitt study says [press release]. Pittsburgh, PA: University of Pittsburgh School of Medicine; August 7, 2014.

3. Wilson RS, Capuano AW, Boyle PA, et al. Clinical-pathologic study of depressive symptoms and cognitive decline in old age [published online ahead of print July 30, 2014]. *Neurology*. pii:10.1212/WNL.0000000000000715.

Study Questions Cancer Screening in Patients with Very High Mortality Risk

Those with the highest risk of mortality were most likely to have undergone cancer screening, according to data from a study published in *JAMA Internal Medicine*.¹ Prostate, breast, cervical, and colorectal cancer screenings were analyzed in the study.

The study authors reviewed data from the population-based National Health Interview Survey (NHIS), which collected data from 2000 to 2010. The survey included data from 27 404 participants aged 65 years or older. Survey respondents were grouped into 4 mortality categories: low (<25% risk of mortality), intermediate (25-49%), high (50-74%), and very high (>75%).

Of respondents in the highest risk category, 13% to 55% had received recent cancer screening; the most

common screening in the highest risk category was for prostate cancer (55%). Of women who had undergone hysterectomy for noncancerous reasons, 34% to 56% had undergone a pap test in the previous 3 years.

There were fewer occurrences of prostate or cervical cancer screening in years toward the end of the study's time frame, and there was no significant interaction between calendar year and mortality risk for any cancer screening. Screening was common among survey respondents with life expectancy less than 5 years.

"A substantial proportion of the US population with limited life expectancy received prostate, breast, cervical, and colorectal cancer screening that is unlikely to provide net benefit," the study authors said. "These results suggest that overscreening is common in both men and women, which not only increases health care expenditure but can lead to net patient harm."

1. Royce TJ, Hendrix LH, Stokes WA, Allen IM, Chen RC. Cancer screening rates in individuals with different life expectancies [published online ahead of print August 18, 2014]. *JAMA Intern Med*. doi:10.1001/jamainternmed.2014.3895.

Lifetime Risk of Diabetes Diagnosis Has Risen; Years Lost Due to Diabetes Has Decreased

The lifetime risk of Americans being diagnosed with diabetes has increased and the life-years lost due to the disease have decreased, according to a analysis of NHIS data from 1985 to 2011 published in *Lancet Diabetes and Endocrinology*.¹ The study reviewed data from 598 216 adults who responded to NHIS questionnaires.

From 2000 to 2011, American men had a lifetime risk of diabetes diagnosis at age 20 of 40.2% (95% CI, 39.2-41.3); in the same time frame, women had a 39.6% (38.6-40.5) risk of diagnosis. The risks for men and women from 2000 to 2011 increased by 20% and 13%, respectively, from 1985-1989.

Hispanic men and women and non-Hispanic black women carried the highest lifetime risks from 2000 to 2011, all of which were greater than 50%.

The number of life-years lost to diabetes when diagnosed at 40 years decreased overall. Men lost 7.7 (95% CI, 6.5-9.0) years in the period from 1990 to 1999, and lost 5.8 (4.6-7.1) years from in the more recent period. Similarly, women lost 8.7 (8.4-8.9) years from 1990 to 1999, and lost 6.8 (6.7-7.0) years between 2000 and 2011.

Researchers saw an increase in years spent with diabetes, with a 156% increase in men and a 70% increase in women.

The study authors credited improvement in medical care as the reason for the decrease in the number of life-years lost due to diabetes and the increase in the number of years spent with the disease.

1. Gregg EW, Zhuo X, Cheng YJ, et al. Trends in lifetime risk and years of life lost due to diabetes in the USA, 1985-2011: a modeling study [published online ahead of print August 12, 2014]. *Lancet Diabetes Endocrinol*. doi:10.1016/S2213-8587(14)70161-5.

Smoking, Low Education Linked with Stroke Incidence

Patients with a low level of education had a higher incidence of ischemic stroke than those with a high level of education, according to a study published in *Stroke*.¹ Risk factors for stroke, such as smoking and hypertension, were more prevalent in low-education groups than in high-education groups.

The study examined a Danish population (n = 68 643) aged 30 to 70 years. Over a period of 14 years, researchers observed 3613 ischemic strokes and 776 hemorrhagic strokes. Educational differences were observed in those with ischemic stroke but not hemorrhagic stroke. Low versus high education was associated with 181 (95% CI, 127-235) extra cases per 100 000 person-years at risk of ischemic stroke.

Smoking and hypertension were associated with ischemic and hemorrhagic stroke. The combination of cur-

rent smoker status and low education in men was associated with 289 (95% CI, 238-340) extra cases per 100 000 person-years at risk of ischemic stroke, meaning that 134 (95% CI, 49-219) extra cases per 100 000 person-years at risk of ischemic stroke could be ascribed to the interaction between smoking and level of education. Researchers found no similar pattern among women.

"[P]eople, particularly men, in lower socioeconomic groups could be more vulnerable to the effect of smoking than those in higher socioeconomic groups in terms of ischemic stroke," the researchers said, using level of education as a marker of socioeconomic status. "This finding may be of benefit to the public health and clinical agenda because health interventions and preventive strategies should be aimed at patients or population subgroups in which the most cases could potentially be prevented."

1. Nordahl H, Osler M, Frederiksen BL, et al. Combine effects of socioeconomic position, smoking, and hypertension risk of ischemic and hemorrhagic stroke [published online ahead of print August 14, 2014]. *Stroke*. doi:10.1161/STROKEAHA.114.005252.

Body Mass Index Linked to Increase in Cancer Incidence

Body mass index (BMI) was linearly associated with cancer of the uterus, cervix, thyroid, kidney, and gallbladder and with leukemia, according to a study published in *The Lancet*.¹

Researchers used primary care data from patients (n = 5 240 000) in the Clinical Practice Research Datalink database to analyze BMI and incidence of 22 specific cancers in adults from the United Kingdom. Each BMI increase of 5 kg/m² (11 lb/m²) was associated with uterine cancer (HR, 1.62; 99% CI, 1.56-1.69; P < .0001), cervical cancer (HR, 1.10; 99% CI, 1.03-1.17; P < .0035), thyroidal cancer (HR, 1.09; 99% CI, 1.00-1.19; P < .0088), kidney cancer (HR, 1.25; 99% CI, 1.17-1.33; P < .0001), gallbladder cancer (HR, 1.31; 99% CI, 1.12-1.52; P < .0001), and leukemia (HR, 1.09; 99% CI, 1.05-1.13; P ≤ .0001).

"Assuming causality, 41% of uterine and 10% or more of gallbladder, kidney, liver, and colon cancers could be attributable to excess weight," the study authors wrote. The study authors estimated that "a 1 kg/m² (2.2 lb/m²) population-wide increase in BMI would result in 3790 additional annual UK patients developing 1 of the 10 cancers positively associated with BMI." ■

1. Bhaskaran K, Douglas I, Forbes H, et al. Body-mass index and risk of 22 specific cancers: a population-based cohort study of 5.24 million UK adults [published online ahead of print August 14, 2014]. *Lancet*. doi:10.1016/S0140-6736(14)60892-8.

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