

# Blood sugar processing tied to brain problems

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People with diabetes experience more short-term-memory problems on average than do people without the disease. Researchers now report that some nondiabetic people who nevertheless have slightly elevated blood sugar concentrations also have short-term memory impairment.

Moreover, these people have a smaller hippocampus on average than do those without high blood sugar, report Antonio Convit, a psychiatrist at the Nathan Kline Research Institute for Psychiatric Research in Orangeburg, N.Y., and his colleagues. The hippocampus is a part of the brain that retrieves short-term memories, such as what one had for breakfast.

The findings, which appear in the Feb. 18 *Proceedings of the National Academy of Sciences*, could explain some memory lapses in elderly people who otherwise appear healthy, says Convit.

He and his colleagues tested 30 individuals with an average age of 69. None had Alzheimer's disease or another dementia. After fasting overnight, the vol-

unteers performed a test requiring them to recall elements of a brief story read to them. Then the researchers gave each person an infusion of glucose and took blood samples over 4 hours. Slowly falling blood-glucose concentrations indicate inefficient sugar metabolism.

Volunteers showing such a trend had fared worse on the recall tests than those whose blood-glucose concentrations normalized more quickly, Convit says.

Using magnetic resonance imaging, the researchers found that people slow to metabolize sugar had smaller hippocampi relative to their head size than the others, the team reports.

Previous studies have shown that the hippocampus can atrophy in animals with poor sugar metabolism. This damage correlates with an inability of the animals to retrieve memories, says Convit.

Why the shrinkage occurs remains baffling, Convit says. The good news, he adds, is that such loss might be reversible, since exercise and a good diet can improve sugar uptake. —N.S.



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