

Acute anemia linked to silent strokes in children

February 11 2011

Silent strokes, which have no immediate symptoms but could cause long-term cognitive and learning deficits, occur in a significant number of severely anemic children, especially those with sickle cell disease, according to research presented at the American Stroke Association's International Stroke Conference 2011.

One-quarter to one-third of children with sickle cell disease have evidence of silent strokes in their brains, according to Michael M. Dowling, M.D., Ph.D., lead author of the study and assistant professor of pediatrics and neurology at the University of Texas Southwestern Medical Center in Dallas.

"These are 5- to 10-year-old children who have brains that look like the brains of 80-year-olds," Dowling said. "These strokes are called 'silent' because they don't cause you to be weak on one side or have any obvious neurologic symptoms. But they can lead to poor academic performance and severe cognitive impairments."

Sickle cell disease is a [blood disorder](#) characterized by low levels of hemoglobin, the iron-containing component of [red blood cells](#) that carries oxygen. Low hemoglobin causes [anemia](#). In sickle cell disease, the blood cells are misshapen (sickle-shaped) and may form clots or block blood vessels. About 10 percent of children with sickle cell disease suffer a stroke. Blood transfusions can reduce the high risk of repeat strokes.

Dowling and colleagues hypothesized that silent strokes occur during severe anemia and may be detectable by MRI. They used MRI on the brains of 52 hospitalized children 2- to 19-years-old at Children's Medical Center Dallas with hemoglobin concentrations dropping below 5.5 g/dL. They compared severely anemic children with sickle cell disease to a group of children without sickle cell disease who had hemoglobin levels below 5.5 g/dL.

They identified silent strokes in about 20 percent of the children with sickle cell disease who were experiencing acute anemia. They also saw evidence of silent strokes, though not as often, in severely anemic children who didn't have sickle cell disease.

The many reasons, besides sickle cell disease, why children could have anemia include trauma, surgery, iron deficiency or cancer such as leukemia.

"These are brain injuries that go unnoticed by doctors, unless the children have testing with a special MRI," he said. "We looked at every child who went to the hospital for a 30-month period and identified about 400 children that came in with hemoglobin below 5.5 g/dL. That represented about 12 percent of the admissions for sickle cell disease and about 1 percent of the total admissions to Children's Medical Center."

The findings suggest that children with or without sickle cell disease who have acute anemia could be suffering undetected brain damage. The researchers suggest that all children with severe anemia need careful examination for silent strokes.

Improved recognition and timely transfusion to increase blood hemoglobin levels could prevent permanent brain damage in children with silent strokes, according to the study.

Future studies should look at larger groups of children for longer periods to better understand the impact of acute anemia on [children](#), Dowling said.

Provided by American Heart Association

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