

Survivors of childhood heart defects may have higher risk of premature dementia

People born with heart defects who survive into adulthood may be at higher risk of developing dementia, particularly dementia that starts before 65 years of age, according to new research in the American Heart Association's journal *Circulation*.

With improved newborn and childhood treatments, more people born with heart defects survive into adulthood. A 2016 study published in *Circulation* estimated that approximately 1.4 million adults are living with congenital heart defects in the United States.

"Previous studies showed that people born with heart defects have a higher risk of neurodevelopmental problems in childhood, such as epilepsy and autism, but this is, to our knowledge, the first study to examine the potential for dementia later in adult life," said Carina N. Bagge, B.Sc., lead author of the study and a medical student in the Department of Clinical Epidemiology at Aarhus University Hospital in Aarhus, Denmark.

Using national medical databases and records covering all Danish hospitals, the researchers examined the occurrence of dementia in 10,632 mostly Caucasian adults (46 percent male) born with heart defects between 1890 and 1982 (most between 1960 and 1982), matching each with 10 members of the general population of the same gender born the same year.

Researchers found the risk of dementia from any cause, including vascular dementia, Alzheimer's disease and others, in people born with heart defects in Denmark was:

- 60 percent higher overall than the general population;
- 160 percent (2.6 times) higher for early-onset dementia (diagnosed before age 65);
- 30 percent higher for dementia diagnosed after age 65.

The study was observational, which means that the researchers were examining individuals with heart defects over time to see if there was an association between being born with a heart defect and developing dementia later in life. While they did find an association, the study does not mean that every person who was born with a heart defect will develop dementia. The study observed a higher risk, but did not prove cause and effect.

Heart defects are the most common group of birth defects, occurring in 4 to 10 of every 1,000 live births in the United States and 8 to 10 out of every 1,000 live births in Denmark'.

"Our study involved an older population born when treatments for heart

defects were more limited. Modern treatment has improved greatly, and as a result we can't directly generalize these results to children born today. We need further work to understand the risks in the modern era," Bagge said.

Dementia or cognitive impairment is often progressive, and can be caused by many factors, including reduced blood flow to the brain, strokes and Alzheimer's disease. People with dementia may have problems with memory, reasoning, behavior and other mental functions.

In this study, the risk of dementia was higher in people born with heart defects who developed other heart disease risk factors later in life, such as atrial fibrillation, heart failure, and diabetes. These risk factors are more common in people born with heart defects than in the general population, and they have also been shown to independently raise the risk of dementia.

"While we must be careful to appreciate these findings within the limitations of the study design, continued study of this association may yield important clinical screening and medical management strategies in the future, and there may even be opportunities discovered to aid in the prevention of dementia in this population," said Nicolas L. Madsen, M.D., M.P.H., senior author of the study and assistant professor of pediatrics at the Cincinnati Children's Hospital Medical Center.

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Journal reference:

Circulation

Provided by:

American Heart Association