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Big babies could be at higher risk of common heart rhythm disorder in adulthood

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Elevated birth weight is linked with developing atrial fibrillation later in life, according to research presented at the 31st Great Wall International Congress of Cardiology (GW-ICC).

GW-ICC 2020 is a virtual meeting during 19 to 25 October.

Study author Dr. Songzan Chen of Zhejiang University, Hangzhou, China said: "Our results suggest that the risk of atrial fibrillation in adulthood may be higher for large newborns (over 4,000 grams or 8 pounds 13 ounces) than those with normal birth weight. Preventing elevated birth weight could be a novel way to avoid atrial fibrillation in offspring—for example with a balanced diet and regular check-ups during pregnancy, particularly for women who are overweight, obese or have diabetes."

He added: "People born with a high weight should adopt a healthy lifestyle to lower their likelihood of developing the heart rhythm disorder."

Atrial fibrillation is the most common heart rhythm disorder, affecting more than 40 million individuals globally. People with atrial fibrillation have a five times greater risk of having a stroke. The relationship between birth weight and atrial fibrillation is controversial. This study investigated the lifetime causal effect of birth weight on the risk of atrial fibrillation.

The researchers conducted a naturally randomised controlled trial—a technique called Mendelian randomisation. First, they used data from 321,223 individuals in a genome-wide association study (GWAS) to identify 132 genetic variants associated with birth weight.6 Next, they identified which of those variants play a role in atrial fibrillation using data from 537,409 participants of the Atrial Fibrillation Consortium (of whom 55,114 had atrial fibrillation and 482,295 did not).

To conduct the naturally randomised controlled trial, the 132 genetic variants were randomly allocated to the 537,409 participants at conception, giving each individual a birth weight in grams. The

investigators then analysed the association between birth weight and atrial fibrillation.

Elevated birth weight was associated with an increased risk of atrial fibrillation later in life. Specifically, participants with a birth weight that was 482 grams (about 1 standard deviation) above the average (3,397 grams) were 30% more likely to develop the heart rhythm disorder (odds ratio = 1.30; 95% confidence interval 1.18-1.44; p=0.0000004).

Dr. Chen said: "A major strength of our study is the methodology, which allows us to conclude that there may be a causal relationship between high birth weight and atrial fibrillation. However, we cannot discount the possibility that adult height and weight may be the reasons for the connection. Birth weight is a robust predictor for adult height, and taller people are more likely to develop atrial fibrillation. Previous research has shown that the link between birth weight and atrial fibrillation was weaker when adult weight was taken into account."

Professor Guosheng Fu of Sir Run Run Shaw Hospital (SRRSH), affiliated with the Zhejiang University School of Medicine, and one of the Scientific Committee Chairmen of GW-ICC 2020, said: "This study provides genetic evidence for the association between elevated birth weight and the increased risk of atrial fibrillation. From this research, we can see that reducing the number of newborns with elevated birth weight is probably considered as a feasible prevention to ease the burden of atrial fibrillation. Therefore, pregnant women should pay more attention to the diet control and regular check-ups, especially for those with obesity or diabetes. Equally important, people born with a high birth weight should be aware of reducing other risk factors to prevent atrial fibrillation."

Professor Michel Komajda, a Past President of the ESC and Global Affairs regional Ambassador for Asia at GW-ICC 2020, said: "Atrial

fibrillation is a devastating illness that causes avoidable strokes if left untreated. We know that people with unhealthy lifestyles are more likely to develop atrial fibrillation, and risk can be lowered through physical activity and keeping body weight under control. This study is a welcome addition to our knowledge about how to prevent atrial fibrillation."

More information: Gerhard Hindricks et al. 2020 ESC Guidelines for the diagnosis and management of atrial fibrillation developed in collaboration with the European Association of Cardio-Thoracic Surgery (EACTS), *European Heart Journal* (2020). DOI: 10.1093/eurheartj/ehaa612

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