A fetus with restricted growth will weigh less at birth and may potentially face a daunting array of health and developmental problems. In the past decades, researchers thought that low birthweight increased the risk of developing coronary heart disease later in life. However, as a team of Swedish and Canadian researchers noted in an article published in The Lancet, these results may have been influenced by factors such as genetics and early environment.

Using data drawn from the Swedish Twin Registry, which includes information on twins born in Sweden between 1886 and 1958, the research team undertook a case-control study to investigate the association between birth characteristics (birth weight, birth length and head circumference) and acute myocardial infarction (AMI). The researchers selected 132 same-sexed co-twin pairs in which one twin had suffered from AMI while the other had not. AMI subjects were also compared with 118 individually matched external twins (the researchers were unable to match external twins for all 132 AMI subjects).

When twin subjects were compared with unrelated control twins, low birthweight, birth length and head circumference were associated with an increase in AMI, a result consistent with previous studies. However, when these subjects were compared with their healthy co-twins on the above-mentioned birth characteristics, no differences were found. The study’s researchers concluded that, although there is an association between low birthweight and AMI, “our findings do not support a direct effect between fetal growth and AMI. The result suggests that genetic, maternal and environmental factors during childhood and adolescence associated with fetal growth may have influenced the previously reported associations between birthweight and AML.”

John LeBlanc, Assistant Professor of Pediatrics, Psychiatry, Community Health and Epidemiology at Dalhousie University called the study, “very well constructed” and praised the two-part structure whereby researchers used both related twins and co-twins as controls. “The main finding is in the study’s second part, where twins with AMI were compared with their healthy twin partners. If there is a risk factor for AMI in the early uterine environment, it is something that appears to be independent of restricted birthweight and must somehow affect one twin only.”

LeBlanc added that understanding the role of intrauterine growth in terms of a person’s overall lifetime health has an impact on health programs and policies. “This kind of research helps sort out where to put our priorities in terms of prevention programs,” he said.

More research in this area is critical, added Robin Walker, Professor of Pediatrics at the University of Ottawa and Chief of Neonatology at the Children’s Hospital of Eastern Ontario. “This is a very preliminary finding. You need more studies and you need larger sample numbers,” he said. However, doing this research is essential, Walker noted: “Fetal health, genetics as well as the child and adolescent environment may all be profoundly affecting adult health. We need to know more about these factors.”


DOES LOW BIRTHWEIGHT INCREASE THE RISK OF DEVELOPING CORONARY HEART DISEASE?