Growth differences during twin pregnancy have effect later in life

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A child who receives fewer nutrients in the womb than their identical twin brother or sister is more likely to have developmental problems later in life. This is what researchers from the Leiden University Medical Center (LUMC) write in *The Lancet Child & Adolescent Health*. This study shows that unfavorable conditions in the womb can lead to lifelong

adverse health effects.

The researchers looked specifically at genetically identical twins in which the shared placenta was unevenly distributed during pregnancy. This occurs in 10 to 15% of these twin pregnancies. "You can compare it to one child experiencing the Dutch hongerwinter of 1944–1945 while the other is thriving in the Bahamas," explains Jeanine van Klink, child psychologist and researcher at the Willem-Alexander Children's Hospital (WAKZ). As a result, one child is sometimes nearly double or even triple the size of the other twin at birth.

Suspicion confirmed

The research team has shown that when a child lags behind in growth during pregnancy, this has adverse effects later in life. "For this so-called LEMON study, we invited 48 pairs of twins between ages 4 and 17 with a growth difference," says Ph.D. student Sophie Groene. All of these twins were born in the LUMC. The WAKZ is the national referral center and top referral treatment center for identical twin pregnancies in which the twins share one placenta.

Groene continues by explaining that they "performed IQ tests on each of these infants and assessed their motor skills. We saw that the children who were smaller at birth, on average, scored lower in all areas of intelligence compared to their twin sibling, and we saw that they more often had mild psychomotor developmental delay." These results confirm what was often already suspected by parents and researchers. "I have been working with this group of twins for about 10 years and had always suspected that the smaller of the two developed differently in many cases. Now we have the first scientific proof that this really is the case," says Van Klink.

Keeping track of twins

According to Van Klink and Groene, this study shows that the care and attention for these twins should not stop once they leave the hospital. "It is important to keep following these children. Only then can we detect developmental problems early and offer support if needed," says Van Klink. "In addition, we can now provide the parents of these twins with better information," adds Groene.

The LEMON study is also investigating whether the difference in growth before birth affects the development of the heart and lungs. "Furthermore, we have measured the growth of these twins and are using the growth curves from the consultation office to study the growth patterns in the first years of life," says Groene. The results of these studies are expected soon.

Long-term health

The researchers emphasize that they could not have carried out this study without the commitment and involvement of the twins and their parents. "Parents share their experiences, the differences they see within the twins, but also their concerns with us. This is extremely valuable, because after all, parents know their children best," says Van Klink. "With their help, we gain more insight into the long-term health of these special twins and in turn, we can make healthcare a little better for them," concludes Groene.

More information: Sophie G Groene et al, Long-term effects of selective fetal growth restriction (LEMON): a cohort study of neurodevelopmental outcome in growth discordant identical twins in the Netherlands, *The Lancet Child & Adolescent Health* (2022). DOI: 10.1016/S2352-4642(22)00159-6

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