Medical Xpress

Fatty liver more common in children of mothers with obesity

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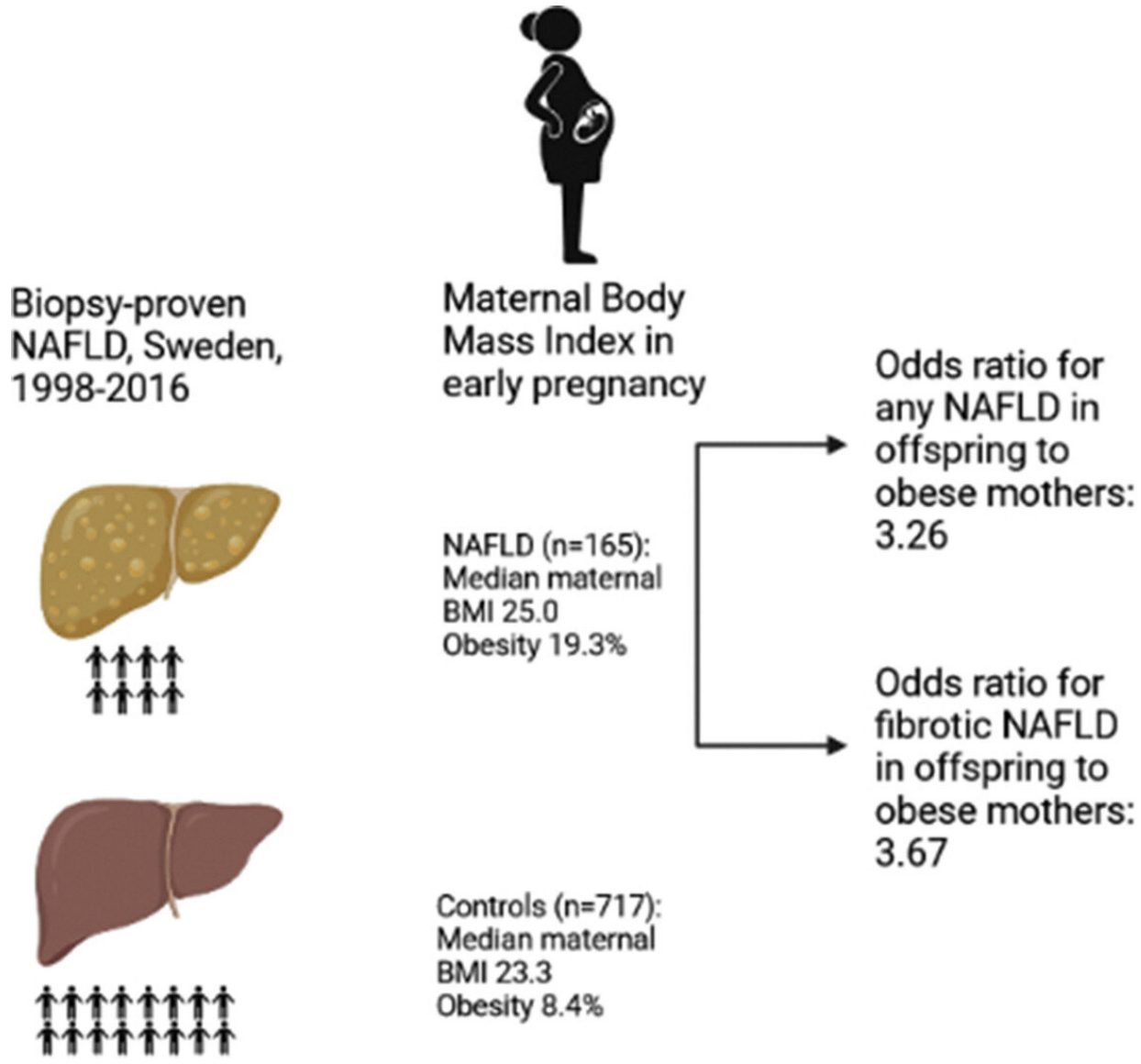

Graphical abstract: Maternal obesity has been linked to offspring NAFLD.

Credit: https://doi.org/10.1016/j.jhep.2021.06.045

Children and young people whose mothers had a BMI greater than 30 during early pregnancy are at an increased risk of fatty liver disease. This is shown in a register-based study from Karolinska Institutet and Harvard University published in the *Journal of Hepatology*. As obesity rates increase also in women at a child-bearing age, more and more young people are at risk of developing fatty liver disease, the researchers say.

"The findings are important because obesity is becoming more common at a young age, and fatty liver due to being overweight, is increasing in the world. If a tendency towards obesity and fatty liver disease can be "inherited," it can have consequences for public health," says the study's lead author dr. Hannes Hagström, associate professor at the Department of Medicine, Huddinge, Karolinska Institutet.

Through the so-called ESPRESSO study, where liver biopsies from all of Sweden's pathology departments were collected, researchers identified all children and young adults born after 1992 who, after tissue sampling, were diagnosed with non-alcohol-related fatty liver disease (NAFLD), a total of 165 individuals.

The children had a median age of 12 years, just over 60 percent were boys and nearly half had fatty liver with fibrosis. The control group consisted of children and young people without fatty liver matched by gender and age.

From the Swedish Medical Birth Register, the researchers then retrieved information about the mother's BMI (body mass index) during early pregnancy. Children of obese mothers (BMI over 30) were more than

three times more likely to be diagnosed with fatty liver disease compared to children of mothers with normal BMI during pregnancy.

The increase in risk was also seen after other important factors such as education, smoking, and the country of birth were considered.

Advice for pregnant mothers

Previous research in animals has shown that obesity in the mother can lead to changes in the fetus that are suggested to lead to a change in behavior with a greater food intake, but such research in humans is lacking. The limitations of the new study are above all the lack of data on food intake, type of diet and physical activity, as such information is not available in Swedish registers.

"We cannot say for sure whether the finding is a biological effect of maternal obesity on the growing fetus, or whether there are socio-economic explanations such as increased energy intake and an unhealthy lifestyle after birth. But in any case, expectant or future mothers with obesity should receive advice on how they can reduce the risk of the child developing fatty liver disease later in life," says dr. Hannes Hagström.

5–10 percent in the U.S.

The presence of fatty liver disease in children is not known in Sweden, but in the US it is estimated at 5–10 percent. It is mainly in line with the incidence of obesity, which is also the main risk factor for non-alcoholic fatty liver disease.

"Other research has shown that being overweight early in life increases the risk of fatty liver disease, but our study is the first to investigate the

effect of obesity over generations. Swedish registers provide unique opportunities to follow up patients over a long period of time," says the study's last author Jonas F. Ludvigsson, pediatrician and professor at the Department of Medical Epidemiology and Biostatistics, Karolinska Institutet.

Fatty liver often causes no discomfort and many people have it without knowing it, but the disease can sometimes lead to inflammation of the liver and cirrhosis of the liver. The amount of fat accumulated in the liver can be reduced by weight loss and good habits such as physical activity.

More information: Hannes Hagström et al, Maternal obesity increases the risk and severity of NAFLD in offspring, *Journal of Hepatology* (2021). DOI: 10.1016/j.jhep.2021.06.045

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