Toxic bile damages the liver

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Researchers at the Heidelberg University Hospital have discovered a new genetic disease that can lead to severe liver damage. Because a protective component of the bile is missing, the liver cells are exposed to the toxic components of the bile, resulting in cirrhosis of liver, a transformation of liver cells into connective tissue with a gradual loss of liver function. This could explain some of the cases of liver cirrhosis of unknown origin and open up a new approach for treatment. The research has now been published in the journal *Hepatolog*.

Some of the known frequent causes of cirrhosis of the liver are liver inflammation due to a virus, alcohol abuse, autoimmune disease, and metabolic defects. But in some 15 to 20 percent of patients, the cause is unknown and the appropriate treatment cannot be initiated.

The Heidelberg University Hospital team, including Dr. Daniel Gotthardt and Dr. Peter Sauer of the Gastroenterology Department and Dr. Heiko Runz and Professor Dr. Johannes Zschocke of the Institute of Human Genetics, discovered that a mutation of the ABCB4 gene can cause inadequate secretion of bile in the liver, giving rise to cirrhosis. The illness can begin in childhood or at an adult age and lead to death. The gene ensures the production of a transporter protein that is responsible for the excretion of phosphatidylcholine into bile. Phosphatidylcholine protects the liver from toxic substances in the bile; a low concentration can thus lead to liver damage.

It was already known that another mutation in the ABCB4 gene can cause severe liver disease in babies. The disease occurs only if the gene

is inherited from both father and mother. Women who carry the mutated ABCB4 gene but are not themselves affected have a clearly increased risk of suffering from pronounced jaundice during pregnancy. Genetic counseling and close supervision during pregnancy should be considered.

Source: University Hospital Heidelberg