Molecular signatures may aid fight against pediatric liver disease

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Researchers have identified a set of "molecular signatures" for biliary atresia - the most common diagnosis leading to liver transplant in children - that can help identify the progression of disease at diagnosis and predict clinical outcomes.

The Cincinnati Children's Hospital Medical Center scientists found that using traditional methods to analyze liver biopsies, only 14 of 47 infants with biliary atresia could be identified as having either inflammation or fibrosis (development of excess fibrous connective tissue). By examining the expression of the entire genome in the liver, the researchers developed a molecular signature that could classify the vast majority of the patients as inflamed or fibrotic.

"This suggests that the molecular profile at diagnosis may determine the 'stage' of liver disease through specific biological pathways that are not easily distinguishable by standard approaches," says Jorge Bezerra, M.D., a gastroenterologist at Cincinnati Children's and senior author of the study. "Infants with inflammation were younger, indicating that inflammation may reflect an earlier stage of disease - particularly given that those with fibrosis had decreased survival without transplant."

The researchers hope that, given the ability to identify how disease will progress, current treatments can be tailored to the stage of the liver disease and that new treatments can be developed.

Biliary atresia is a rare disease of the liver and bile ducts that occurs in

infants. Symptoms of the disease appear or develop about two to eight weeks after birth. When a baby has biliary atresia, bile flow from the liver to the gallbladder is blocked. This causes the bile to be trapped inside the liver, eventually causing liver failure.

More information: The study was published in Genome Medicine.

Provided by Cincinnati Children's Hospital Medical Center