Journal of Hepatology and Gastrointestinal Disorders

OPEN ACCESS Freely available online

Perspective

Immune Mediated Mechanisms and Treatment Strategies of Biliary Atresia

Michael Curley*

Department of Medicine, University of Calgary, Calgary, Canada

ABOUT THE STUDY

Biliary atresia is a rare but serious condition that primarily affects infants. It involves the progressive obstruction or absence of bile ducts, which are essential for carrying bile from the liver to the gallbladder and intestine. This blockage leads to bile build up in the liver, causing damage and eventually leading to liver failure if not treated promptly.

Immune mediated mechanisms

These mechanisms play a pivotal role in the pathogenesis of biliary atresia, although the exact triggers and processes involved remain incompletely understood. It is hypothesized that an aberrant immune response directed against the bile duct epithelium contributes to the progressive fibrosis and obstruction seen in the disease. This autoimmune hypothesis is supported by several lines of evidence.

Firstly, histopathological studies of affected liver tissues often reveal lymphocyte infiltration around the bile ducts, suggesting an active immune response targeting these structures. This inflammatory milieu is believed to initiate and perpetuate the fibrotic process, leading to bile duct obliteration over time.

Secondly, studies have identified various immune markers and cytokines that are upregulated in the liver tissues of patients with biliary atresia. These include Interleukins (*IL-2*, *IL-6*, *IL-10*), Tumor Necrosis Factor-alpha (TNF-alpha), and Transforming Growth Factor-beta (TGF-beta), which are involved in inflammation, immune modulation, and fibrosis.

Additionally, animal models of biliary atresia have provided further insights into immune-mediated mechanisms. These models often replicate aspects of the human disease, demonstrating the critical role of immune dysregulation in bile duct injury and obstruction.

Despite these observations, the specific triggers that initiate the autoimmune response in biliary atresia remain elusive. Viral infections, genetic predispositions, and environmental factors may all contribute to the breakdown of immune tolerance towards bile duct epithelial cells. Further research is needed to unravel the complex exchange between immune factors and biliary pathology, potentially leading to novel therapeutic strategies aimed at modulating the immune response and preserving liver function in affected individuals.

Treatment strategies

Hepatoportoenterostomy: The Kasai procedure, or hepatoportoenterostomy, is a surgical intervention used to treat biliary atresia in infants. During the procedure, surgeons create a bypass by connecting the bile drainage system of the liver directly to a loop of the small intestine (jejunum). This allows bile to flow from the liver into the intestine, bypassing the obstructed bile ducts.

The goal of the Kasai procedure is to establish sufficient bile flow to prevent further liver damage and improve long-term outcomes. It is most effective when performed early, ideally between the first two to three months of life. However, success rates vary, and many infants may eventually require liver transplantation due to progressive liver disease. Postoperative care includes close monitoring of liver function, nutritional support, and managing complications such as bile duct infections. Despite its limitations, the Kasai procedure remains a critical intervention in managing biliary atresia and may delay the need for liver transplantation in some cases.

Liver transplantation: It is the definitive treatment for children with biliary atresia who fail to respond to the Kasai procedure or develop end-stage liver disease. It involves taking out the damaged liver and replacing it out for a healthy liver from a deceased or living donor.

Indications for transplantation include persistent cholestasis, progressive liver failure, and complications like cirrhosis or portal hypertension. Before transplantation, rigorous evaluation assesses the child's overall health and suitability for surgery.

Although transplantation offers a chance for improved survival and quality of life, it comes with risks, including organ rejection and complications from immunosuppressive medications. Lifelong medical management is essential post-transplant to monitor graft function, manage medications, and prevent complications.

Correspondence to: Michael Curley, Department of Medicine, University of Calgary, Calgary, Canada, E-mail: curleymba173@gmail.com

Received: 08-Apr-2024, Manuscript No. JHGD-24-32922; **Editor assigned:** 11-Apr-2024, PreQC No. JHGD-24-32922 (PQ); **Reviewed:** 25-Apr-2024, QC No. JHGD-24-32922; **Revised:** 02-May-2024, Manuscript No. JHGD-24-32922 (R); **Published:** 09-May-2024, DOI: 10.35248/2475-3181.24.10.304

Citation: Curley M (2024) Immune Mediated Mechanisms and Treatment Strategies of Biliary Atresia. J Hepatol Gastroint Dis. 10:304.

Advancements in surgical techniques and immunosuppression have enhanced outcomes, but challenges remain, emphasizing the importance of early detection, prompt referral to transplant centers, and comprehensive care to optimize long-term results for these patients.