

Letter to the Editor

Sepsis and cirrhosis in pediatrics: revisiting two-hit BDL-CLP rat model and its pathological and immunological reliability

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Cirrhotic patients are significant in terms of infection. Due progressive damage and organ failure, as well as immune dysfunction, they are vulnerable to these complications. Highlighting infants with cirrhosis, the major cause is biliary atresia¹. It leads to a progressive liver failure². Many individuals undergo surgeries, most of them being submitted to liver transplantation in few years³. Spontaneous bacterial peritonitis, ascending cholangitis and bacterial translocation occur in some cases. They aggravate organic injury, which can trigger a septic condition⁴.

Motivated by these situations and experimental model studies, the Division of Pediatric Surgery proposed to study conditions overlap by a two-hit of very used animal models: bile duct ligation (BDL)⁵ and cecal ligation and puncture (CLP)⁶. The study's main hypothesis was that inflammatory biomarkers, organic injuries and clinical features had a positive and strong correlation in an integrated analysis, with worse values in two-hit. So the study aimed to develop two-hit models in young rats at different periods of cirrhosis and sepsis; to collect organs for histological slides and blood for IL-1 beta, TNF-alpha, and IL-10 stud; to use statistical tests for clinical and pathological scores, comparing the groups created.

I was one year scientific project. A total of 100 young Wistar rats (*Rattus norvegicus albinus*) from both sexes with approximately 21 days of age.

Procedures were performed in young rats after anesthesia by isoflurane inhalation and ketamine injection. Serum levels of inflammatory biomarkers like IL-1beta TNF-alpha, IL-10 interleukins were analyzed in different periods, as well as clinical scores and histopathological findings. Results indicates that two-hit models show a low survival (about 60%). There were few differences between the groups in interleukins values comparison. Two-hit had the worst organic and clinical scores. IL-10 had a high correlation with MSS ($\rho = 0.64$, $p < 0.0001$). Liver and kidney had a high correlation with MSS ($\rho = 0.65$ and 0.66 , $p < 0.0001$) and MHBS ($\rho = 0.82$ and 0.79 , $p < 0.0001$).

As conclusion, the model was a simple and useful tool to study conditions overlap in young rat, despite interleukins do not show a clear pattern. Although it represents a severe state, it may require improvements to stratify the diseases.

Conflicts of Interest Disclosures: the researchers claim no conflicts of interest

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