

**The relevance of intestinal dysbiosis in liver transplant candidates.**

Grąt M<sup>1</sup>, Hołówko W, Wronka KM, Grąt K, Lewandowski Z, Kosińska I, Krasnodebski M, Wasilewicz M, Gałęcka M, Szachta P, Zborowska H, Patkowski W, Krawczyk M.

**Author information**

**Abstract**

**BACKGROUND:**

The gut microbial ecosystem plays an important role in the pathogenesis of liver diseases. However, the association of microbial community structure with the severity of liver dysfunction is not completely understood.

**METHODS:**

Fecal microflora was assessed in 40 patients with liver cirrhosis listed for primary liver transplantation (LT). Independent associations between fecal microbial counts and serum bilirubin, serum creatinine, international normalized ratio (INR), and the Model for End-stage Liver Disease (MELD) score were established in multiple linear regression models.

**RESULTS:**

Bifidobacterium (standardized regression coefficient [ $s\beta$ ] = -0.549;  $P < 0.001$ ), Enterococcus ( $s\beta = 0.369$ ;  $P = 0.004$ ), and yeast ( $s\beta = 0.315$ ;  $P = 0.018$ ) numbers were independently associated with serum bilirubin, while Escherichia coli counts ( $s\beta = 0.318$ ;  $P = 0.046$ ) correlated with INR, and Bifidobacterium counts ( $s\beta = 0.410$ ;  $P = 0.009$ ) with serum creatinine. Only Bifidobacterium ( $s\beta = -0.468$ ;  $P = 0.003$ ) and Enterococcus ( $s\beta = 0.331$ ;  $P = 0.029$ ) counts were independent predictors of the MELD score.

Bifidobacterium/Enterococcus ratio, proposed as a measure of pre-LT gut dysbiosis, was significantly related to the MELD score following the adjustment for the absolute Bifidobacterium ( $s\beta = -0.333$ ;  $P = 0.029$ ) and Enterococcus ( $s\beta = -0.966$ ;  $P = 0.003$ ) numbers. This pre-transplant dysbiosis ratio (PTDR) was significantly correlated with Enterococcus ( $R = -0.897$ ;  $P < 0.001$ ) but not with Bifidobacterium ( $R = 0.098$ ;  $P = 0.546$ ) counts. Among the other components of gut microflora, only hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>)-producing Lactobacillus strains significantly influenced Enterococcus counts ( $s\beta = 0.349$ ;  $P = 0.028$ ) and PTDR ( $s\beta = -0.318$ ;  $P = 0.046$ ).

**CONCLUSION:**

While the abundance of both Bifidobacterium and Enterococcus is related to liver dysfunction, the size of the Enterococcus population seems to be the most important determinant of pre-LT gut dysbiosis in cirrhotic patients. The H<sub>2</sub>O<sub>2</sub>-producing Lactobacillus strains potentially ameliorate this dysbiotic state.

**KEYWORDS:**

Bifidobacterium; Enterococcus; Model for End-stage Liver Disease; gut microbiota; liver cirrhosis; liver transplantation

PMID:

25728703

[PubMed - in process]