

肝臟移植術中肝臟阻力計算  
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**The Correlation of Hepatic and Systemic Hemodynamics during Liver Transplantation: Quantification of Hepatic Resistance as an Actual Value**

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**Purpose:**

The correlation between portal vein pressure (PVP) and flow (PVF) has not been established, and there is still lack of consensus about the optimal hemodynamics during liver transplantation (LT). We aimed to establish the correlation between systemic and hepatic hemodynamics during LT by applying the hepatokinetic power hypothesis, based on the law of energy conservation and hydrodynamics.

**Materials and Methods:**

A total of 103 adult liver transplant recipients were enrolled in this study from September 2012-December 2014. Systemic and hepatic hemodynamics were assessed intra-operatively to calculate the hepatokinetic power status. Severe surgical complications (Clavien-Dindo grade $\geq$ III) were recorded as the main outcome measure, and potential covariates were evaluated including recipient, donor, donor-recipient match, surgery-related factors, conventional hemodynamics, and the intra-operative hepatokinetic power profile.

**Results:**

In multivariate analysis, hepatokinetic power gradient $>4260$  mL mmHg min $^{-1}$ 100 g graft weight $^{-1}$  (P=0.001), 2.2 $<$ ratio of hepatokinetic power from the portal vein to the hepatic artery $\leq 8.7$  (P=0.012), and hepatic resistance of partial grafts $\leq 0.006$  or  $>0.015$  min mmHg mL $^{-1}$  (P=0.012) were associated with a higher risk. None of the conventional hemodynamic parameters, such as PVP, PVF and hepatic venous pressure gradient, entered into this regression model (c-statistic=0.916) when competing with hepatokinetic power indexes.

**Conclusion:**

The hepatokinetic power hypothesis clarifies the correlation of systemic and hepatic hemodynamics in a simple, rational manner. The hepatic resistance, derived from the hepatokinetic power equation, can be quantified and has an effect on the incidence of severe surgical complications. This finding offers a new objective clinical approach to evaluate graft quality during transplantation.