

Early Allograft Dysfunction to Assess the Liver Function following Liver Transplantation

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Background: Early allograft dysfunction (EAD) can be used as a tool to assess function of the liver after transplantation. Currently, most accepted EAD definition can be defined using a number of criteria including but not limited to total bilirubin > 10 mg/dL on post-operative day 7, INR > 1.6 on post-operative day 7, and ALT or AST > 2000 IU/L within the first post-operative 7 days. EAD is associated with mortality and morbidity after liver transplantation which leads to decreased recipient survival rates. It is considered a precursor step in the pathway to eventual graft loss.

Methods: We have performed a literature review to understand what risk factors increase, including donor and recipient demographics as well as recipients' MELD (Model for End Stage Liver Disease) scores, which predicts patients' disease severity. We also compared the incidence of EAD between our center and the literature.

Results: We found that incidence of EAD was between 23-40% (Table 2). It is higher when livers from donation after circulatory death (DCD) donors were used, as expected.

Reference (year)	Number of patients	Incidence of EAD
Ekser et al (2019)	n = 2008	29%
Olthoff et al (2010)	n = 300	23%
Wadei et al (2015)	n = 1325	27%
Lee et al (2014)	n = 205	39.5% (DCD donors)

Risk factors that can result in an increase occurrence of EAD were; (i) donor age, (ii) liver stenosis, (iii) expanding criteria for donor livers, (iv) prolonged warm ischemia time (WIT) and (v) cold ischemia time (CIT). Histologically, hepatocellular damage that is shown as coagulative necrosis can be seen immediately after reperfusion.

Conclusions: During our literature review, potential strategies have been discovered to help prevent EAD including pharmacological treatment using glucose, antioxidants, anti-inflammatories, and apoptotic drugs. Although none of them significantly prevented the occurrence of EAD, it was clear that there are many tools that can be used to attempt to prevent EAD in order to offer a better outcome in patients undergoing liver transplantation.