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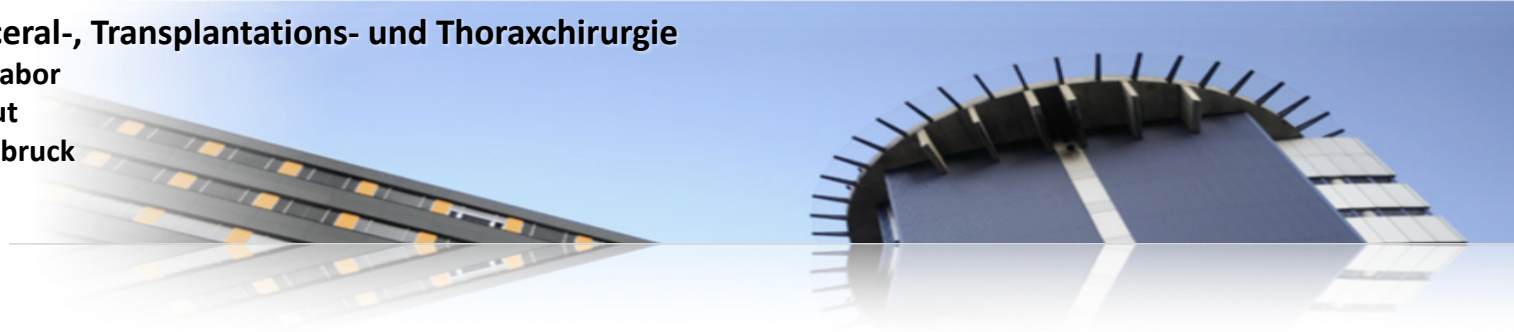

The changes of transaminases, LDH and pH-levels during Normothermic machine preservation correlate with early allograft dysfunction

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BACKGROUND

- Normothermic machine preservation of the liver has become an established tool to preserve livers in a near physiological environment prior to transplantation
- Elevated liver enzymes are clinically accepted biomarkers predicting graft survival
- Our aim was to analyze perfusate markers and the occurrence of **early allograft dysfunction * (EAD)**

* defined as the presence of one or more of 1) bilirubin ≥10mg/dL on day seven, 2) INR≥1.6 on day seven, and 3) ALT, AST >2000 IU/L within the first seven days after liver transplantation

Olthoff KM, Kulik L, Samstein B, Kaminski M, Abecassis M, Emond J, et al. Validation of a current definition of early allograft dysfunction in liver transplant recipients and analysis of risk factors. Liver Transpl. 2010 Aug;16(8):943–9.

Study Design, Demographics

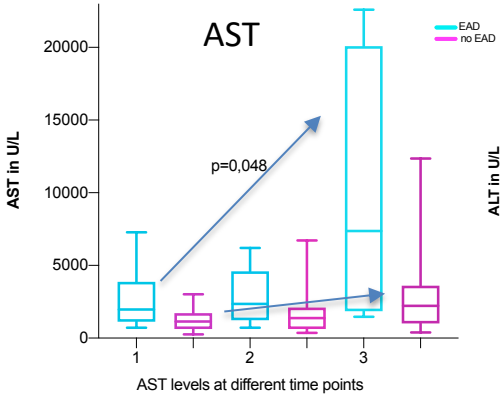
- Retrospective single center analysis
- All NMP performed between 02/2018 – 10/2019 (n=53)
  - Transplanted after NMP (n=42)
  - Declined after NMP (n=11)
- Perfusates from all livers preserved on NMP-device were collected at different time points during perfusion

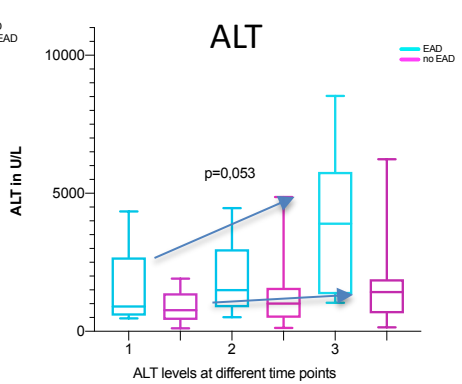
Table 1 Demographics and outcome in NMP livers (n=42) with and without EAD

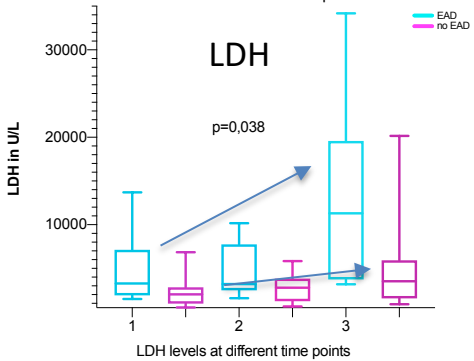
Characteristics	EAD (n=12)	No EAD (n=30)	p-value
Recipient age in years	59.9±10.5	59.8±10.3	0.928
Recipient BMI (kg/m2)	25.6±4.3	25.7±4.5	0.401
Donor age in years	57.3±15.7	56.2±15.9	0.428
Donor BMI (kg/m2)	27.3±3.4	27.2±3.5	0.188
NMP time (h)	14.9±6.8	15.1±6.9	0.654
Overall preservation time (h)	21.5±7.2	21.3±7.1	0.789
CIT (h)	6.4±2.4	6.4±2.3	0.791
ECD (n, %)	10(83.4%)	17(56.7%)	n.a.
DCD (n, %)	1(8.3%)	3(10%)	n.a.
Outcome			
90-days readmission rate (n,%)	3(25%)	9(30 %)	n.a.
Overall patient and graft survival (n, %)	10 (83.3%)	27 (90%)	n.a.

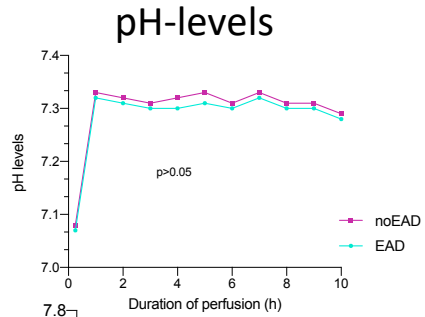
Cardini B, Oberhuber R, Fodor M, et al. Clinical Implementation of Prolonged Liver Preservation and Monitoring Through Normothermic Machine Perfusion in Liver Transplantation. Transplantation. 2020

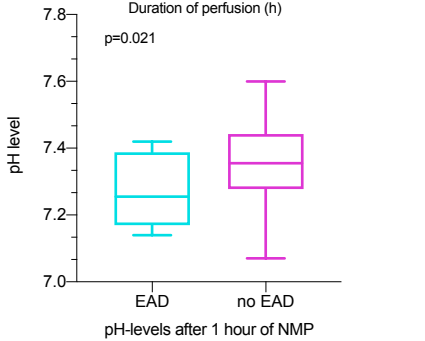
RESULTS


AST
EAD
no EAD
AST in U/L
20000
15000
10000
5000
0
p=0,048
1
2
3
AST levels at different time points


ALT
EAD
no EAD
ALT in U/L
10000
5000
0
p=0,053
1
2
3
ALT levels at different time points


LDH
EAD
no EAD
LDH in U/L
30000
20000
10000
p=0,038
1
2
3
LDH levels at different time points


pH-levels
pH levels
7.4
7.3
7.2
7.1
7.0
p>0.05
0
2
4
6
8
10
Duration of perfusion (h)
noEAD
EAD


pH level
7.8
7.6
7.4
7.2
7.0
p=0.021
EAD
no EAD
pH-levels after 1 hour of NMP

Conclusion

- Testing viability using perfusate parameters over time is possible
- Increased transaminases, LDH as well as lower pH-levels at the beginning of perfusion have to be considered as important factors correlating with EAD
- Future comparisons with perfusate levels of discarded NMP livers will shed more light in to viability assessment of livers

Danke für Ihr Interesse

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