The Implications of A Low Anaerobic Threshold in Liver Transplant Patients

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Introduction

- Cardiopulmonary exercise testing (CPET) is routinely used to assess patients prior to liver transplantation.
- A low anaerobic threshold (AT), <9ml/min/kg, has been associated with prolonged hospitalization and increased mortality following liver transplants (1, 2, 3)
- Other CPET outcomes, such as peak oxygen consumption (VO_2) <60%, have also been associated with worse outcomes (4, 5)
- In light of the current donor shortage, there is a need to identify patients who would benefit most from a transplant.

Aims

- Assess the outcomes of patients having a liver transplant with an AT < 9ml/min/kg.
- Assess the correlation between CPET variables and outcomes following liver transplantation.

Key Findings

- ***A low AT is not associated with worse outcomes following liver transplantation***
- ***Increasing age causes significantly increased mortality***
- ***Peak VO_2 and Peak Power achieved in CPET may be helpful in predicting outcomes***

Methods

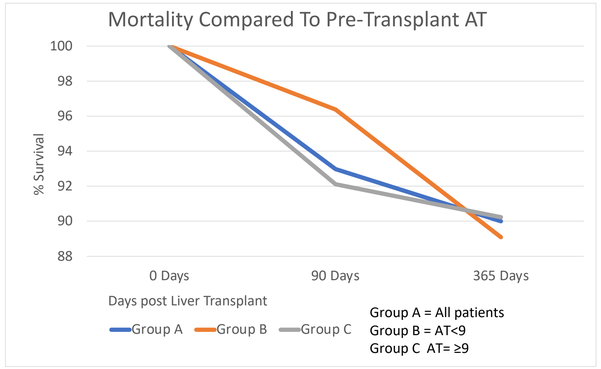
- The study was carried out at St James' University Hospital Leeds.
- All liver transplant patients between 1/1/2013-31/12/17 who completed CPET prior to transplant were retrospectively analysed.
- Outcomes were compared for patients with an AT of <9 and those with an AT ≥9.
- Statistical analysis was performed using Stata
- A p value of <0.05 was considered significant

Results

292 patients performed CPET prior to liver transplantation

- 270 patients reached the AT
  - 55 had an AT <9
  - 215 had an AT ≥9

Survival Following Liver Transplantation



No statistically significant difference in 90 day and 1 year mortality was found between patients with a low and normal AT

- No significant correlation between AT and length of ICU or hospital stay was found

90-day and 1-year mortality was significantly higher in older patients regardless of AT

In Patients with AT ≥9:

- Non-surviving patients at 90-days and 1-year had significantly higher peak VO_2 than survivors

Association of Other CPET Variables with Outcomes

Variables	Spearman Rank Value	P Value
Peak VO_2 vs. length of ICU Stay	-0.169	0.005
Peak Power (watts) vs, length of ICU stay	-0.161	0.0077
Peak Power (watts) vs. length of hospital stay	-0.262	0.0001

Conclusions

- A low AT was not found to affect outcomes, contrary to other studies
- Peak VO_2 consumption may be associated with mortality, further research is needed
- Peak VO_2 and Peak Power (watts) are negatively associated with length of ICU and length of hospital stay

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