High- vs. Low-Dose Steroid Therapy Regimens for Organ Donor Management
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INTRODUCTION

- Optimizing donor organs is a critical process in ensuring maximal yield for transplantation.
- Brain death triggers a pro-inflammatory cascade that can damage vital organs.
- Steroids have been used as part of "hormonal resuscitation" to improve hemodynamic stability, lung function, glucose control, and especially insulin requirements.
- There is concern that such "blasts" of steroids likely exacerbate hyperglycemia and increase insulin requirements, which may not be required to maintain adequate hemodynamic stability, lung function, and insulin control.
- Our objective was to determine if a low-dose steroid regimen could achieve better glucose control and insulin requirements while maintaining acceptable hemodynamic stability, lung function, and yield.

METHODS

Objective - To compare the use of a low-dose (LD) steroid protocol to the traditional high-dose (HD) regimen in unstable donors.

Methods - We conducted a prospective, randomized, double-blind study comparing a low-dose steroid protocol to the traditional high-dose regimen. Donors were randomized to either the LD or HD protocol prior to brain death. Glucose control and insulin requirements were monitored throughout the procurement process.

RESULTS

- Prior to February 2009, all donors managed by MTS received IV methylprednisolone 100 mg/kg as part of "hormonal resuscitation" to improve hemodynamic stability, lung function, glucose control, and especially insulin requirements.
- We conducted a multivariate logistic regression analysis to determine important factors that might influence lung yield. Post-hoc analysis was done for glucose control and insulin data excluding diabetics.
- We analyzed 132 management protocol from 15 mg/kg methylprednisolone.
- Results showed that patients were off insulin drips after excluding diabetics (53% vs. 74%, p=0.02).

REFERENCES


Table 1. Baseline characteristics of subjects

Table 2. Clinical parameters in high- and low-dose subjects

RESULTS (cont’d)

- The groups were balanced except for a higher baseline P O₂ (46% vs. 39%) at time of procurement. Lung recovery was higher in LD (32% vs. 24%) (p=0.011). Overall organ yield was higher in LD (27% vs. 22%) (p=0.08).
- Because one of our endpoints was lung function, we excluded patients over the age of 65 to reduce bias that could be introduced by those whose lung potential is low.
- Table 2 shows the clinical parameters in high- and low-dose subjects.

CONCLUSIONS

- Low-dose steroid regimens lead to better lung recovery and organ yield.
- Factors like positive sepsis and P O₂ response in determining whether a lung would be transplanted, whereas the steroid regimens were not evaluated.
- Our data suggests that low-dose steroids may improve glucose control without increasing insulin requirements.
- Further follow-up is required to determine if these differences impact long-term organ function.

ABSTRACT

Objective: To determine if a low-dose steroid regimen could achieve better glucose control and insulin requirements while maintaining acceptable hemodynamic stability, lung function, and yield.

Methods: To compare the use of a low-dose (LD) steroid protocol to the traditional high-dose (HD) regimen in unstable donors.

RESULTS

- Prior to February 2009, all donors managed by MTS received IV methylprednisolone 100 mg/kg after declaration of brain death (HD). After a change in MTS protocol, all donors received IV methylprednisolone 15 mg/kg after declaration of brain death.
- Baseline data collected included age, gender, race, history of diabetes mellitus, sepsis, and high-risk status. Glucose levels, P O₂, and pressure requirements were determined at declaration and at time of procurement. At time of organ procurement, final insulin requirements were determined. Organ donation was determined and details extracted (including specific organs harvested and immunocompatibility for long and short from the HD and LD groups).
- We analyzed 132 management protocol from 15 mg/kg methylprednisolone.
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REFERENCES