Donor sepsis is not a contraindication to cadaveric organ donation

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Received 21 April 1997 and in revised form 13 August 1997

Summary

Systemic donor infection is regarded as being an absolute contraindication to cadaveric organ donation for transplantation. This is largely due to fear of transmitting pathogenic organisms to the immunosuppressed recipient. However, due to the current shortage of organs available for transplantation, clinicians are faced with the option of using organs from 'non-ideal' donors, such as those patients with documented evidence of infection. We report the successful outcome of six orthotopic liver transplants, 11 renal transplants, one combined heart lung transplant and one simultaneous kidney and pancreas transplant with organs from eight donors in whom bacterial meningitis (n=7) and acute bacterial epiglottitis (n=1) were the antecedent causes of death.

Introduction

Transplantation dogma dictates that an infectious cause of donor death is an absolute contraindication to cadaveric organ transplantation. However, the chronic shortage of organs available for transplantation requires reappraisal of this policy. Between January 1990 and February 1995, we successfully retrieved and transplanted six livers, 14 kidneys, one combined heart/lung graft and one pancreas graft from eight donors in whom the terminal illness was documented as bacterial meningitis or acute bacterial epiglottitis (Table 1). The cause of donor death was culture-proven infection in all cases. The mean donor age was 7.5 years (range 2–20 years). One donor (age 2 years) was diagnosed as Down’s syndrome from birth. The remaining donors had no significant antecedent past medical history. The average duration of ventilation prior to declaration of brain death was 2.5 days.

Methods

Confirmatory cultures of the infecting organism were available in all cases prior to organ retrieval, and maximal antibiotic therapy was instituted for at least 48 h. All potential donors were required to be afebrile at the time of organ retrieval with negative blood culture results. The organs were perfused in situ and cold-stored in either EuroCollins or UW solution at 4 °C. Prior to transplantation, the perfusant fluid was cultured microbiologically. Standard transplantation technique was performed, with the exception of those kidneys retrieved from two infant donors. These kidneys were transplanted as an en bloc unit into two adult recipients. All recipients

Table 1 Donor characteristics

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>n</th>
<th>Mean age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meningococcal meningitis</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Pneumococcal meningitis</td>
<td>2</td>
<td>3.8</td>
</tr>
<tr>
<td>Haemophilus influenzae meningitis</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Haemophilus influenzae acute epiglottitis</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

The cause of donor death was culture-proven infection in all cases.
were immunosuppressed post-transplantation, and no modifications to standard local immunosuppressive protocols were made. Standard post-transplantation anti-microbial therapy was instituted in all cases.

Results

None of the recipients developed meningococcal, pneumococcal or *H. influenzae* infection post-transplantation. After a mean follow-up period of 26.6 months, the actual graft survival rates of the kidney, liver and pancreatic allografts are 85%, 75% and 100%, respectively. The recipient of one of the liver grafts and the combined heart-lung allograft recipient died 6 months post-transplantation due to graft rejection.

Discussion

Transplantation is severely restricted by the supply of available donor organs. This has forced clinicians to explore the feasibility of transplanting organs previously considered as unsuitable. Retrieval of organs from paediatric donors\(^5\)\(^6\) or elderly donors\(^7\)\(^8\) and donors with premorbid disease such as hypertension\(^9\) and non-insulin dependent diabetes mellitus\(^10\) are now being considered where previously they were rejected. To our knowledge however, transplantation of organs from donors who died of infectious causes such as those we describe herein has not been previously recorded. Exclusion of this group of potential donors, the majority of whom would otherwise be considered as ‘ideal’ is the result of a previously untested theory.

Many bacterial organisms including *Neisseria meningitidis*, *Streptococcus pneumoniae* and *Haemophilus influenzae* are susceptible to unfavourable environment changes, including extremes of temperature.\(^11\) We believe that intensive treatment of the potential donor with appropriate antibiotics to prevent bacteraemia, in addition to perfusion and storage of organs at 4 °C prior to transplantation, effectively excludes the risk of transmitting these organisms to the recipient. From the successful outcome of the cases described, we conclude that selected transplantation of organs from clinically infected donors can indeed be safely achieved. These potential donors should no longer be excluded as ‘unsuitable’ for transplantation.

References