Early peri-operative hyperglycaemia and renal allograft rejection in patients without diabetes

ABSTRACT

Hyperglycaemia is associated with an increased risk for allograft rejection. This is consistent with similar findings in patients with diabetes. We hypothesise a causal link concordant with epidemiological and in vitro evidence and propose further clinical research.

INTRODUCTION

Background Hyperglycaemia is common following renal transplantation. Aside from patients with diabetes, many dialysis patients have impaired glucose tolerance and much of the standard post-transplant management is diabetogenic. Recent data has demonstrated that patients with diabetes are at increased risk for allograft rejection. We have recently described how glycaemic control correlates with allograft rejection in patients with diabetes, raising the possibility of a causal association between peri-operative hyperglycaemia and allograft rejection. Transplantation is a unique situation where naive tissue may be suddenly subjected to a hostile hyperglycaemic environment. Acute rejection is thought to be initiated in the early postoperative period by antigen presentation, possibly in response to allograft inflammation and injury. Acute hyperglycaemia is known to enhance ischaemic injury, antigen presentation, apoptosis, and augment the inflammatory response. We hypothesise that exposure of allograft tissue to hyperglycaemia could influence the risk for rejection, not only in diabetes, but in any patient with an elevated glucose. This study investigates the relationship of peri-operative hyperglycaemia to acute rejection in patients without diabetes.

CONCLUSION

Conclusions This, and previous studies by us, have shown that patients with early hyperglycaemia, whether diabetic or not, have an increased risk for allograft rejection. While hyperglycaemia is not the only risk for allograft rejection, it is both common and eminently susceptible to intervention. There are sound reasons why sugars should be tightly controlled following transplantation in patients with diabetes. Further, we believe the prevention of early hyperglycaemia and attention to insulin resistance may also serve to reduce allograft injury and decrease rejection episodes in patients without diabetes. Further research is needed to determine if such interventions can improve transplant outcomes.