Correspondence

Letter by Deutsch and Kaczmarek Regarding Article, “Donor Pretreatment With Hypertonic Saline Attenuates Primary Allograft Dysfunction: A Pilot Study in a Porcine Model”

To the Editor:

We read with great interest the article by Badiwala et al describing donor pretreatment with hypertonic saline as being effective in attenuating primary allograft dysfunction in an experimental porcine heart transplant model. The positive influence of hypertonic saline on enhanced ventricular recovery after storage-related ischemia-reperfusion injury and subsequent transplantation was ascribed to an improvement of early hemodynamics and beneficial immunomodulatory and vasculomodulatory effects.

A work published by Harada and associates might explain the early positive hemodynamic effects. Postischemic dysfunction after short-term global ischemia in isolated blood-perfused dog hearts was caused by a decreased responsiveness of the contractile elements to intracellular Ca\(^{2+}\). The decreased responsiveness was induced by intracellular Ca\(^{2+}\) accumulation. Extracellular hypernatremia during early reperfusion was associated with an improved responsiveness of contractile elements to intracellular Ca\(^{2+}\), probably by preventing the increase in intracellular Ca\(^{2+}\), which suggests that Na\(^{-}\)-H\(^{+}\) and Na\(^{-}\)-Ca\(^{2+}\) exchange processes play important modulatory roles during organ reperfusion.

Whether the promising observations in the experimental model translate into a clinically relevant benefit in human heart transplantation would be interesting and remains to be investigated. Because brain death results in an impairment of cerebral regulatory processes, which leads to an early depletion of antidiuretic hormone and the development of central diabetes insipidus due to anterior and posterior pituitary failure, the clinical consequences are characterized by inappropriate diuresis, hypovolemia, hyperosmolality, and severe hypernatremia. The decreased responsiveness was induced by inappropriate diuresis, hypovolemia, hyperosmolality, and serum sodium levels that often range above physiological values. After initial studies reported a negative association of donor sodium levels with outcome after liver transplantation (as mentioned by the authors) and even after heart transplantation, we analyzed a potential clinical correlation of donor sodium levels on outcome after heart transplantation in a retrospective single-center study that included 336 heart transplant recipients and a subsequent multicenter study that included 1800 heart transplant recipients. In our opinion, clinical studies that investigate posttransplant effects of hypertonic saline to potentially optimize early organ recovery after reperfusion should be encouraged.

Disclosures

None.

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References

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