

HEPATIC ARTERY THROMBOSIS

Hepatic artery thrombosis (HAT) is the most common vascular complication after liver transplantation, occurring in 2–5% of liver transplant recipients. As such, HAT is a major cause of morbidity and graft loss after liver transplantation. In many instances, HAT occurs soon after surgery for technical reasons, but HAT can also occur several months after transplantation due to factors such as graft rejection or sepsis. Zoe Stewart and colleagues now show that donor age is associated with late graft loss induced by HAT.

The researchers identified 1,246 patients with graft loss caused by HAT from the United Network for Organ Sharing database of adult deceased donor liver transplants from 1987 to 2006 and performed univariate and multivariate analyses to identify donor and graft risk factors. “Previous studies have mostly been performed in one center with a small number of patients, so they were underpowered to find the predisposing factors that led to HAT, such as the use of older donors”, explains Andrew Cameron, the corresponding author on the study.

Univariate log regression analysis showed that recipients who had undergone a previous transplant, were ventilator dependent, or received a split graft, had a significantly increased risk of graft loss from HAT. The donor risk index—for which donor age is a dominant feature—was also predictive of graft loss from HAT.

Characteristics independently associated with increased risk of graft loss from HAT were donor death from an intracerebral hemorrhage, donor age ≥ 50 years, recipients with a history of a previous transplant and patients receiving a split graft. Donor age ≥ 50 years was strongly associated with an increased risk of graft loss from late HAT (>90 days after transplantation; relative risk [RR]=1.94, $P<0.001$), but not from early HAT (RR=1.14, $P=0.067$). By contrast, previous transplantation (RR=1.3, $P=0.001$) or receiving a split graft (RR=1.63, $P=0.03$) were specifically associated with an increased risk of graft loss from early HAT (≤ 90 days after transplantation).

In a separate analysis, the investigators analyzed 7,438 patients who had received allografts from donors ≥ 60 years of age. The incidence of graft loss from HAT was 2.7% for donors aged 50–59 (RR=1.35, $P<0.001$), 3.0% for donors aged 60–69 (RR=0.52, $P<0.001$) and 3.2% for donors ≥ 70 years of age (RR=1.61, $P<0.001$).

This study included the largest cohort of patients with HAT reported in the literature to date. The finding that donor age ≥ 50 years is associated with late HAT suggests that the increased risk could be secondary to factors intrinsic to the graft vasculature, as most early HAT is related to technical factors and vessel caliber.

There is a trend in the USA, where this study was conducted, towards the use of older donors. In 1990 only 13% of donors were >50 years of age, but by 2005 $>40\%$ of donors of liver allografts were >50 years of age. “The implications of our findings are that as we use more and more older donors we might have to use more aggressive surveillance strategies to identify patients with impending HAT, or even anticoagulate our patients who are at high risk for HAT”, comments Cameron. Additional studies are needed to assess if patients receiving allografts from donors >50 years of age would benefit from postoperative antiplatelet therapy to help reduce the risk of graft loss from HAT.

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