

Transplantation

LETTERS TO EDITOR

THE EFFECT OF PRESERVATION FLUID ON THE BLOOD FLOW OF PEDIATRIC LIVER ALLOGRAFTS¹

In a recent report by Todo et al. on the superior preservation qualities of the so-called UW solution, a reduced incidence of hepatic artery thrombosis in the UW livers was noted (1). It has been speculated that suppression of the hypothermia-induced cellular swelling is one explanation for the superiority of UW (1-4), and if so this advantage would extend to the vascular endothelium. We have investigated the effect of preservation fluid on the blood flow characteristics of 36 pediatric livers transplanted to 29 recipients. Twenty-four of the grafts were preserved in Euro-Collins solution prior to October 1987, and the other 12 were preserved thereafter in UW solution. The case selection was made primarily according to the availability of the flow probes or personnel, and not because there was questionable blood flow or because there had been technical difficulty in hepatic arterial reconstruction.

There were no significant differences in the Euro-Collins and the UW groups in age, sex, body weight, indication for transplantation (native disease was biliary atresia in 70% of the recipients), or the type of arterial reconstruction. Cold ischemia times were 367 ± 63 (SD) minutes in the Euro-Collins group versus 466 ± 144 (SD) minutes in the UW group ($P < 0.02$). Blood flows in the hepatic artery and portal vein were measured with a square-wave electromagnetic flowmeter (Cliniflow II, Model FM701D, Carolina Medical Electronics Inc., King, NC) immediately prior to bile duct reconstruction. Details of blood flow measurements are described elsewhere (5). None of the patients studied demonstrated hemodynamic instability at the time of flow measurement. The Mann-Whitney *U* test was used for statistical analysis in this study.

The total liver blood flow and the portal venous flow were not statistically significantly different in the two study groups. However, the hepatic arterial flow (ml/min/kg body weight) was greater in the UW livers than in livers preserved in Euro-Collins solution ($P < 0.02$). This information is summarized in Figure 1, which also shows the disparity in the frequency of hepatic artery thrombosis. Only one of the 12 hepatic arteries in the UW group thrombosed, compared with 9 of 24 in the Euro-Collins group. These findings support the hypothesis that protection of the microvasculature and maintenance of arterial flow contribute to a reduced rate of arterial thrombosis.

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¹This work was supported by Research Grants from the Veterans Administration and Project Grant Am 29961 from the National Institutes of Health, Bethesda, MD.

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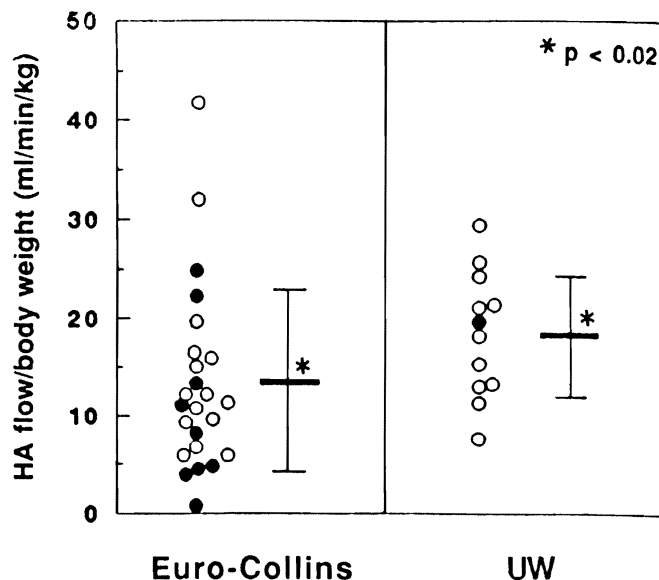


FIGURE 1. Comparison of hepatic artery flow (ml/min/kg body weight): UW versus Euro-Collins. Patent hepatic artery (○); thrombosed hepatic artery (●) (* $P < 0.02$ (Mann-Whitney *U* test).

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