

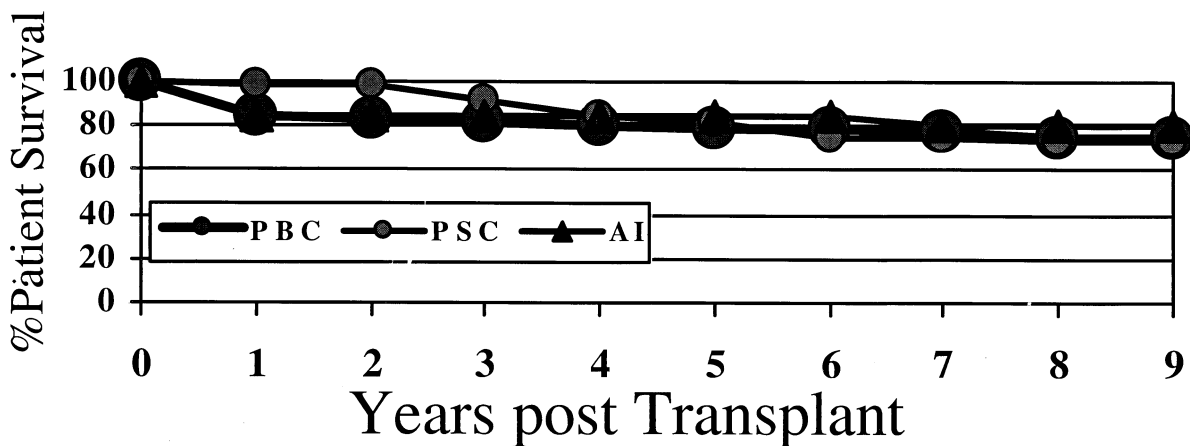
Steroid Withdrawal Under Tacrolimus for Primary Biliary Cirrhosis, Primary Sclerosing Cholangitis and Autoimmune Hepatitis After Liver Transplantation and Long-Term Survival

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END-STAGE liver failure from primary biliary cirrhosis (PBC), primary sclerosing cholangitis (PSC), and autoimmune hepatitis (AIH) are well recognized indications for liver transplantation (LT). Recurrence of autoimmune process in PBC, PSC, and AIH after LT is well recognized. Continuous small dose of steroids has been suggested to prevent the recurrence of disease. The long-term use of steroids obviously has disadvantages and it is generally accepted to avoid use of steroids as much as possible. The aims of the present study are to examine the

long-term outcomes after LT for PBC, PSC, and AIH using tacrolimus and to review the requirements on when to use steroids.

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| | Bili.mg/dl | AST u/ml | ALT u/ml | Alk Po4 u/ml | GGTP u/ml |
|-----|---------------------|-----------------------|-----------------------|---------------------|-------------------------|
| PBC | 0.6 _{-0.2} | 43.8 _{-53.5} | 50.4 _{-47.1} | 170 ₋₁₅₃ | 112.9 _{-130.8} |
| PSC | 0.6 _{-0.2} | 32.3 ₋₃₁ | 49.5 ₋₄₇ | 172 ₋₂₀₆ | 94 ₋₈₃ |
| AI | 0.7 _{-0.3} | 32 ₋₁₁ | 38 ₋₁₆ | 119 ₋₄₄ | 132 ₋₉₂ |

Fig 1. (Top) Actuarial patients survival for PBC, PSC, and AIH. (Bottom) Current mean values indicative of liver function.

PATIENTS AND METHODS

Between August 1989 and December 1992, 168 patients underwent LT for PBC ($n = 83$), PSC ($n = 60$), and AIH ($n = 25$). All patients were studied until March 2000. The mean follow-up time was 8.8 ± 0.7 years (median: 8.9 years; range: 7.2 to 10.5 years). The patients baseline immunosuppression was examined retrospectively. The immunosuppressive protocol and use of steroids have been described before.¹

RESULTS

Survival

During the follow-up period, 43 patients died while 26 underwent retransplantation for primary nonfunction ($n = 14$), hepatic artery thrombosis ($n = 4$), biliary complications ($n = 4$), acute /chronic rejection ($n = 3$), and de novo hepatitis C viral infection ($n = 1$). Overall actuarial patient survival was 74.9% at 9 years. This has been shown in Fig 1 (top) for PBC, PSC, and AIH.

Use of Steroids

In all patients, steroids were withdrawn at some time after LT. However, in 31 patients (24.8%), steroids were reintroduced for recurrence of disease (18 [29%] for PBC, 6 [30%] for AIH, and 7 [16.2%] for PSC). All patients showed improvement in their biochemical profile after reintroduction of steroids. In addition, 6 patients (13%) with PSC received steroids to control colitis. The current mean

biochemical profile indicative of liver function for PBC, PSC, and AIH is shown in Fig 1 (bottom).

DISCUSSION

We have previously reported the use of steroids with tacrolimus for the long term in children and adult liver transplant recipients.^{2,3} Based on our experience, we think that all patients should be given the opportunity to withdraw the steroids regardless of their primary diagnosis. In the event of recurrent acute rejection or the recurrence of the autoimmune process, steroids can be reintroduced with no risk of graft loss. Biochemical changes reversed on the reintroduction of steroids.

CONCLUSION

The 9-year actuarial patient survival for PBC, PSC, and AIH is 76.7%, 73.2%, and 80%, respectively. Maintenance steroids are not necessary in all patients. Of this group of patients, 24.8% required reintroduction of steroids due to a recurrent autoimmune process with a satisfactory response without affecting risk to the allograft.

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