



# EFFECT OF AGE ON SURVIVAL AFTER PEDIATRIC SOLID ORGAN TRANSPLANTATION

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## INTRODUCTION

Solid organ transplantation (SOT) has become the treatment of choice for end-stage organ failure with improved short- and long-term survival rates. Lifelong immunosuppressive regimen exposure children to side effects over decades, and thus the consequences may appear not until adulthood. The aim of the present study was to investigate long-term mortality of patients who underwent solid organ transplantation during childhood and identify causes of death.

## METHODS

In this register-based study, all pediatric patients who underwent kidney (KTx), liver (LTx) or heart (HTx) transplantation between 1982 and 2015 in Finland were studied. Overall, 233 transplant recipients (137 kidney, 53 liver and 43 heart) were included in our study. Each patient had 3–5 sex-, year of birth- and hometown-matched controls (n=1,157). The Digital and Population Data Services Agency and The Social Insurance Institution of Finland were utilized.

The causes of death of the study population were collected from Statistics Finland and were further divided into the four main categories (infections, malignancies, cardiovascular diseases and other).

The data of the specially reimbursed drugs of study population was collected from Specially Reimbursement Drug Registry. Comorbidities of patients was evaluated by means of these special refunds.

Survival curves were analyzed utilizing Kaplan-Meier method and Cox proportional-hazard models were used to investigate risk factors related to post-transplant death.

## RESULTS

A total of 60 (26%) transplant recipients and 2 (0.2%) controls died during follow-up. Transplant recipients' risk of death was nearly 130-fold higher than that of controls (p-value <0.001). 20-year survival rates for KTx, LTx and HTx recipients were 47%, 40% and 28%, respectively. Both LTx and HTx recipients had significantly higher risk of death compared to KTx recipients (HR 3.86, 95% CI 2.11–7.04 and HR 3.77, 95% CI 1.96–7.28, respectively). There was no

significant difference in survival based on sex, re-transplantation and transplantation era.

The main causes of death in 60 deceased pediatric patients were cardiovascular diseases, infections, and malignancy, accounting 62% of all the deaths. Malignancies were more common among kidney recipients (29%) in comparison to LTx (15%) and HTx (6%) patients. The cancer mortality was 6-fold higher among men than in women.

Tx patients had averagely 1–3 specially reimbursed drugs in addition to immunosuppression protocol. Most of them were prescribed for hypertension, anemia, growth restriction and epilepsy. There was not statistically significant difference in terms of reimbursable drugs and mortality. However, deceased who used growth hormone had 6-fold higher mortality risk for cancer compared to other cause of death categories.

## CONCLUSION

In conclusion, cardiovascular complications, infections and cancers are common after pediatric solid organ transplantation and are the major causes of death in our study. These findings emphasize the cruciality of continued progress in long-term outcomes and careful follow-up of pediatric transplant recipients in order to reduce late morbidity and mortality.

Kaplan-Meier Curve for Transplantation Survival

