

De Novo Malignancy after Heart Transplantation

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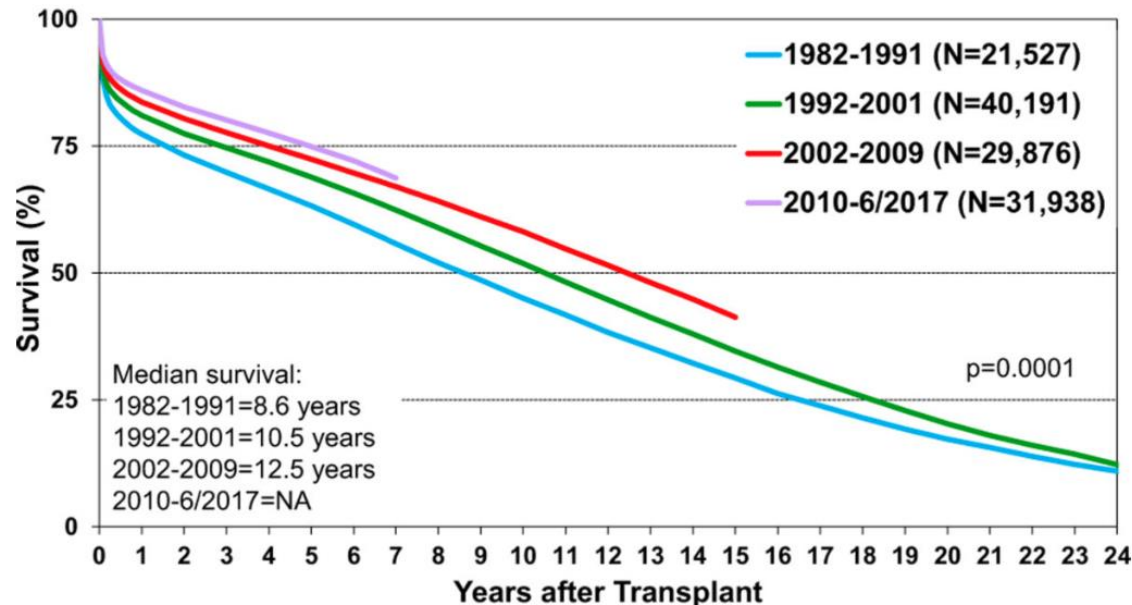
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MEDICINE

Disclosures

- No financial relationships to disclose.
- No discussion of off label or investigational use of drugs/devices.

Background: Post-transplant Survival

- Survival after heart transplantation has steadily improved
 - Median survival now ~13 years



Background:

Post-transplant Malignancy

- Known increased risk of malignancy post-transplantation, etiologies include:
 - Immunosuppressive therapy
 - Oncogenic viral infections
- Poses threat to further survival
- Previous literature has suggested:
 - Calcineurin inhibitors increase malignancy risk
 - MMF, mTOR inhibitors decrease risk

Methods

- Assess rates of malignancy development in adult (>18 years) heart transplant patients from the Organic Procurement and Transplantation Network (OPTN) database, 1987-2018
- Compare to general population in the Surveillance, Epidemiology, and End Results (SEER) database with incidence ratios
- Cox regression to calculate hazard ratios (HR) for risk factors of de novo malignancy development, all-cause mortality, and cancer-specific mortality

Results: Malignancy Rates

- **18.3%** of 49,361 heart transplant patients developed malignancy (excluding non-melanoma skin cancers)
 - Median follow-up of 6.9 years
- Incidence ratio of development any malignancy vs. general population: **3.8**
- Most commonly diagnosed:
 - Lung (22.3%)
 - Post-transplant lymphoproliferative disease (PTLD) (16.5%)
 - Prostate (16.4%)

Results: Malignancy Rates

- Incidence ratios highest for rarer malignancies:
 - Female genital cancer: 11.2
 - Tongue/throat cancer: 7.4
 - Renal carcinoma: 6.5
 - Esophageal cancer: 6.2
 - Male breast cancer: 5.6

Results: Risk Factors

- Risk factors for development of malignancy:
 - Male gender (HR 1.24, 95% CI 1.17-1.31)
 - Older age (HR 1.03, 95% CI 1.03-1.03)
 - Smoking history (HR 1.39, 95% CI 1.27-1.53)
 - Impaired renal function (HR 1.04, 95% CI 1.03-1.07)
- Use of MMF for maintenance immunosuppression was protective
 - HR 0.89, 95% CI 0.83-0.96

Results: Predictors Mortality

- Risk factors for cancer-specific mortality:
 - Older age (HR 1.04, 95% CI 1.04-1.05)
 - Smoking history (HR 1.37, 95% CI 1.16-1.63)
 - ATG for induction (HR 1.15, 95% CI 1.03-1.30)
 - Calcineurin inhibitors for maintenance immunosuppression (HR 1.30, 95% CI 1.09-1.56)
- Development of a post-transplant malignancy increased risk of death **1.4** times

Conclusions

- Heart transplant patients at increased risk of malignancy post-transplant, especially rare cancers
 - Importance of strict cancer surveillance and awareness of possibility for rarer malignancies
- Attention to minimizing/optimizing immunosuppressive regimens

Thank you

Questions?

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