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# Cancer prevalence and risk factors among Korean solid organ transplant recipients

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**Introduction:** With the number of solid organ transplantations (SOT) in Korea increasing, interest in long-term complications in solid organ transplant recipients (SOTRs) is also increasing. Malignancy is one of the leading causes of death in recipients and the use of immunosuppressants or cancer-causing virus infection is considered as risk factors. Also, it is known that the distribution and risk factors of cancers are different from those of the general population. So here we reported prevalence and risk factors of cancers in Korean SOTRs.

**Methods:** Using data from Korean National Health Insurance Service, we compared incidence of malignancies after SOT to general population by standardized incidence ratios (SIR) and harzard ratio (HR).

**Results:** Total 25,330 (male:female 15157:10173, median age 48) patients were transplanted from 2003 to 2019, of which 1,392 (5.5%) developed cancers. SOTRs had 2 fold higher risk (SIR 2.31, 95% confidence intervals (CI) 2.19-2.44). The highest risk cancer is Kaposi sarcoma (SIR 159.14, 95% CI 90.96-258.43) followed by non-hodgkin lymphoma (SIR 11.21, 95% CI 9.39-13.29), and non-melanoma skin cancer (SIR 9.94, 95% CI 7.91-12.34). Of 1,304 patients, under 19 years old, 49 (3.8%, SIR 36.31, 95% CI 26.86-48.01) developed cancer, of which 35 were non-hodgkin lymphoma (SIR 212.14, 95% CI 147.76-295.03). Cancer incidence was the highest after 1-3 years of transplantation (315 of 1151, SIR 1.84, 95% CI 1.65-2.06). Cancer incidence was not significantly different regardless of induction agent use. SOTRs using tacrolimus or mycofenolate mofetil had less cancer than those who did not use (HR 0.79, $P<0.05$ and HR 0.71 $P<0.05$, respectively).

**Conclusion:** Cancer risk after SOT is higher than general population especially under 19 years old. As types of cancer are different from general population, close monitoring and screening is necessary in SOTRs. Also, other risk factors unanalyzed such as EBV infection should be considered.