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신장이식환자에서 악성종양의 발생빈도 및 조기진단을 위한 선별검사

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Cancer Incidence and Screening in KT Recipients

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The use of potent immunosuppression has dramatically improved short-term outcomes, but these immunosuppressants are related to increased incidence of cancer after transplantation, which poses a challenge for their long-term use. Malignancy is now a leading cause of patient death with graft function. A meta-analysis of 5 population-based studies published before March 2007 demonstrated a 3-fold increased risk of cancer in solid organ transplant recipients compared with the general population matched for age and sex. While the risk is only two times greater for 65 years old renal transplant recipients (RTRs), young RTRs have a risk 15-30 times greater than the general population of the same age, a finding that appears to the variability of cancer risk with age. This excess risk is also type specific and greatest for Kaposi's sarcoma (200 times increased risk) and non-melanocytic and melanocytic skin cancer (nine to 20 times increased risk). For non-skin cancers, the risk is greatest in cancers associated with viral infections. The established virus-related cancers that are increased in transplant recipients include Kaposi sarcoma (human herpes virus 8, HHV8), non-Hodgkin lymphoma and Hodgkin lymphoma (Epstein-Barr virus), liver cancer (hepatitis C and hepatitis B virus) and cancer of the cervix, vulva/vagina, penis, anus and oral cavity and pharynx (human papillomavirus, HPV). The markedly increased risk of these cancers is believed to arise from impaired immune control of viral oncogenes, but the precise biological mechanisms of neoplastic progression are not yet understood. Some cancers which are common in the general population also occur at a higher incidence in RTRs (e.g. colorectal, lung, and stomach cancers) and the risk is increased by approximately two to three times when compared with the general population. On the other hand, breast, prostate, ovarian, brain and testicular cancers were not increased in incidence in transplant recipients, a finding that appears to rebut the case for a viral cause for a large proportion of these cancers.

After the occurrence of cancer, the survival of transplant recipients is poor, and treatment options are limited by the transplant or comorbidities. It is thus important to consider options for screening RTRs, which can theoretically deliver benefits of lower morbidity and mortality through reduced incidence or early interventions. For skin cancer, it is generally recommended for screening that RTRs perform skin and lip self-examinations and a physician, with experience in diagnosing skin cancer, perform annual skin and lip examination. For non-skin cancers, screening as per local guidelines for the general population is generally considered to be reasonable, because the studies in the general population have led to the development of cancer screening guidelines in transplant recipients. However, until now, because the randomized controlled

studies to address the issues of mortality benefits, harms, screening test accuracies, and the cost-effectiveness of cancer screening in the renal transplant population are scarce, an individualized approach to screening should be used and based on the individual's cancer risk, existing comorbidities, overall life expectancy, and preference for screening.