

# Kidney Transplanted Population and Risk for De Novo Tumors. Is it Possible to Improve the Outcome? Definition of a Personal Risk Score

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## Short Communication

Tumors, after cardiovascular diseases, are the second cause leading to death in kidney transplant patients [1].

It's well known that tumors occur more often in transplant population than general population [2]. The most frequent tumors seem to be Kaposi sarcoma, non-melanoma skin cancer and lympho proliferative diseases such as Non Hodgkin Lymphoma. Many of those tumors are strictly related to viral infections and viral reactivation [3].

Also solid tumors have increased incidence in transplant population than in general population; many studies have shown that the transplanted organ is related to different rate of risk for different kind of solid tumors [1,4]. In a previous study about de novo solid tumors (excluding skin non melanoma cancer) of our group we found that urogenital cancer and gastrointestinal cancer were the most occurring solid cancer in the kidney transplant population at the center of Udine [5].

Those tumors were responsible of more of 50% of de novo tumors with 22% of mortality for urogenital cancer and 41% mortality for gastrointestinal cancer. Even though those tumors are perhaps not difficult to be diagnosed during scheduled follow up (and these patients are followed according to the guidelines) [6], what was surprising was the aggressiveness leading in few cases to "late" diagnosis with advanced disease and exitus for some patients. So besides an increased risk for some tumors we should fight also against more aggressive tumors. So maybe, for some curable tumors, an increased evaluation and a tailored risk assessment could help to prevent and early diagnose.

In our population we found two statistically demonstrated factors related to increased occurrence of de novo tumors: age and the disease (if glomerulonephritis) which lead to renal failure.

Old age is known to be correlated to an increased risk for tumors also in general population [7]. As for glomerulonephritis, we suggested as a possible reason for this correlation, the drugs exposition of the recipients before the transplant. Bad habits such as alcohol intake and smoke seem to be relevant as risk factors to develop some kind of tumors in our previous data collection, but we did not find correlation with familiarity. This may suggest that besides normal and well recognized factors, some others factors that we did not consider in our previous paper are probably present in this peculiar population.

These should be thoroughly analyzed for a better definition of risk and to suggest, before transplant for example, the choice of immunosuppressive strategies more suitable for each patient and the best program after transplantation.

We also would like to stress the attention on the period while in the waiting list. At the moment 16 months is the median time for kidney

transplant, which means that many of those patients with a difficult immunological situation can stay in the waiting list even for many years, without clear indication to repeat many blood tests and imaging of the pretransplant study.

We think that differences between patients should be more stressed because as it's intuitive that the same screening and follow up program cannot fit general population and transplant population, the same screening and follow up program cannot fit for kidney transplanted patients without distinctions.

Particularly for colon cancer, 20% of de novo solid tumors in our population (excluding non-melanoma skin cancer and hematological tumors), for which the early diagnosis could be easy and the treatment can be successful, we could consider to extent endoscopic pretransplant evaluation also to younger patients. Then, after transplant, the screening should be probably improved; some of our patients showed colon cancer after few months after transplant or advanced disease despite the usual follow up (in the first case a possible misdiagnosed because too young to have routinary pretransplant colonoscopy, the others a possible evidence of a more aggressive behavior of tumors in these patients). Also fecal immunochemical test (FIT) could be considered since it seems more sensitive than fecal occult blood and less invasive than frequent colonoscopy [8,9].

We noticed a very aggressive urogenital ad biliopancreatic cancer in two patients with previous immunosuppression for a previous failed transplant or increased immunosuppression because of combined heart-kidney transplant. Previous therapies, as for glomerulonephritis, should be considered.

The group of biliopancreatic cancer (4 patients) had GNF (2 cases) or APKD (2 cases). As for the English literature, also APKD seems to have relations with pancreatic carcinogenesis, while could be protective for other cancer such as colon cancers [10,11]. Possibly we should consider those differences while scheduling a personalized risk score and deciding in which direction our efforts should be best driven.

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We do not have evaluated data regarding age and medical history of the donor; possibly, it should be considered.

We would suggest that a possible improvement in early diagnosis and prevention could be the result of a personalized program starting with the pretransplant medical history and going through the perioperative period and the late follow up. So we could design for each patient a unique risk assessment including pretransplant medical history, habits (smoke and alcohol intake) and exposure (asbestos, steroids, immunosuppressive drugs), perioperative events (such as donor age and medical history, acute rejection, steroids and other drugs, viral infection or reactivation) and post-transplant follow up. In conclusion we suggest defining differences in risk, consequently modulating the pre, peri and posting transplant period for each patient in order to ameliorate the outcome.

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