New Technologies - Biomarkers and Prediction Models

Prediction models for hepatocellular cancer recurrence after liver transplantation

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After some years of stabilized practice, it became clear that the Milan and University of California San Francisco (UCSF) criteria were much too strict, denying access for many patients to a potentially *curative* therapy. In contrast to most Western teams, many Eastern centres adopted an aggressive attitude in relation to the extension of the inclusion criteria of HCC patients for LT. This development was fostered by the explosive development of living donor liver transplantation (LDLT). Indeed LDLT is thé fertile soil to explore the widening of transplant indications not only because of allowing a better planning of the surgical procedure but also because avoiding drop out on the waiting list and absence of interference with the scarce deceased donor pool.

In 2007, the Kyoto group demonstrated for the first time that the "morphology-alone" selection approach was overruled by two fundamental principles of *modern oncology*, the necessity to combine morphology and biology and to evaluate the response to neo-adjuvant locoregional therapies..Both arguments are very powerful predictors of oncologic outcome.

A review of the 1993 (date of the first reported HCC-LT score) -2023, literature allowed to identify 56 (!) different inclusion criteria/scores. This high number reflects the dissatisfaction of the transplant community with the restrictive allograft allocation rules.

Justified extension of inclusion criteria can be obtained by combining *morphologic and biologic, dynamic tumor characteristics*, highlighting thereby the predictive role of tumor markers (AFP, DCP or PIVKA II), inflammatory markers (NLR and PLR), PET-CT scan tracer-uptake and radiological response to neo-adjuvant LRT and, last but not least, of LDLT in HCC liver recipients. The development of a "comprehensive" HCC-LT score becomes a necessity together with wider implementation of LDLT in order to offer the best possible treatment to the highest possible number of HCC patients.