

Abstract Type : Oral Presentation
Abstract Submission No. : F-004798

Impact of Allocation Priority for Children Awaiting Liver Transplantation: A Pediatric Liver Allocation Simulated Model Analysis (PLASMA)

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Introduction: Deceased donor pool in pediatric liver transplantation (LT) had increased temporarily for several years since allocation and registration policies of split liver transplantation were amended by KONOS (The Korean Network for Organ Sharing) in 2013 and 2014. Despite those efforts, there are still overwhelming number of pediatric patients awaiting LT. The purpose of this study was to investigate problem of current allocation policies for pediatric LT and find a possible solution.

Methods: We analyzed the information of 5252 patients who received deceased donor liver transplantation (DDLT) from February 2000 to December 2020 referring to KONOS database.

Results: Out of 5252 cases of DDLT between February 2000 to December 2020, pediatric recipients were 318 (6.1%). Out of those pediatric patients, only 111 cases (33%) were donated from pediatric cadavers. Pediatric and adult patients who received a split LT were 204 and 234 cases, respectively. In pediatric patients who received a DDLT, mortality was significantly lower than in adult group (14.2% vs 29.9%, $P = 0.000$). Regardless of donors age (≥ 18), mortality was lower in pediatric cases ($P = 0.000$). In multivariate analysis, there was no significant difference in mortality between pediatric and adult patients.

Conclusion: Under the current allocation system regarding DDLT, pediatric patients have a relatively less chance to enlist on the waiting list because of strict regulations. Also, unlike the United States, priority is not given to pediatric candidates in allocating pediatric cadaveric donors for them in South Korea. Considering mortality, equity and potential social reproducibility of pediatric candidates, there should be modification of the allocation system, which will be able to take into consideration urgency and LT outcome as well.