# P-034: Outcome of HIV-infected liver transplant recipients with incidental hepatocellular carcinoma: A prospective multicenter nationwide cohort study (2002-2014)

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**Introduction and purpose:** There is no data on incidental hepatocellular carcinoma (iHCC) in HIV-1-infected patients who have undergone liver transplantation (LT). The aim of this study was to evaluate the characteristics and outcomes of LT recipients with iHCC in Spain for the period 2002-2014

**Methods:** A nationwide multicenter prospective cohort study based on all consecutive adult patients with HIV infection who had undergone LT, matched with HIV uninfected LT recipients (1:3 ratio). Match criteria: age (±12 years), gender, center, calendar year of LT (±1 year), liver disease etiology, and hepatocellular carcinoma (HCC). All patients who had iHCC constituted the present study cohort. iHCC was defined as unsuspected HCC found at the time of histological examination of liver explant of patients transplanted for benign diseases.
Study period: 2002-2012. Follow-up end: August 2014.

**Results:** Fifteen (5.5%) out of 271 LT recipients with HIV infection and 38 (4.7%) out of their 811 HIV-uninfected counterparts presented iHCC in liver explants (*p*=0.63) (Figure 1). Men accounted for 85%, and HCV cirrhosis was the primary liver disease in all recipients (Table 1). HCV Genotype 1 was the most common (9 vs. 26 in HIV-infected and HIV-negative recipients, respectively) (*p*=0.484). All HIV-infected recipients were on combined antiretroviral therapy, and most of them had HIV viral loads below the detection limit at enlisting (93%). Median (IQR) CD4 cell count/mm$^3$ was 375 (193-537). Intravenous drug use was the most frequent risk factor for HIV infection acquisition (93%). Pre-LT serum alpha fetoprotein levels (µg/L) were higher in HIV-infected recipients (*p*=0.035). There were no differences in the pathological features between groups. After a median (IQR) follow-up of 49 (28-82) months, none of the LT recipients presented HCC recurrence post-LT, and 15 patients died (28%). The most frequent cause of death was HCV recurrence (n=9, 5 HIV+ vs. 4 HIV-) (*p*=0.608). LT iHCC recipients without HIV infection had better survival rates (95%CI) than their HIV-infected counterparts at one (92%, 77-97 vs. 73% 50-93), three (84%, 68-92 vs. 67%, 37-85), and five years (80%, 63-90 vs. 50%, 22-73) (*p*=0.062)(Figure 2).

**Figure 1. Spanish cohort of LT recipients according to HIV infection status**

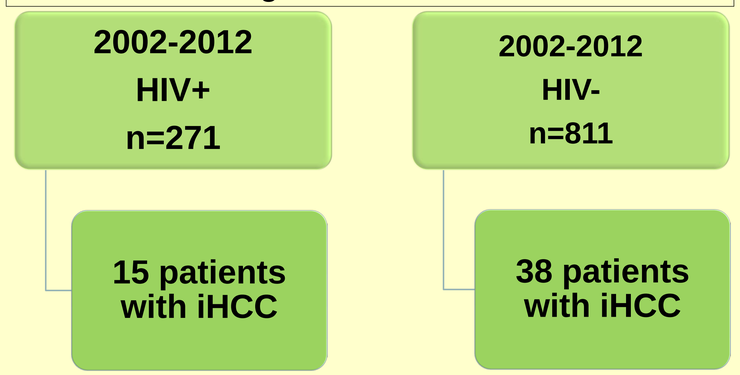


**Figure 2. Patient survival curves after LT**

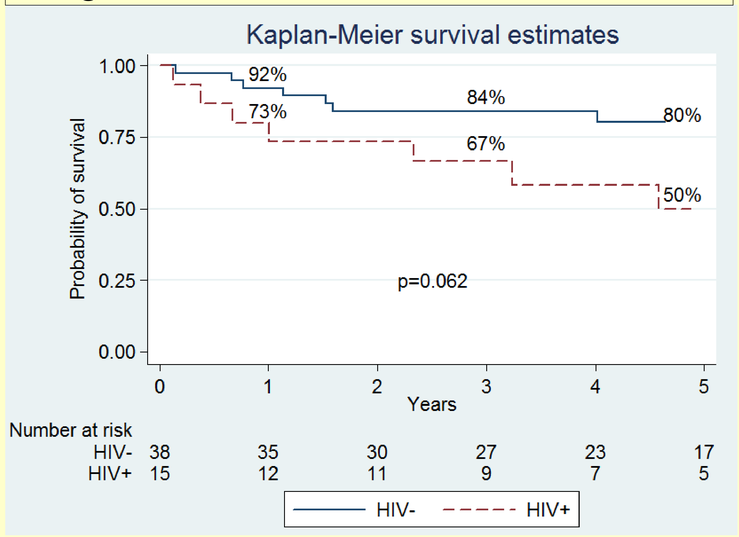


**Table 1. Baseline and follow-up characteristics of LT recipients with incidental hepatocelullar carcinoma**

| | Total N=53 | HIV+ n=15 | HIV- n=38 | *p*-value |
|---|---|---|---|---|
| **Characteristics, n (%)** | | | | |
| - Recipient age at LT, (yrs)* | 47 (43-50) | 46 (41-48) | 48 (43-50) | 0.166 |
| - Male gender | 45 (85) | 14 (93) | 31 (82) | 0.415 |
| - HCV infection | 53 (100) | 15 (100) | 38 (100) | n.a |
| - HCV genotype | | | | 0.880 |
| 1-4 | 42 (86) | 11 (79) | 31 (89) | 0.392 |
| 2-3 | 7 (14) | 21 (3) | 4 (11) | |
| - Positive RNA VHC at LT | 50 (94) | 15 (100) | 35 (92) | n.a |
| MELD Score at enlisting* | 16 (14-19) | 16 (13-19) | 16 (14-20) | 0.797 |
| MELD Score at LT* | 17 (14-22) | 16 (14-23) | 17 (14-22) | 0.890 |
| Donor age, (yrs)* | 51 (40-58) | 52 (41-54) | 51 (36-61) | 0.912 |
| AFP at WL* | 6 (4-16) | 7 (5-29) | 5 (3-14) | 0.068 |
| AFP at LT* | 6 (4-19) | 12 (5-29) | 5 (3-13) | 0.035 |
| WL period (months) | 5.4 (2.0-9.2) | 5.4 (1.4-8.8) | 5.4 (2.2-9.3) | 0.639 |
| **Pathological features in the explanted liver** | | | | |
| - Single nodule | 38 (72) | 11 (73) | 27 (71) | 0.868 |
| - Maximum nodule diameter >3 | 4 (7) | 1 (7) | 3 (8) | 0.879 |
| - Microscopic vascular invasion | 3 (6) | 1 (7) | 2 (5) | 0.842 |
| - Macroscopic vascular invasion | 1 (2) | 1 (7) | - | n.a |
| - Satellite nodules | 3 (6) | 1 (7) | 2 (5) | 0.842 |
| - Well differentiated Edmonson grade | 27 (55) | 10 (71) | 17 (49) | 0.207 |
| - Outside criteria | 4 (5) | 1 (7) | 3 (8) | 0.879 |
| - Outside UCSF criteria | 3 (6) | 1 (7) | 2 (5) | 0.842 |
| **Follow-up** | | | | |
| - Median follow-up time* | 49 (28-82) | 39 (12-75) | 53 (35-95) | 0.269 |
| - Tacrolimus-based initial immunosuppressive regimen | 42 (79) | 13 (87) | 29 (76) | 0.482 |
| **- HCC recurrence** | **0** | **0** | **0** | **n.a** |
| - Mortality | 15 (28) | 7 (47) | 8 (21) | 0.062 |
| **Causes of death** | | | | |
| - HCV recurrence | 9 (17) | 5 (33) | 4 (10) | 0.608 |
| - Infection | 2 (4) | 1 (7) | 1 (3) | 0.733 |
| - *de novo* tumor | 2 (4) | 1 (7) | 1 (3) | 0.733 |
| - Others | 2 (9) | 0 (7) | 2 (6) | n.a |

*Median (IQR)

**Conclusions:** The incidence of iHCC and the histological findings of the liver explants were similar in HIV-infected LT recipients compared with their HIV-negative counterparts. None of the LT recipients developed HCC recurrence. HIV-infected LT recipients with iHCC had worse survival rates than recipients without HIV infection. However, iHCC did not play any role in survival, as HCV recurrence was the main cause of death in the HIV/HCV co-infected patients