Long-term outcomes with oral therapy in liver transplant recipients with hepatitis B

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Background

Liver transplant is the treatment of choice for patients with liver failure secondary to chronic hepatitis B viral (HBV) infection. Oral antiviral therapy in liver transplant recipients with a history of HBV is associated with significant improvement in liver function and overall survival. This study evaluates how oral antiviral agents impact renal function in this patient population.

Methods

We studied 79 patients who received a liver transplant for hepatitis B and were placed on all-oral antiviral therapy at a single-institution tertiary care center. A retrospective chart review was conducted to obtain laboratory data. Univariate and two-sided t tests were performed.

Results

Overall, there was a significant ($p<0.05$) increase in mean serum creatinine (Cr) by 0.3 mL/min in our patient population when comparing post-transplant lab values collected prior to starting all-oral therapy with lab values collected at the last follow-up.

For recipients on oral therapy who were never on the anti-viral drug, tenofovir alafenamide, the average increase in serum Cr was 0.55 mL/min ($p<0.05$). For those on tenofovir alafenamide, there was no significant change in Cr values.

Table 1. Mean changes in laboratory results (n=79)

Parameter	Laboratory values, mean (± SD)			
	Pre-HBIG withdrawal	Last follow-up	Difference	*P* value
SCr (mL/min)	1.31 ± 0.51	1.64 ± 1.52	+0.34	.023
GFR (mL/min/1.73 m^2)	60.3 ± 21.0	60.3 ± 24.0	−0.02	.994
Albumin (g/dL)	4.44 ± 0.38	4.20 ± 0.57	−0.25	.0004
Total bilirubin (mg/dL)	0.73 ± 0.46	1.49 ± 6.18	+0.76	.269
AST (IU/L)	25.0 ± 15.6	48.9 ± 129.8	+23.96	.098
ALT (IU/L)	26.7 ± 26.0	34.3 ± 76.3	+7.61	.375

Table 2. Mean changes in laboratory results for patients never on tenofovir alafenamide (n=47)

Parameter	Laboratory values, mean (±SD)		
	Pre-HBIG withdrawal	Last follow-up	*P* value
SCr (mL/min)	1.28 ± 0.49	1.83 ± 1.92	.038
GFR (mL/min/1.73 m^2)	60.9 ± 22.2	63.4 ± 27.4	.483
AST (IU/L)	27.4 ± 19.4	68.9 ± 166.0	.985
ALT (IU/L)	31.3 ± 32.4	45.5 ± 97.5	.375
Mean time = 1538 ± 1120 d			

Table 3. Mean changes in laboratory results for patients on tenofovir alafenamide (n=32)

Parameter	Laboratory values, mean (± SD)		
	Pre-TAF	Last laboratory on TAF	*P* value
SCr (mL/min)	1.38 ± 0.50	1.35 ± 0.40	.573
GFR (mL/min/1.73 m^2)	55.5 ± 17.1	55.9 ± 17.9	.792
AST (IU/L)	19.9 ± 5.9	26.3 ± 38.3	.296
ALT (IU/L)	18.2 ± 9.0	21.8 ± 26.1	.304
Mean time on TAF = 308 ± 159 d			

Abbreviations: ALT, alanine aminotransferase; AST, aspartate aminotransferase; dL, deciliter; GFR, glomerular filtration rate; g, gram; HBIG, hepatitis B immune globulin; IU/L, international units/liter; mg, milligram; min, minute; mL, milliliter; SCr, serum creatinine; SD, standard deviation.

Table 4. Mean outcomes in patient population (n=79)

Characteristic	Number (%)
Adverse events	
1. Change in CKD stage from HBIG withdrawal to last follow-up (n = 79)	
Same	47 (59.5%)
Better	14 (17.7%)
Worse	18 (22.8%)
2. Change in CKD stage from before tenofovir alafenamide to end of tenofovir alafenamide (n = 32)	
Same	26 (81.3%)
Better	4 (12.5%)
Worse	2 (6.3%)
3. Change in CKD stage from HBIG withdrawal to last follow-up for patients never on tenofovir alafenamide (n = 47)	
Same	28 (59.6%)
Better	8 (17.0%)
Worse	11 (23.4%)
4. Increase in SCr 0.3 from HBIG withdrawal to last follow-up (n = 79)	
Increase > 0.3	14 (17.7%)
5. Increase in SCr 0.3 from before tenofovir alafenamide to end of tenofovir alafenamide (n = 32)	
Increase > 0.3	2 (6.3%)
6. Increase in SCr 0.3 from HBIG withdrawal to last follow-up for patients never on tenofovir alafenamide (n = 47)	
Increase > 0.3	9 (19.5%)

Conclusions

Oral antiviral agents generally worsen renal function in liver transplant recipients with a history of hepatitis B. However, tenofovir alafenamide appears to have less of an impact on renal function compared to other oral antiviral agents.