Bictegravir or dolutegravir-containing antiretroviral regimens in solid organ transplantation: single-center experience

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BACKGROUND

- Solid organ transplantation (SOT) is the definitive treatment for end-organ failure in HIV-positive recipients
- Bictegravir (BIC) or dolutegravir (DTG) based antiretroviral therapy (ART) is preferred for most people with HIV
  - High efficacy, excellent tolerability, minimal drug interactions, decreased pill burden
- Paucity of data on second-generation integrase inhibitors (INSTIs) in SOT
- We report the Memorial Transplant Institute's experience using second generation INSTI-containing ART with or without emtricitabine/tenofovir alafenamide (FTC/TAF) in SOT candidates and recipients with HIV

OBJECTIVE

- To report the clinical information and ART management of SOT candidates and recipients with HIV in our center

METHODS

- Single-center observational study
- Compiled data from medical records of all persons with HIV undergoing SOT seen by the Division of Infectious Disease from January 2017 through April 2022.
- Protocol approved by Institutional Review Boards of Memorial Healthcare System and Nova Southeastern University

DISCUSSION

- Patients were 63% male, mean age 55, CD4 323 cells/mm^3, and living with HIV for 16 years
  - Last on-treatment HIV RNA < 200 copies/mL for 94% of patients
- ART of all SOT recipients modified to avoid pharmacokinetic enhancers and drug interactions with anti-rejection meds
- Most common post-SOT regimen BIC/FTC/TAF (50%)
- Post-SOT patients maintained HIV RNA < 200 copies/mL
- No ART-related adverse effects documented
- Two allograft- or life-threatening infections and one episode of acute antibody rejection reported
- Expectedly, serum creatinine decreased and estimated glomerular filtration rate increased post-renal transplant

RESULTS

Sixteen patients met inclusion criteria: 8 SOT candidates (7 kidney, 1 heart) and 8 SOT recipients (all kidney)

Table 1. Demographics and clinical features of 16 patients with HIV undergoing solid organ transplantation

Subject #	Age/Sex/Race /Ethnicity	SOT type and status	Yr of HIV diagnosis	Current ART	Current HIV RNA (copies/mL)	Current CD4 (cells/mm^3)	Pre-SOT coinfections	Known HIV RAMs
1	53/F/AA/NH	Kidney candidate	1997	BIC/FTC/TAF	212	259	CMV retinitis	RT: E138A; PR: L63P, V77I, I93L
2	65/M/W/H	Kidney candidate	1988	DTG/RPV	< 20	278	Hepatitis C (treated)	None
3	45/M/AA/NH	Kidney recipient	2001	BIC/FTC/TAF	26	129	None	None
4	45/M/AA/NH	Kidney recipient	2008	BIC/FTC/TAF	< 40	438	Cryptococcal meningitis	RT: M184V; PR: A71T
5	49/F/AA NH	Kidney candidate	2000	RPV/FTC/TAF + DTG	< 40	551	None	RT: K219E; PR: L63P, V77I
6	34/M/AA/NH	Kidney candidate	2014	BIC/FTC/TAF	< 20	136	None	None
7	63/M/AA/NH	Kidney recipient	1995	FTC/TAF + DTG	< 20	684	Hepatitis C (treated)	None
8	59/F/AA/NH	Kidney recipient	1987	BIC/FTC/TAF	< 20	5	Hepatitis B	None
9	57/F/AA/NH	Kidney candidate	2020	BIC/FTC/TAF	< 20	333	None	PR: L63P, I64V, V77I
10	56/F/AA/NH	Kidney candidate	2006	DTG/RPV	< 20	446	Latent tuberculosis (treated)	None
11	62/M/AA/NH	Kidney candidate	2013	FTC/TAF + DTG	23	357	None	None
12	69/M/W/H	Heart candidate	2007	BIC/FTC/TAF	< 20	271	None	RT: M41L, T215Y; PR: L63P, I64V
13	51/M/AA/NH	Kidney recipient	2011	DTG/RPV	< 20	3	Latent tuberculosis (treated)	RT: K65R; PR: L63P, I64L
14	64/F/AA/NH	Kidney recipient	2014	DTG/3TC	< 40	85	None	None
15	58/M/AA/NH	Kidney recipient	2005	FTC/TAF + DTG	< 40	306	Hepatitis B	None
16	47/M/AA/NH	Kidney recipient	2014	BIC/FTC/TAF	< 20	892	None	None

3TC: lamivudine; AA: African American; ART: antiretroviral therapy; BIC: bictegravir; DTG: dolutegravir; F: female; FTC: emtricitabine; H: Hispanic/Latino/a/x; IN: integrase; M: male; NH: Non-Hispanic/Latino/a/x; PR: protease; RAMs: resistance-associated mutations; RPV: rilpivirine; RT: reverse transcriptase; SOT: solid organ transplantation; TAF: tenofovir alafenamide; W: white, Yr: year

Table 2. Clinical course of 8 patients with HIV after solid organ transplantation (SOT)

Subject #	Pre-SOT ART	Month and yr of SOT	Post-SOT ART	Months on post-SOT ART	ART-related AEs post-SOT	SCr pre- /post-SOT (mg/dL)	eGFR post-SOT (mL/min/1.73m^2)	Rejection or other serious infectious complications post-SOT
3	DTG + DRV/c	January 2022	BIC/FTC/TAF	3	None	12 / 2.25	39	None
4	DTG + RPV + ABC	April 2017 (SOT at different institution & transferred care in 2020)	BIC/FTC/TAF	7	None	9.28 / 1.53	54	None
7	FTC/TAF + RAL	February 2020	FTC/TAF + DTG	14	None	12 / 1.52	56	Kidney allograft abscess due to *E. coli* with malakoplakia by biopsy; no rejection history
8	BIC/FTC/TAF	March 2022	BIC/FTC/TAF	1	None	8.61 / 4.45	12	None
13	DTG + ETR + DRV/r	SOT #1 May 2018; SOT #2 March 2022	DTG/RPV	1	None	9.18 / 2.61	31	SOT #1 Failed kidney allograft due to *Candida albicans* arteritis at anastomosis requiring explantation; SOT #2 Acute antibody rejection 1 month post-SOT
14	DTG/RPV	July 2019	DTG/3TC	33	None	7.40 / 1.83	33	None

3TC: lamivudine; AE: adverse event; ABC: abacavir; ART: antiretroviral therapy; ATV: atazanavir; BIC: bictegravir; c: cobicistat; DTG: dolutegravir; DRV: darunavir; eFGR: estimated glomerular filtration rate; ETR: etravirine; FTC: emtricitabine; r: ritonavir; RAL: raltegravir; RPV: rilpivirine; RTV: ritonavir; SCr: serum creatinine; SOT: solid organ transplantation; TAF: tenofovir alafenamide; Yr: year

CONCLUSIONS

- We provide additional insight into the use of BIC- and DTG-ART with or without FTC/TAF in the peri-SOT period
- Our growing experience suggests second generation INSTI-containing ART regimens with or without FTC/TAF are effective and well tolerated following kidney transplantation
- Additional research on the use of second generation INSTIs in the SOT patient population is needed

DISCLOSURES: The authors report no conflict of interest and nothing to disclose.