Efficacy and safety of elvitegravir/cobicistat/emtricitabine/tenofovir alafenamide as maintenance treatment of patients with HIV and Hepatitis B virus (HBV) coinfection

Yu-Shan Huang[1], Chen-Hsiang Lee[2], Yuan-Ti Lee[3], Hsin-Yun Sun[1], Bo-Huang Liou[4], Chia-Jui Yang[5], Chun-Eng Liu[6], Hung-Jen Tang[7], Shih-Ping Lin[8], Chien-Yu Cheng[9], Shu-Hsing Cheng[9], Po-Liang Lu[10], Mao-Wang Ho[11], Sung-Hsi Huang[1], Hung-Chin Tsai[12], Chien-Ching Hung[1], on behalf of the Taiwan HIV Study Group

[1]National Taiwan University Hospital, Taipei, Taiwan, [2]Kaohsiung Chang Gung Memorial Hospital, [3]Chung Shan Medical University Hospital, Taichung, Taiwan, [4]Hsinchu MacKay Memorial Hospital, Hsinchu City, Taiwan, [5]Far Eastern Memorial Hospital, New Taipei City, Taiwan, [6]Changhua Christian Hospital, Changhua County, Taiwan, [7]Chi Mei Medical Center, Tainan, Taiwan, Taiwan, [8]Taichung Veterans General Hospital, Taichung, Taiwan, [9]Taoyuan General Hospital, Ministry of Health and Welfare, Taoyuan, Taiwan, [10]Kaohsiung Medical University Hospital, Kaohsiung, Taiwan, [11]China Medical University Hospital, Taichung, Taiwan, [12]Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan

Introduction

- Tenofovir alafenamide (TAF) can suppress both HIV and HBV. The efficacy and safety of switching from TDF-based antiretroviral therapy to elvitegravir/cobicistat/emtricitabine/TAF (E/C/F/TAF) has not been widely investigated in HIV/HBV-coinfected Asian populations.

Methods

- Between January 2018 and October 2018, HIV/HBV-coinfected patients who had achieved HIV viral suppression (plasma HIV RNA load [PVL] <50 copies/mL) with TDF-containing regimens were switched to E/C/F/TAF as maintenance therapy. Patients with active opportunistic illness, pregnancy, hepatic decompensation, allergic to FTC, intolerance of InSTIs, concurrent use of drugs that are highly dependent on CYP3A for clearance were excluded.
- Assessment of plasma HBV and HIV viral load, HBV serology, renal function, urine protein, metabolic profiles, and bone mineral density (BMD) were performed at Weeks 24 and 48 after initiation of E/C/F/TAF.

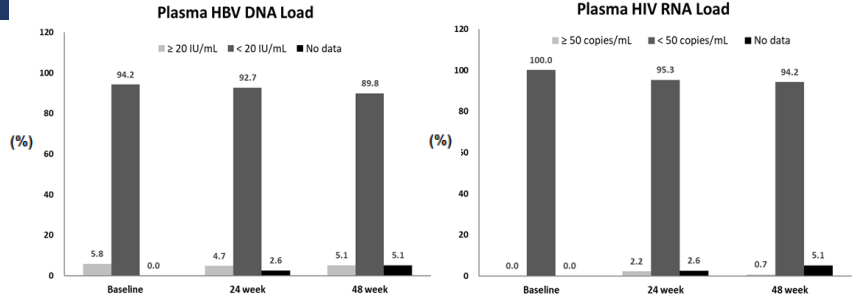
Results

- A total of 274 HIV/HBV-coinfected participants were enrolled. 268 and 261 have completed 24 and 48 weeks of follow-up. The demographic and characteristics of the participants at baseline, 24 and 48 weeks are shown in **Table 1**.
- In snapshot analysis, 92.7% and 89.8% of the participants achieved plasma HBV DNA <20 IU/ml at Week 24 and 48 (**Fig 1**)

Table 1. Demographic and characteristics of the patients

	Baseline N=274	24 weeks N=268	48 weeks N=261	Baseline vs 48 week, p
Age (year), median (IQR)	41 (36-47)	NA	NA	
Male sex, n (%)	269/274 (98.2)	NA	NA	
Men who have sex with men, n (%)	238/274 (86.9)	NA	NA	
Anti-HCV positivity at baseline, n (%)	36/266 (13.5)	NA	NA	
Year since HIV diagnosis, median (IQR)	7.0 (4.0-11.0)	NA	NA	
Duration of TDF use (year), median (IQR)	4.0 (2.4-6.0)	NA	NA	
Patients with HIV RNA < 50 copies/mL, n (%)	274/274 (100)	261/267 (97.8)	258/260 (99.2)	
CD4 count (cells/μL), median (IQR)	567 (432-723)	573 (419-736)	588 (439-742)	0.028
HBV profiles and liver functions				
Patients with plasma HBV DNA <20 IU/mL	258/274(94.2)	254/267 (95.1)	246/260(94.6)	
Positive HBeAg, n (%)	36/274 (13.1)	NA	33/260 (12.7)	
Positive anti-HBe, n (%)	206/274 (75.2)	NA	192/260 (73.8)	
Positive HBsAg, n (%)	274/274 (100)	NA	257/260 (98.4)	
HBsAg level (IU/mL), median (IQR)	677 (90-1703)	NA	655 (95-1590)	0.009
HBsAg level (Log_{10}IU/mL), median (IQR)	2.8 (2.0-3.2)	NA	2.8 (2.0-3.2)	0.101
ALT level (IU/mL), median (IQR)	26(20-37)	23(18-33)	24(17-33)	0.001
AST level (IU/mL), median (IQR)	25(21-31)	23(19-29)	22(19-29)	<0.001
Cirrhosis of liver, n (%)	4 /250 (1.6)	NA	4/170 (2.4)	
Renal function				
Serum creatinine (mg/dL)	0.94 (0.84-1.08)	0.98 (0.88-1.1)	1.0 (0.9-1.1)	<0.001
Estimated GFR (min/mL), median (IQR)	98.8(85.6-109.2)	95.1 (82.6-106.4)	94.9 (82.4-105.5)	<0.001
UPCR (mg/g), median (IQR)	79 (57-114)	74 (56-99)	68 (55-95)	<0.001
UACR (mg/g), median (IQR)	5.2(3.1-9.8)	5.4 (3.4-8.6)	4.5(3.0-8.3)	0.009
Urine β-2 microglobulin(ng/mL), median (IQR)	228 (111-909)	140 (71-253)	128(68-273)	<0.001
Urine β-2 microglobulin/Cr (μg/g)	241 (115-968)	136 (80-265)	134(75-270)	<0.001
Lipid profiles and blood glucose				
Triglyceride (mg/dL), median (IQR)	116(84-174)	131 (100-194)	140(104-203)	<0.001
Total cholesterol (mg/dL), median (IQR)	165(149-193)	198 (174-223)	192(167-220)	<0.001
LDL (mg/dL), median (IQR)	99 (84-118)	121 (101-144)	118(97-137)	<0.001
HDL (mg/dL), median (IQR)	42(35-49)	47 (40-56)	46(38-54)	<0.001
Total cholesterol: HDL ratio, median (IQR)	4.0 (3.4-4.7)	4.2 (3.4-5.1)	4.2(3.5-5.0)	<0.001
Fasting blood glucose(mg/dL), median (IQR)	93(86-101)	93 (87-99)	92(87-100)	0.279
HbA1C, median (IQR)	5.4(5.2-5.7)	5.4(5.2-5.6)	5.4(5.1-5.6)	0.073
Bone mineral density (N=181 at baseline, N=161 at Week 24, and N=156 at Week 48 week)				
Lumbar spine (g/cm²), median (IQR)	1.09(1.01-1.21)	1.10(1.03-1.22)	1.12(1.03-1.23)	<0.001
Lumbar spine T-score, median (IQR)	-0.3(-1.0-0.6)	-0.2(-0.8-0.7)	-0.1 (-0.8-0.8)	<0.001
Lumbar spine Z-score, median (IQR)	-0.1(-0.8-0.8)	-0.0(-0.8-0.8)	0.1(-0.7-0.9)	<0.001
Hip (g/cm²), median (IQR)	0.90(0.81-1.00)	0.91(0.83-1.01)	0.91(0.82-1.02)	<0.001
Hip T-score, median (IQR)	-0.5(-1.2-0.3)	-0.4(-1.1-0.4)	-0.5(-1.1-0.5)	<0.001
Hip Z-score, median (IQR)	-0.2(-0.9-0.5)	0.0(-0.9-0.6)	-0.1(-0.8-0.7)	<0.001

Figure 1. Snapshot analysis of plasma HBV DNA and HIV RNA load



- Compared with baseline, the median UPCR, UCAR, and urine β2-microglobulin-creatinine ratio at Week 48 decreased significantly. Significantly higher lipid profiles were observed at Week 48 (**Fig 2**). BMD of the lumbar spine and hip improved at Week 48 (**Fig 3**).

Figure 2. Change of (a) urine protein and (b) lipids at Week 24 & 48

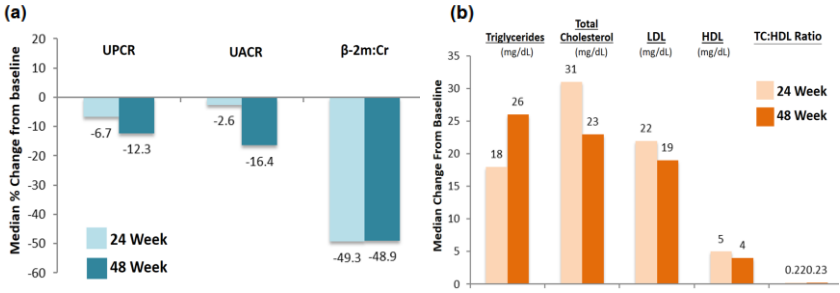
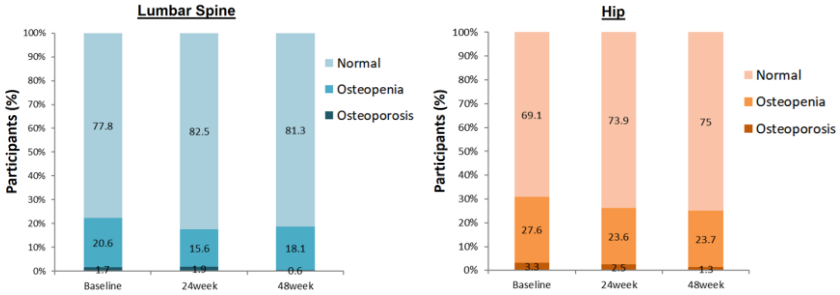


Figure 3. Percentage of patients with osteopenia and osteoporosis



Conclusions

- E/C/F/TAF achieved both HBV and HIV viral suppression in HIV/HBV-coinfected participants. Switch to E/C/F/TAF resulted in less proteinuria, improved BMD of the lumbar spine and hip, but increased lipids at Week 48.