No evidence of neuronal injury after switching to dolutegravir/lamivudine from three-drug regimen

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Background

Treatment with dolutegravir/lamivudine (DTG/3TC) is effective in terms of viral suppression in the blood, but its effect on HIV infection in the central nervous system (CNS) is insufficiently explored.

Methods

'The Gothenburg HIV CSF Study is a longitudinal study investigating HIV infection in the CNS. From this cohort, we retrospectively included all individuals who were on suppressive antiretroviral therapy and who switched to DTG/3TC and who also had undergone lumbar punctures up to one year before and up to two years after. Cerebrospinal fluid (CSF) neurofilament light (NfL) levels were measured by ELISA.

Results

We included 20 participants between 2017-2023, all of whom were virally suppressed (<50 HIV RNA copies/mL) in blood and cerebrospinal fluid at the time of switch. Fifteen were on integrase inhibitor at baseline. Seven were female. Median age at switch was 55 years. All participants remained suppressed in blood throughout the follow-up period while one patient had an asymptomatic minor increase of 70 copies/ml in CSF without elevation of CSF white blood cell count or NfL. Mean levels of CSF NfL were 610 ug/ml before switch and 613 ug/ml after switch. The small difference was below the expected annual increase of 3% and not significant. *See table 1 and figure 1*.

Table 1. Baseline and follow-up data of all participants

	Baseline	Follow-up
	Mean (SD)	
CSF HIV RNA	0 (0)	3.50 (15.7)
CSF NfL (age adj)	528 (272)	520 (291)
P HIV RNA	1.45 (6.25)	1.20 (4.44)
B CD4⁺ cell count	677 (150)	691 (206)
Weight (kg)	81 (15)	80 (16)
Creatinine (umol/L)	87 (12)	88 (18)

INI: Integrase inhibitor. PI: Protease Inhibitor.
CSF: cerebrospinal fluid. P: Plasma. B: Blood
NfL: Neurofilament Light protein. Age adj: Adjusted to 50 years

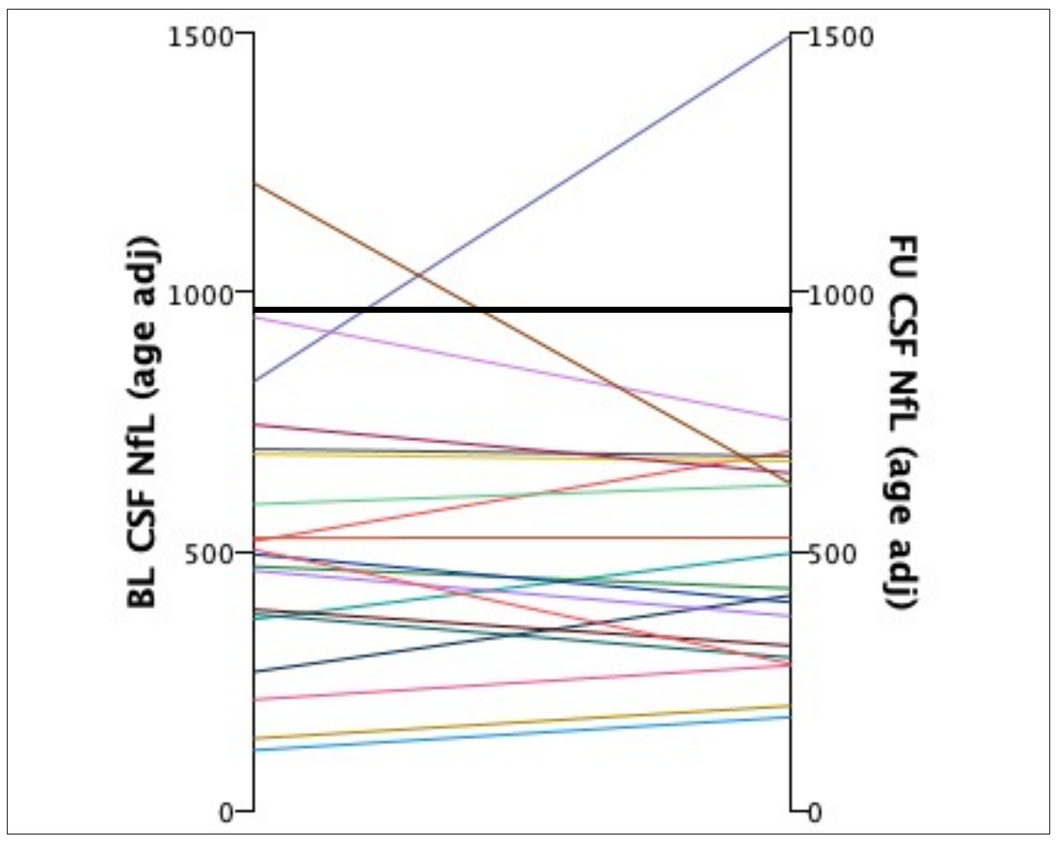

Figure 1. Parallel line plot of Cerebrospinal fluid (CSF) neurofilament light protein (NfL) at baseline (BL) and follow-up (FU), age adjusted to 50 years. Each line represents an individual. Black line represents upper normal limit (967 ug/mL).

Conclusion

In this pilot study, we observed no evidence of neuronal injury, as measured by NfL, following the switch to dolutegravir/lamivudine. The results will be further explored by investigating inflammatory biomarkers in CSF as well as NfL levels and other CNS injury markers in a larger cohort using plasma samples.