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Background

The progressive thinning of peripapillary retinal nerve fiber layer (pRNFL) and of ganglion cell layer+inner plexiform layer (GCIPL) as assessed with optical coherence tomography (OCT) are considered biomarkers of neurodegeneration in multiple sclerosis (MS), and have been shown to predict disability progression after treatment initiation, thus representing an accessible biomarker of treatment failure in MS. However, **data regarding the effect of fingolimod and cladribine treatment on retinal atrophy are still lacking.**

Aims

To investigate and compare the impact of cladribine (I course) and fingolimod treatments on retinal atrophy in a cohort of relapsing remitting multiple sclerosis (RRMS) patients.

Methods

- In this ongoing **prospective observational study** patients starting cladribine or fingolimod treatment at the MS Center of the University of Genoa underwent spectral-domain optical coherence tomography (SD-OCT) (*Spectralis, Heidelberg Engineering*) scans at baseline and at 12-months follow-up (FU).
- Demographic characteristics and effectiveness outcomes throughout FU were collected.
- Patients with previous bilateral optic neuritis (ON) were not included. In patients with previous unilateral ON, only the non-affected eye was analyzed. In patients without history of ON and HC, OCT metrics were averaged over the two eyes.
- Atrophy rates of pRNFL and GCIPL at different timepoints and their differences between groups were assessed** with repeated measures ANCOVA accounting for age, sex, disease duration.

Results

Table 1

Demographic characteristics and disease history			
	Cladribine N=14	Fingolimod N=15	P-value
Mean (SD) age y	42 (12)	38 (11)	0.39
Female, n (%)	7 (58)	9 (60)	0.88
Median (range) baseline EDSS	1.5 (0-4.5)	1.5 (0-5)	0.88
Mean (SD) baseline ARR	0.4 (0.7)	0.2 (0.4)	0.34
Mean (SD) disease duration, y	12 (8)	12 (9)	0.99

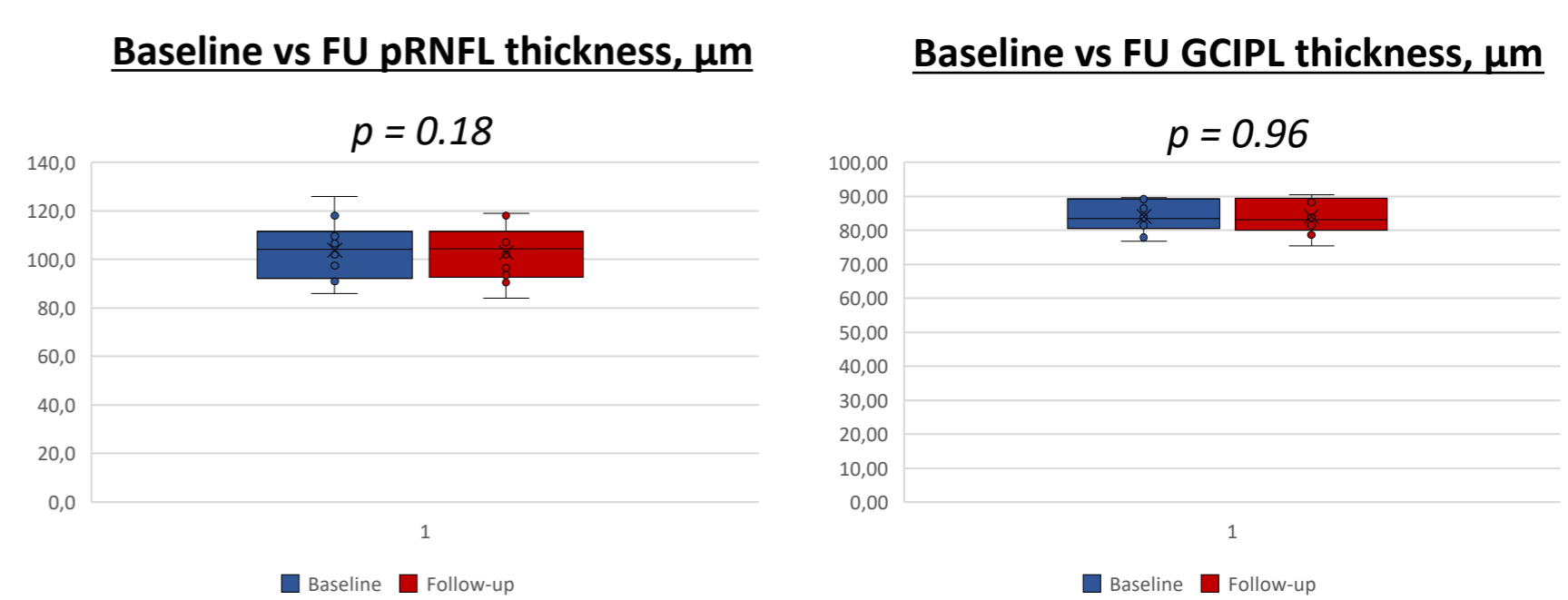
Conclusions

- Our preliminary findings show an overall stability of pRNFL and GCIPL thickness over 1-year** in patients treated with cladribine (I course) and fingolimod.
- The impact of treatment in terms retinal atrophy seems similar between the two drugs. Our results need to be confirmed by **larger analyses, which should also take into account the impact of the second course of cladribine treatment.**

Bibliography

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- At 1-year FU, **no significant differences were observed between baseline and FU pRNFL** (99.54 ± 12.61 vs 98.26 ± 12.62 μm , respectively; $p=0.18$) **or GCIPL** (81.45 ± 0.01 vs 81.88 ± 7.75 μm , respectively; $p=0.96$), when considering the global population.



- Retinal thinning over FU was similar between patients treated with cladribine** (pRNFL: -0.90 ± 2.36 μm ; GCIPL: -0.16 ± 2.26 μm) **or fingolimod** (pRNFL: -1.57 ± 0.97 μm ; GCIPL: -0.61 ± 1.61 μm); ($p=0.34$ and $p=0.47$, respectively).

