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Background and Aim

Ocrelizumab (OCR), a monoclonal antibody targeted against CD20+ B cells, has been shown to reduce frequency of relapses by 46% and disability worsening by 40% compared to interferon-β 1a in relapsing-remitting multiple sclerosis (RRMS). Effectiveness compared to other treatments is unknown.

Aim: To compare the effectiveness of ocrelizumab with interferon-β, fingolimod and natalizumab on reducing relapse activity in RRMS.

Methods

Retrospective cohort study from the MSBase international registry. Included patients: RRMS treated for ≥6 months with ocrelizumab, interferon-β (interferon β-1a, interferon β-1b SC or interferon β-1b IM), fingolimod or natalizumab, >12-month pre-treatment follow up. No prior exposure to comparator therapy. Included patients were 1-to-multiple propensity score-matched on: sex, age, MS duration, EDSS, prior relapse rate, prior MS therapy, disease activity, country, reason for previous treatment discontinuation and MRI (missing values imputed).

Annualised rate of relapses (negative binomial models) and cumulative hazard of relapses (Andersen-Gill proportional hazards models) were compared in pairwise-censored groups.

Results

natalizumab (NAT) vs ocrelizumab (OCR)

	NAT	OCR	SMD
patients, nr (% female)	343 (75.1)	262 (73.4)	0.04
age, yr	39 (10.8)	39 (11.5)	0.07
MS duration, yr	9.3 (7.5)	9.7 (8.1)	0.05
disability, EDSS	2.7 (1.7)	2.8 (1.8)	0.05
Relapses prior 12mo	0.83 (0.9)	0.82 (0.8)	0.01
Previous therapies, nr	1 [1-2]	2 [1-2]	0.01
Pairwise-censored follow-up, yr	1.6 (0.6)	1.6 (0.6)	0.00

Mean (SD) or median [quartiles]; SMD – standardized mean difference

fingolimod (FTY) vs ocrelizumab (OCR)

Characteristics of the matched cohort

	FTY	OCR	SMD
patients, nr (% female)	811 (72.1)	297 (73.4)	0.01
age, yr	41 (10.3)	41 (12.2)	0.01
MS duration, yr	10.3 (8.6)	10.1 (8.8)	0.02
disability, EDSS	2.7 (1.7)	2.8 (1.9)	0.05
Relapses prior 12mo	0.66 (0.8)	0.67 (0.8)	0.02
Previous therapies, nr	1 [1-2]	1 [1-2]	0.06
Pairwise-censored follow-up, yr	1.5 (0.6)	1.5 (0.6)	0.00

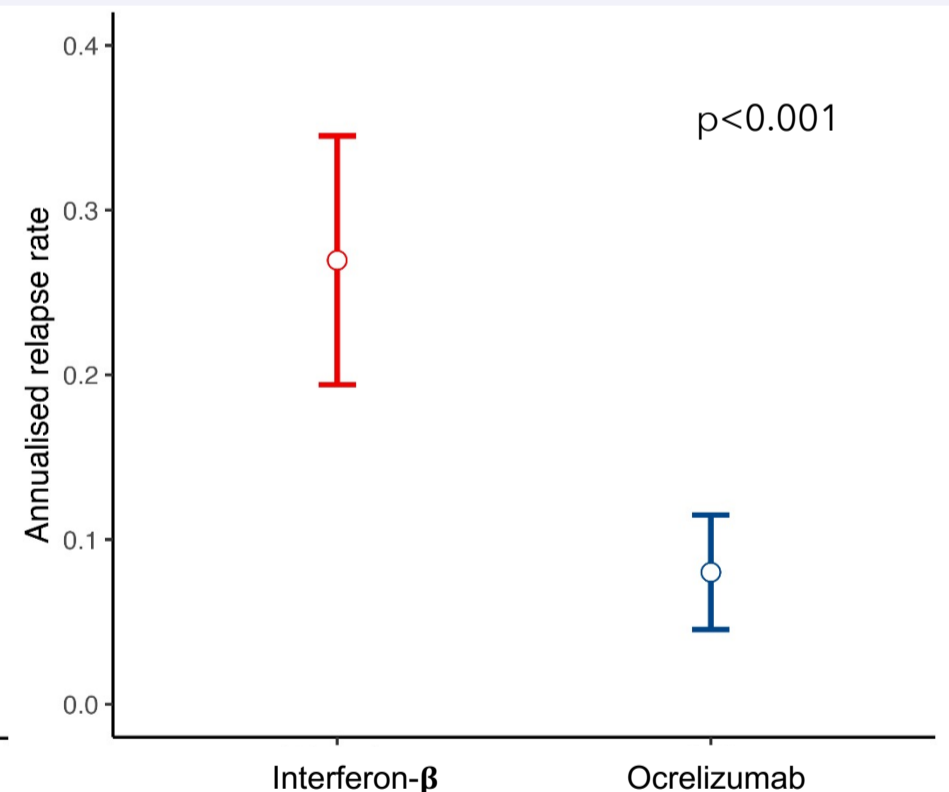
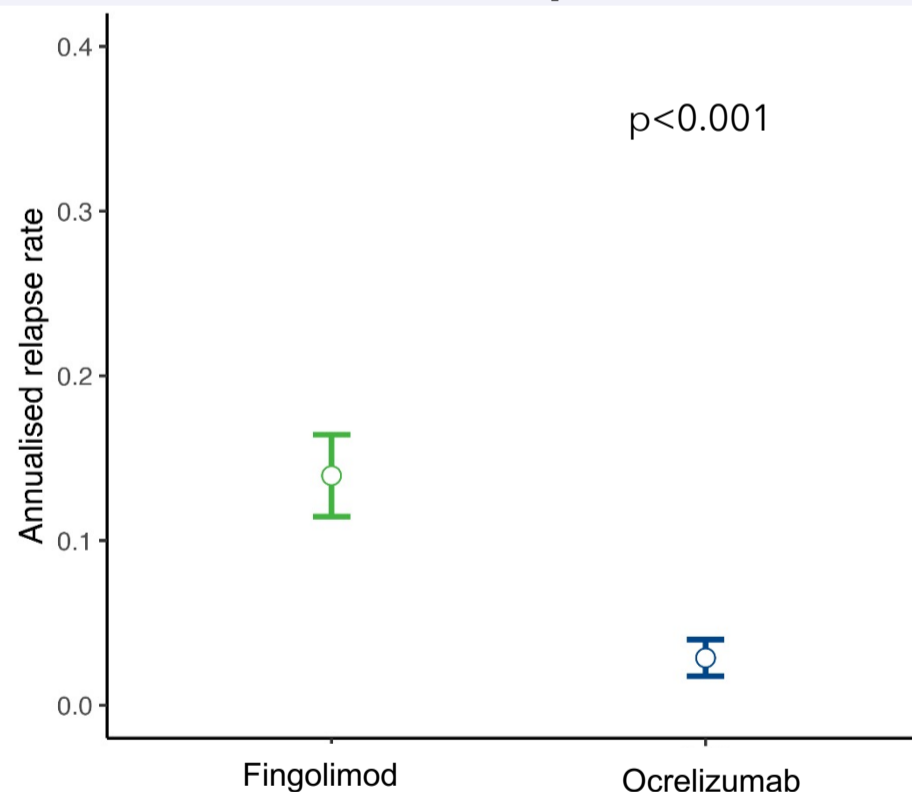
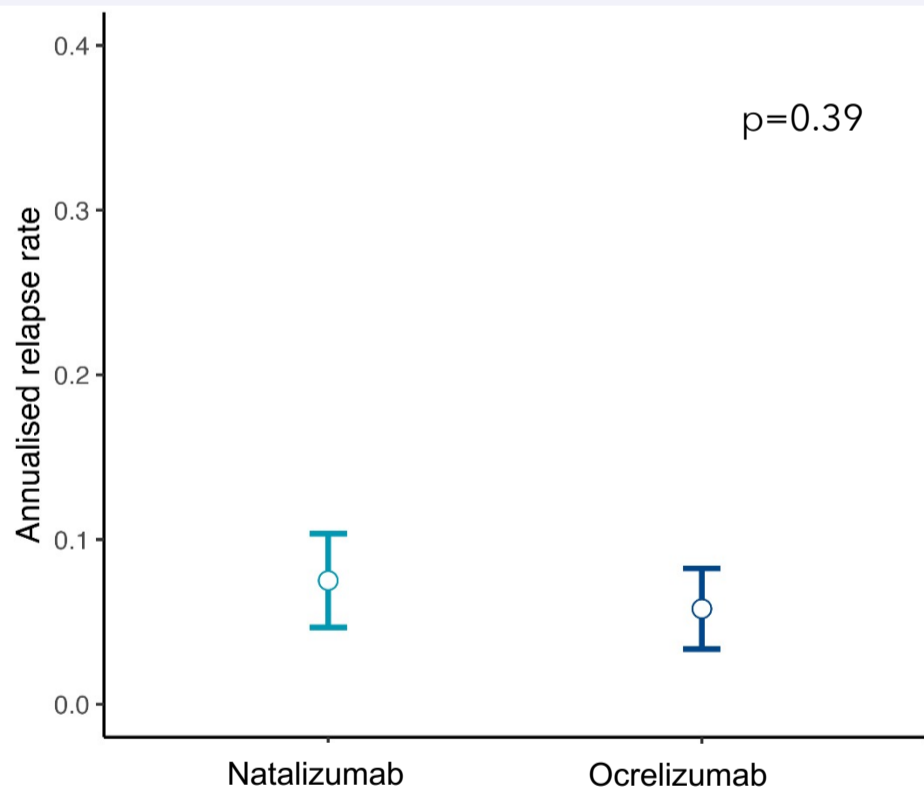
Mean (SD) or median [quartiles]; SMD – standardized mean difference

interferon-β (IFN-β) vs ocrelizumab (OCR)

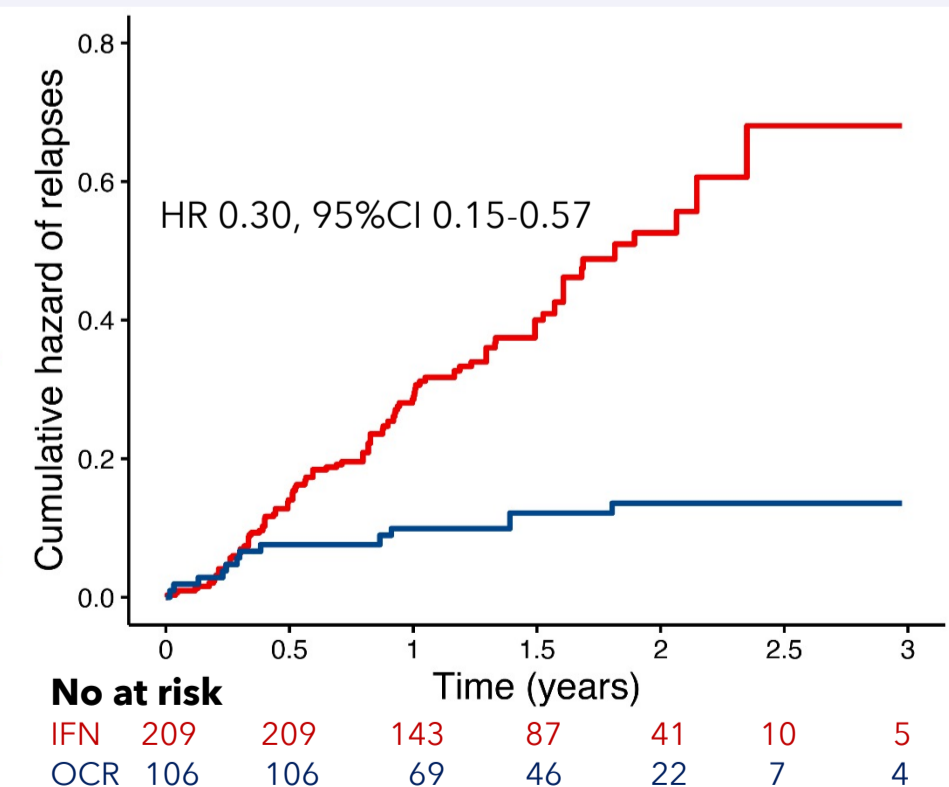
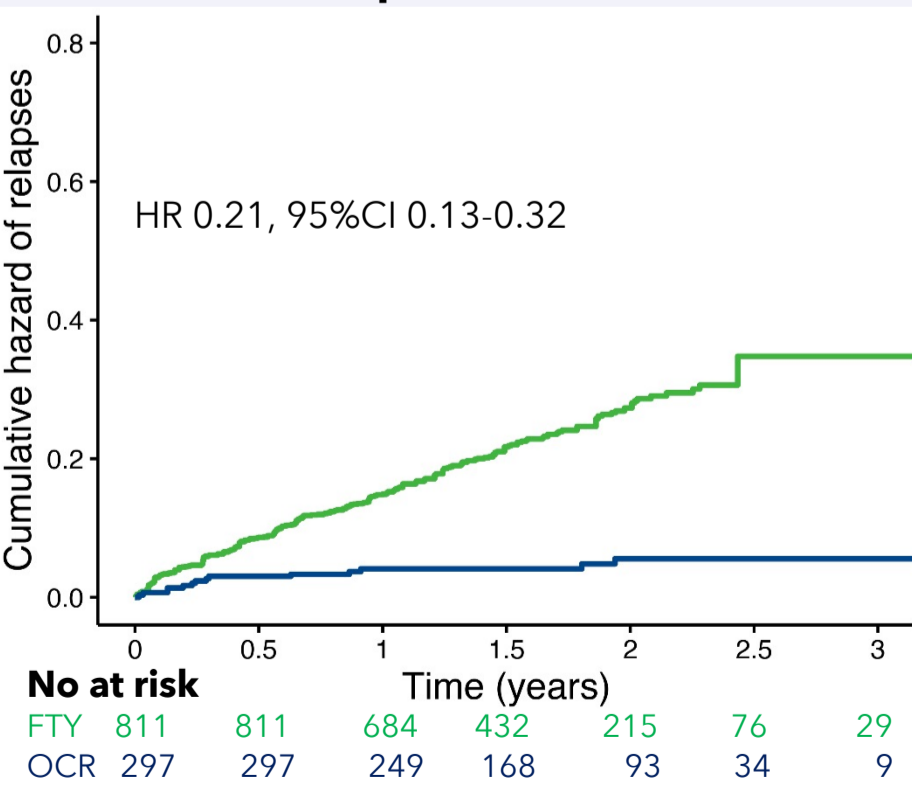
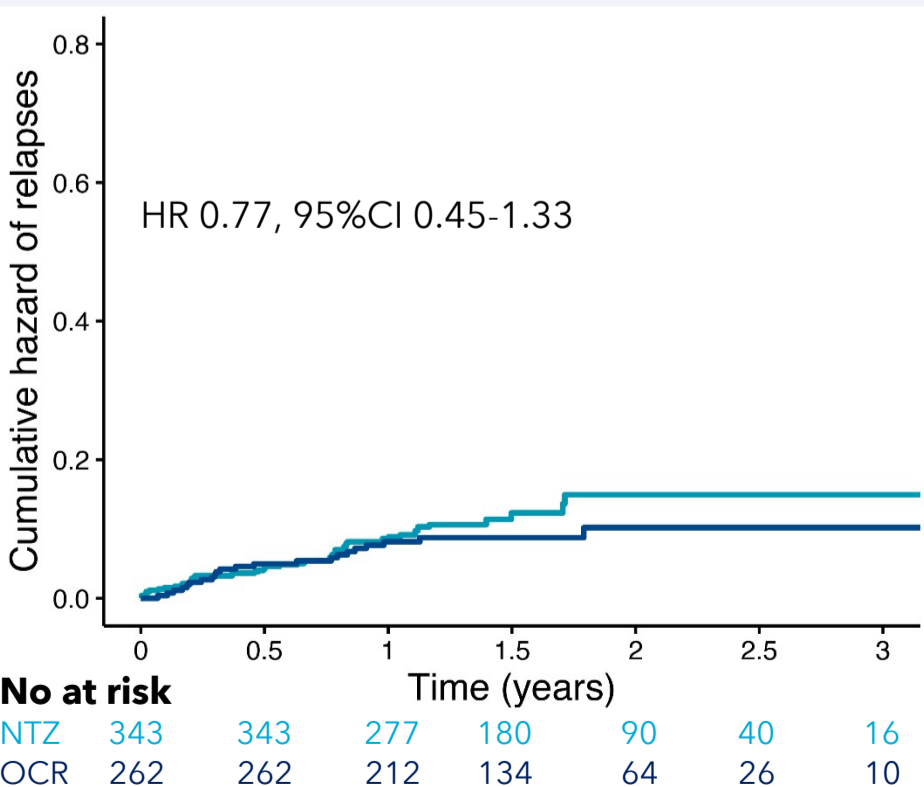
	IFN-β	OCR	SMD
patients, nr (% female)	209 (71.7)	106 (73.7)	0.04
age, yr	39 (12.3)	39 (13.4)	0.02
MS duration, yr	8.7 (8.3)	8.3 (9.0)	0.05
disability, EDSS	2.5 (1.7)	2.4 (1.7)	0.06
Relapses prior 12mo	0.84 (0.9)	0.81 (0.9)	0.03
Previous therapies, nr	1 [0-2]	1 [0-2]	0.01
Pairwise-censored follow-up, yr	1.3 (0.6)	1.3 (0.6)	0.00

Mean (SD) or median [quartiles]; SMD – standardized mean difference

Annualised relapse rate



Relapse incidence



Conclusion: Treatment with ocrelizumab provides superior control of relapses than interferon-β and fingolimod.

The effects of ocrelizumab and natalizumab on relapse activity are similar.

Further evaluation of the comparative effectiveness of ocrelizumab on disability accumulation is warranted.

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