Early use of high efficacy therapies in pediatric forms of relapsing-remitting multiple sclerosis: a real-life observational study

A. Moreau, I. Kolitsi, L. Kremer, M.-C. Fleury, N. Collongues, J. De Sèze, K. Bigaut
Hôpitaux Universitaires de Strasbourg, Neurology, Strasbourg, France

Introduction

- Pediatric forms of relapsing-remitting multiple sclerosis (RRMS) are more active than those in adults.[1]
- Yet, the effectiveness of different therapeutic approaches is not well studied in this population.[2]

Purpose

- To compare the effectiveness of early use of high efficacy therapies (HET) versus intermediate efficacy therapies (IET) in children and adolescents with multiple sclerosis.

Methods

- This retrospective analysis included patients with RRMS starting before 18 years old from 4 Alsatian centers, diagnosed during a 10-years period (2010-2020).
- Collected data included age, gender, disease-modifying treatment (DMT), Expanded Disability Status Scale (EDSS), magnetic resonance imaging findings.
- DMT were categorized as follows:
  - IET: beta-1a interferon, glatiramer acetate, dimethyl fumarate, teriflunomide;
  - HET: fingolimod, natalizumab, ocrelizumab, alemtuzumab.
- The primary endpoint was the occurrence of a new relapse.

Results

- Sixty-four patients were included in the analysis (80% women, mean age 15.5 years, 81% treated with IET) with a median follow-up of 37 months (**Table 1**).
- The cumulative probability of being relapse-free was 0.0% under IET, vs 90.9% under HET (p=0.013) (**Figure 1**).
- For patients with IET at baseline, the cumulative probability of keeping IET was 10.2% (IC95% 2.06;50.8), with a median of survival of 52 months (IQR 21;92) (**Figure 2**).
- The cumulative probability of no worsening of EDSS was 78.3% under IET, versus 100% under HET (p=0.43).

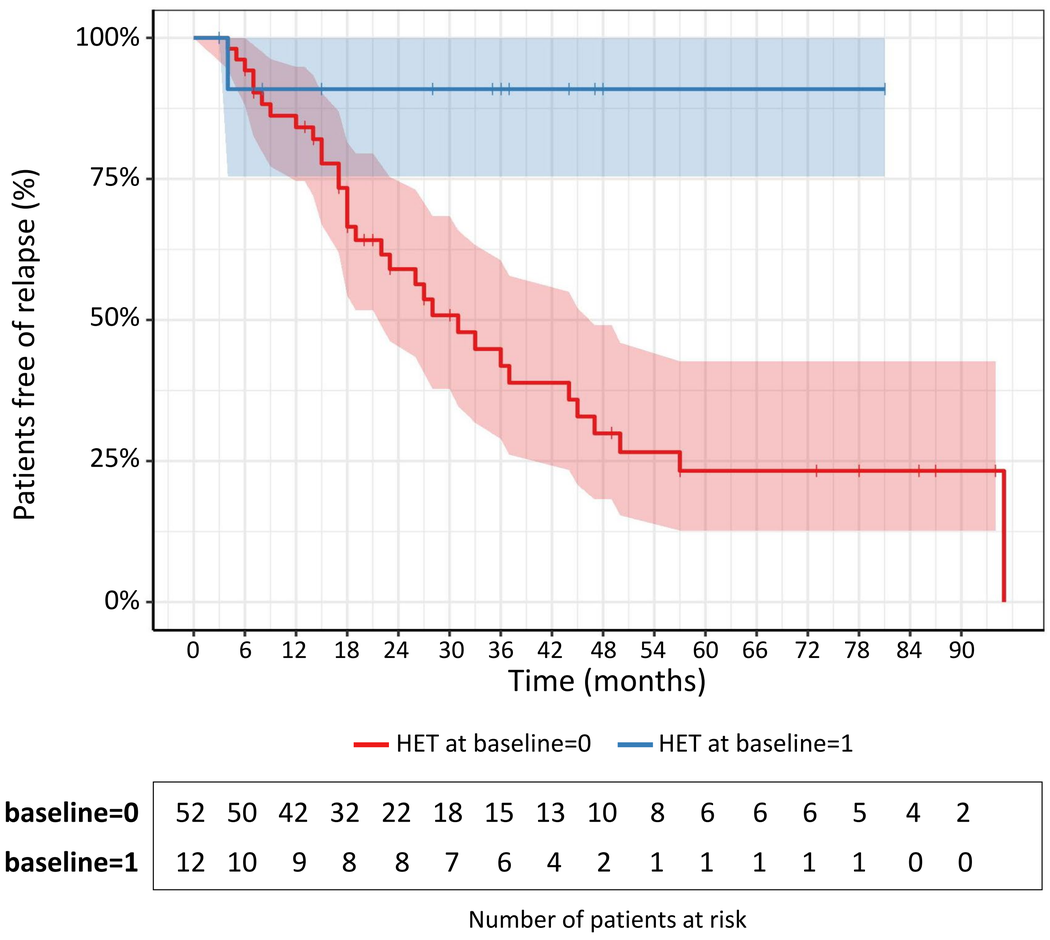

Figure 1. Kaplan-Meier survival analysis estimating the cumulative risk over 90 months of clinical relapse under HET versus IET, with 95% confidence intervals.
IET: intermediate efficacy therapy, HET: high efficacy therapy

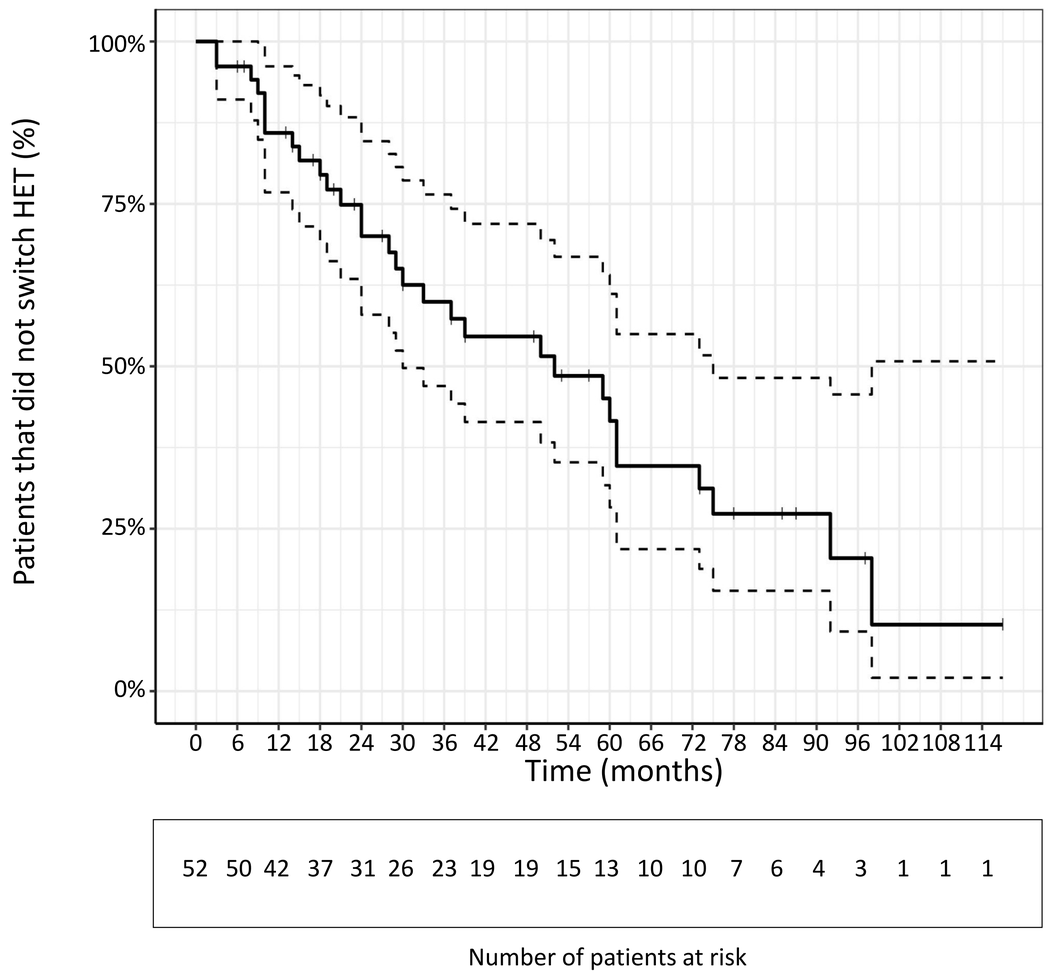

Figure 2. Kaplan-Meier survival analysis estimating the cumulative risk over 90 months of switching to HET in patients who started with IET, with 95% confidence interval. IET: intermediate efficacy therapy, HET: high efficacy therapy

Characteristic	IET (N=52)	HET (N=12)	Total (N=64)
Female sex – no. (%)	42 (81%)	9 (75%)	51 (80%)
Age – yr, mean ± SD	15.3±1.6	16.0±1.6	15.5±1.6
Patients with ≥9 T_2-weighted MRI lesions			
Patients evaluated	46†	12	58
No. (%)	33 (71%)	10 (83%)	43 (74%)

Table 1. Baseline characteristics of the patients, according to DMT group.
DMT: disease-modifying treatment, IET: intermediate efficacy therapy, HET: high efficacy therapy, SD: standard deviation, MRI: magnetic resonance imaging, yr: year.
†Baseline information was missing for a small number of patients before the first dose.

Conclusions

- Patients under intermediate efficacy therapies had a much higher disease activity than those on early high efficacy therapies.
- Rapid initiation of more aggressive treatment may allow better disease control.
- However, the effect on EDSS worsening remains uncertain, probably due to the small number of events and the short follow-up duration.

References

1. Gorman MP et al., 2009, *Arch Neurol*, DOI: 10.1001/archneurol.2008.505
2. Fadda G et al., 2021, *Lancet Neurol*, DOI: 10.1016/S1474-4422(20)30432-4

Disclosure

K. Bigaut has received lecturing fees and travel grants from Biogen, Celgene-BMS, Novartis, Roche and Sanofi-Genzyme. The other authors have nothing to disclose.
Presented at the ECTRIMS 2022 - 38th Congress of the European Committee for Treatment and Research in Multiple Sclerosis - 27th Annual RIMS Conference – 26-28 October 2022, Amsterdam, The Netherlands