REAL LIFE EXPERIENCE OF THE IMPACT OF BODY MASS INDEX IN FINGOLIMOD-INDUCED LYMPHOPENIA IN MULTIPLE SCLEROSIS PATIENTS

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OBJECTIVE

Previous studies have demonstrated that Body Mass Index (BMI) affects the risk of FTY-induced lymphopenia. We aimed to correlate BMI with lymphopenia and to assess its predictive value for treatment response in a real life setting of FTY treated Relapsing-MS patients.

MATERIALS AND METHODS

We collected clinical, demographic and anthropometric data of 160 patients at the start of FTY (T0). Total White Blood Cells (WBC), lymphocyte count (LC) and lymphocyte subsets (LS) were assessed at T0 and after 1(T1), 3 (T3) and 6 (T6) month of therapy by flow cytometry. To correlate WBC, LC and LS with BMI and clinical and demographic characteristics, non-parametric tests were performed (Pearson and Spearman test). We previously evaluated in the same cohort, how lymphocytes could represent a biomarker of treatment response: cut off value of 262.02/ul CD3+ lymphocytes stratified patients for the risk of a relapse at T6; cut off value of 591.50/ul LC predicted the occurrence of Gd+ at T12. We evaluated using multivariate logistic regression models, whether BMI can be a predictive factor in reaching this target values.

RESULTS

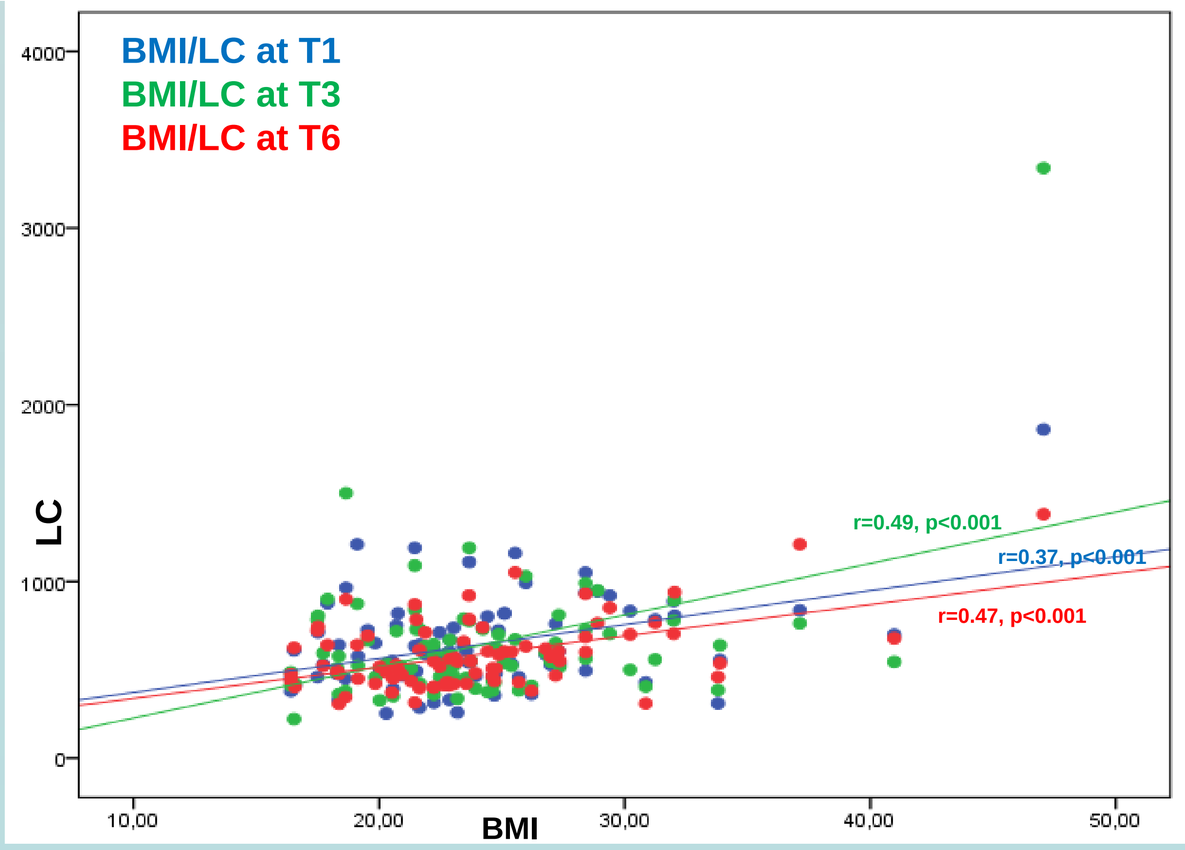
The mean age at FTY-beginning was 38.3±9 years and the disease duration was 12.5±7.3 years (**Table 1**). We found a direct correlation between BMI and WBC at T1 (r=0.24 p=0.016) and LC at T1 (r=0.37, p<0.001), T3 (r=0.49, p<0.001) and T6 (r=0.47, p<0.001) (**Figure 1**). Moreover, stratifying patients for their weight category, we found that overweight and obese patients had a lower risk of lymphopenia at T1 (rs= -0.21; p=0.022) compared to underweight and healthy weight patients. BMI resulted a predictive factor for the cut-off value of CD3+ (p=0.04; OR= 0.88; CI95%= 0.805-0.996) from the third month of therapy; BMI could also predict the reaching the cut-off value of LC (p=0.015; OR= 0.88; CI95%=0.795-0.976) from the sixth month (**Table 2**).

Table 1. Baseline characteristics of the cohort (n°160)
Values expressed as mean (±SD)

Sex (F/M)	**106/54**
Age at FTY start, years	**38.3±9**
Disease duration, years	**12.5±7.3**
EDSS at FTY start	**3.5±1.5**
BMI	**24.08±4.9**
LC at T0	**2131.03±619.6**
WBC at T0	**7036±1865.8**

WBC = White Blood count; LC = Lymphocyte count.

Figure 1. Correlation between BMI and Lymphocytes Count



DISCUSSIONS AND CONCLUSIONS

Evaluating BMI in clinical practice is gaining importance for prognosis and monitoring of MS. A higher BMI can be a protective factor for lymphopenia. Our results demonstrate that BMI can also be considered to stratify treatment response during FTY, influencing the efficacy of the drug.

Table 2. Predictors of LC and CD3+ target value

	CD3+ target value		LC target value	
Predictor	**OR (95% CI)**	**p**	**OR (95% CI)**	**p**
Male sex	0.54 (0.82-1.48)	0.22	0.85 (0.69-4.97)	0.28
Disease duration at FTY beginning	0.82 (0.40-1.68)	0.59	0.87 (0.31-2.43)	0.79
BMI	**0.88 (0.81-0.997)**	**0.00**	**0.88 (0.795-0.97)**	**0.015**
Age at FTY beginning	1.01 (0.98-1.02)	0.89	1.08 (0.84-1.09)	0.87
Disease duration at FTY beginning	1.85 (0.95-1.62)	0.21	1.24 (0.85-1.88)	0.61
EDSS at FTY beginning	1.41 (0.96-1.71)	0.20	1.12 (0.97-1.82)	0.21

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•Paolicelli D, et al. J Neuroimmunol. 2017