Initial MRI lesion load: a predictor of long-term disability independent of suggestive event

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Objectives
- To assess initial MRI lesion load as a predictor of long-term disability and relation with history of suggestive event.

Methods
- Inclusion criteria were 1) first documented demyelinating event occurred > 14 years ago. 2) initial brain MRI data available.
- Outcome measure: Time to reach EDSS 3 and 6
- Explicative variables: suggestive event (yes / no), T2 lesions (n ≥ 14, < 14), gadolinium lesions (n ≥ 2, < 2).
- Number of brain MRI T2 lesions and T1 Gadolinium lesions were determined by two readers. To be confirmed the suggestive event should be supported by clinic and MRI.
- ROC curve were used to define the cutoff for the number of T2 and T1 Gadolinium lesions. A survival analysis was performed to assess each variable regarding the time to reach EDSS 3 and 6. A cox model was used for multivariable analysis. The correlations between variables were assessed by Spearman test.

Results
- Population characteristics are reported in table 1 (n = 227)
- The median follow up time is 13.5 years (6.5 - 15.5)

Initial T2 lesions ≥ 14 increases the risk to reach EDSS 3 (figure 2)
- The proportion of patients who reached EDSS 3 was higher in the group with a number of T2 lesions ≥ 14 (0.16, 95%CI(0.10 - 0.25) vs 0.39, 95%CI(0.25 - 0.54); p=0.014) with an increased risk to reach EDSS 3: HR = 3.03, 95%CI (1.31 - 6.79); p = 0.010
- The number of Gadolinium lesions and the occurrence of a suggestive event was not predictive of EDSS 3
- The number of T2 lesions ≥ 14, Gadolinium ≥ 2 and suggestive event was not predictive of EDSS 6

Relation between T2 lesions and the other explicative variables
- Hypothesis: T2 lesion load could be related to the level of disease activity or the duration of presymptomatic phase
- Gadolinium lesions may reflect the disease activity and suggestive event reflects a longer duration of undiagnosed phase
- Number of initial T2 lesions is correlated with Gadolinium lesions (p = 0.49, p < 0.001) but not with time elapsed between suggestive event and 1st documented event (p = -0.04; p = 0.7)

Conclusion
- Initial MRI T2 lesion load ≥ 14 increases the risk to reach EDSS 3
- Initial MRI T2 lesion load is correlated to G+ lesion