Objective classification of multiple sclerosis disease course results in frequent reclassification to secondary progressive multiple sclerosis


Conclusions: The SPMS proportion increased markedly after application of an objective classifier, indicating an under-assignment of SPMS in clinical practice. The group that was reclassified to SPMS generally displayed a higher age and higher EDSS scores compared to the patients that remained in the RRMS group. Misclassification was most pronounced in patients on DMTs, indicating an important bias.

Results: Of 61,950 MS patients, 8,273 were reclassified from RRMS to SPMS, increasing the overall SPMS proportion from 18% to 28%. As a result of the reclassification, the average age in the RRMS group changed from 44.4 to 42.8 years and from 57.9 to 57.2 years in the SPMS group. Those who were reclassified from RRMS to SPMS were on average 55 years old and had a mean EDSS score of 5.26 compared to mean EDSS scores of 2.53 and 5.85 in the clinically assigned RRMS and SPMS groups respectively. In the reclassified group a majority of 71% were on disease modifying treatments (DMTs) compared to 81% and 39% among the clinically assigned RRMS and SPMS patients respectively.

RCN on SPMS: The Research collaboration network for secondary progressive MS was started in 2019 as a collaboration between nine national MS registries and the international database MSBase. So far the RCN is supported financially from Novartis but is principally open for collaborations with other sponsors.

Objective: To determine the proportion and characteristics of patients with relapsing-remitting (RRMS) and secondary progressive (SPMS) multiple sclerosis (MS) after applying an objective disease course classifier in five clinical MS registries.

Background: The assignment of SPMS in clinical practice is complicated given lack of objective criteria and less therapeutic options raising a question of accuracy of clinically assigned RRMS and SPMS courses.

Design/Methods: We used data from MS registries in the Czech Republic, Denmark, Germany, Sweden, and the United Kingdom, including patients with RRMS or SPMS with age ≥18 years at the beginning of the index period (1 January 2017 – 31 December 2019). We applied a decision tree MS course classifier developed at Karolinska Institutet (Ramanujam R, et al, 2020. medRxiv, Reference)
Objective classification of multiple sclerosis disease course results in frequent reclassification to secondary progressive multiple sclerosis


1Department of Clinical Neuroscience, Karolinska Institute, Stockholm, Sweden, MS-Register, 2Centre for Molecular Medicine (CMM), Department of Clinical Neurosciences, Karolinska Institute, Stockholm, Sweden, 3Department of Mathematics, KTH Royal Institute of Technology, Stockholm, Sweden, 4Czech national multiple sclerosis patient registry ReMuS, IMPULS Endowment Fund, 5Department of Neurology and Center of Clinical Neuroscience, Charles University in Prague, 1st Faculty of Medicine and General University Hospital, Prague, Czech Republic, 6Danish Multiple Sclerosis Registry, Department of Neurology, Rigshospitalet, Denmark, 7Danish Multiple Sclerosis Center, Department of Neurology, Rigshospitalet, Denmark, 8MS Forschungs- und Projektentwicklungs-gGmbH, Hannover, Germany, 9Dept of Neuroscience, Central Clinical School, Monash University, Australia, 10Swansea University Medical School, Swansea, United Kingdom. 11Department of Cellular and Molecular Neuroscience, Imperial College London, London, UK, 12Department of Visual Neuroscience, UCL Institute of Ophthalmology, London, UK, 13Novartis Pharma AG, Basel, Switzerland

Disclosures: Jan Hillert has received honoraria for serving on advisory boards for Biogen, Sanofi-Genzyme and Novartis and speaker's fees from Biogen, Novartis, Merck-Serono, Bayer-Schering, Teva and Sanofi-Genzyme and has served as P.I. for projects, or received unrestricted research support from, Biogen Idec, Merck, Novartis and Sanofi-Genzyme. Lars Forsberg: Nothing to disclose. Ali Manouchehrinia is supported by the Margaretha af Ugglaas Foundation. Ryan Ramanujam: Nothing to disclose. Tim Spelman has received compensation for serving on scientific advisory boards, honoraria for consultancy and funding for travel from Biogen Inc; speaker honoraria from Novartis. Pernilla Klyve: Nothing to disclose. Jiri Drahota: Nothing to disclose. Dana Horakova received compensation for travel, speaker honoraria and consultant fees from Biogen Idec, Novartis, Merck, Bayer, Sanofi, and Teva, as well as support for research activities from Biogen Idec. Hanna Joensen received honoraria for advisory board from Biogen. Melinda Magyari has served on scientific advisory board for Biogen, Sanofi, Roche, Novartis, Merck, Abbvie, has received honoraria froBiogen, Merck, Novartis, Sanofi, Genzyme, has received research support and support for congress participation from Biogen, Genzyme, Roche, Merck, Novartis. David Ellenberger: Nothing to disclose. Alexander Stahmann: has no personal pecuniary interests to disclose, other than being the lead of the German MS Registry, which receives funding from a range of public and corporate sponsors, recently including the German Innovation Fund (G-BA), The German MS Trust, Biogen, German MS Society, Celgene (BMS), Merck and Novartis. Dr van der Walt has received travel support and served on advisory boards for Novartis, Biogen, Merck Serono, Roche and Sanofi. She receives grant support from the National Health and Medical Research Council of Australia and MS Research Australia. Jeff Rodgers: Nothing to disclose. James A Witts: Nothing to disclose. Rod Middleton: Nothing to disclose. Richard Nicholas reports support from advisory boards and travel expenses from Novartis, Roche and Biogen. He has grant support from the UK MS Society and is a member of a NICE HTA committee. Vladimir Bezlyak is a full-time employee of Novartis Pharma AG. Nicholas Adlard is a full-time employee of Novartis Pharma AG. Thomas Hach is a full-time employee of Novartis Pharma AG. Carol Lines is a full-time employee of Novartis Pharma AG. Anna Glaser: has received research support from Novartis. This study was supported by a research grant from Novartis Pharma AG.