Abstract

Multiple sclerosis (MS) is a chronic neurological disease that, without treatment, leads over years to decades to severe disability in most patients. We cannot cure the disease, but there is growing evidence that early initiation of anti-inflammatory therapy and management of associated comorbidities has a major impact on its course. Patient registries have an irreplaceable contribution to evaluating factors influencing the MS course and the monitoring of therapeutic agents in real clinical practice.

First, this thesis evaluated therapy management trends between 2013 and 2021 based on data from the Czech National MS Registry (ReMuS). Subsequently, the paper responds to the onset of the covid-19 pandemic through registry data and addresses this issue in the context of MS. The proportion of patients in ReMuS treated with high-efficacy disease-modifying therapies (HE-DMT) increased from 16.2% to 37.1% between 2013 and 2021, and the proportion of treatment-naive patients initiating HE-DMT increased from 2.1% to 18.5%. Regarding covid-19 infection, we determined that higher body mass index, older age, recent high-dose glucocorticoid treatment, and anti-CD20 therapy were independent variables associated with pneumonia based on data from 958 MS patients with a history of covid-19. Further, we analyzed 1661 vaccinated MS patients without a history of covid-19 and 495 unvaccinated MS patients with a history of covid-19. We observed a slight increase in the proportion of patients with at least one relapse (-180 to -90 days: 3.9%; -90 to 0 days: 3.8% versus 0 to +90 days: 5.3%) after vaccination and covid-19 infection. Patients who experienced a relapse after vaccination or infection were on average statistically significantly younger. Finally, we analyzed magnetic resonance imaging data from 181 clinically stable patients and demonstrated a decrease in brain volume after covid-19 compared with the previous and subsequent periods, especially in older patients.

Keywords: multiple sclerosis, disease-modifying therapy, real-world practice, registries, epidemiology, covid-19, vaccination, magnetic resonance imaging