Multiple sclerosis (MS) is a chronic disease of the central nervous system. Evidence regarding the causes of death (COD) that contribute to mortality in patients with MS is limited. The analysis of the death certificate data for patients with MS can help to identify causes of death and may contribute to understanding the disease burden. The current study aimed to determine the mortality rate due to MS and other CODs in patients with MS using a retrospective cohort analysis of death certificates from a large insurance database.

Methods

Selection of subjects and determination of mortality

The study cohort consisted of patients with MS who died while enrolled in or after entry into the database. The diagnostic coding followed the International Classification of Diseases, 10th revision (ICD-10) coding system. The principal COD referred to the COD that led directly to death. The underlying COD referred to the COD that contributed to the cause of death, but not necessarily leading to death, as determined by the death certificate (YaLaVIDE). The study population included patients with MS who died in the period from January 1, 2000, to December 31, 2015.

Determination of principal COD

The principal COD was determined as the ICD-10 code recorded on the death certificate in the position closest to the cause of death. For patients who died after entry into the study, the principal COD was the last ICD-10 code entered. The deaths were categorized as due to MS or non-MS causes. The principal COD was determined by the coding team using the ICD-10 coding system, which includes all causes of death, including MS. The underlying COD was determined by the coding team using the ICD-10 coding system, which includes all causes of death, including MS.

Results

A total of 1579 deaths (5.2%) were observed in the MS cohort, with 2332 deaths (5.0%) observed in the non-MS cohort. The mortality rate due to MS (133 vs 286 deaths per 100,000 person-years) was significantly lower than the mortality rate due to non-MS causes (291 vs 286 deaths per 100,000 person-years). The principle COD indicated the highest mortality rate due to cardiovascular disease, cerebrovascular disease, MS, and infection (Figure 1). The underlying COD indicated a higher mortality rate due to cardiovascular disease, cerebrovascular disease, MS, and infection (Figure 2).

Conclusion

The mortality rate due to MS was significantly lower than the mortality rate due to non-MS causes. The principal COD indicated the highest mortality rate due to cardiovascular disease, cerebrovascular disease, MS, and infection. The underlying COD indicated a higher mortality rate due to cardiovascular disease, cerebrovascular disease, MS, and infection. The results of this study provide valuable insights into the cause of death in patients with MS and may help to improve the management of this disease.