FULL-LENGTH ARTICLE NPub.org/xqy7q3

Nationwide prevalence and incidence study of neuromyelitis optica spectrum disorder in Denmark

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Study objective

To estimate the nationwide population-based incidence, prevalence, and geographical distribution of neuromyelitis optica (NMO) spectrum disorder (NMOSD) in Denmark.

Summary results

Estimates of NMO/NMOSD incidence and prevalence in this study are similar to those of other population-based studies in whites that have used the 2015 IPND criteria.

What is known and what this paper adds

Since the recognition of aquaporin 4 (AQP4) antibody (Ab), a few NMO/NMOSD classifications have been proposed. This study estimates the incidence and prevalence of NMO/NMOSD in the entire Danish adult population according to the 2006 Wingerchuk and the 2015 International Panel for NMO Diagnosis (IPND) criteria and assesses differences among the 5 regions of Denmark.

Participants and setting

Data were obtained from the Danish National Patient Registry, the Danish Multiple Sclerosis Registry, neurology departments, and laboratories providing AQP4-Ab testing. Fifty-six cases were selected based on the 2006 Wingerchuk and 2015 IPND criteria.

Design, size, and duration

This was a nationwide population-based, historically prospective study between 2007 and 2014. The following information was collected from medical records and MRI images of all patients: demographic data and medical history, including age at onset; clinical course; brain and spinal cord MRIs at the time of diagnosis and during follow-up; AQP4-Ab results; method of AQP4-Ab test; visual evoked potentials; and spinal fluid examination.

Main results and the role of chance

Using the 2006 criteria, the incidence of NMO was 0.029 per 100,000 person-years, and the prevalence (age ≥16) was 0.566 per 100,000. Using the 2015 IPND criteria, the incidence of NMOSD was 0.070 per 100,000 person-years, and the prevalence (age ≥16) was 1.09 per 100,000, without regional differences.

Table Prevalence of neuromyelitis optica spectrum disorder (NMOSD) in the 5 Danish regions, according to 2015 IPND criteria

Region	Prevalence per 100,000 person-years
Capital region	1.19
Region Zealand	0.75
Region of Southern Denmark	1.12
Central Denmark region	1.06
North Denmark region	1.25

Bias, confounding, and other reasons for caution

This study may have missed cases with rare clinical symptoms because it did not review patients with every type of demyelinating disorder. The use of different AQP4 test methods might have influenced the results, although the potential impact is unclear.

Generalizability to other populations

The study population was predominantly white, in whom NMOSD is less frequent compared to Asian and African ancestry. This study did not test all patients fulfilling the strict 2015 criteria of seronegative NMOSD for anti-MOG antibodies and may thus be of limited value in populations where this test is used.

Study funding/potential competing interests

This study was funded by Aarhus University and the Danish MS Society. The authors report serving on scientific advisory boards, receiving honoraria, and consulting for various entities. Go to Neurology.org/N for full disclosures.

A draft of the short-form article was written by R. Chastain-Gross, a writer with Editage, a division of Cactus Communications. The authors of the full-length article and the journal editors edited and approved the final version.

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