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Epidemiology and Current Treatment of Neuromyelitis Optica: A Systematic Review

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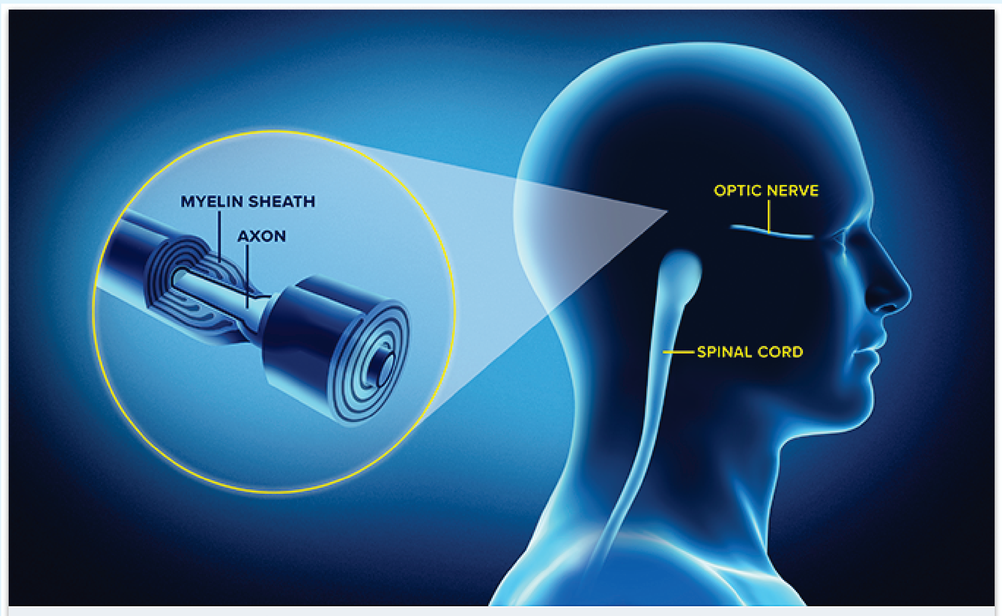
INTRODUCTION

- Neuromyelitis Optica (NMO; also known as Devic's disease) is a rare autoimmune condition characterised by:
  - Acute relapsing optic neuritis
  - Extensive transverse myelitis [1]
- Historically, NMO was viewed as a subtype of Multiple Sclerosis[2]



The myelin sheath protects axons throughout the nervous system to maintain optimal brain signaling. Neuromyelitis optica degrades the myelin sheath of the spinal cord and optic nerve, causing damage that could lead to blindness and/or paraplegia, as well as respiratory failure.

- Anti-Aquaporin 4 antibody (against aquaporin-4 antigen) is specific, and present in approximately 70% of people with NMO [3]
- Many MS treatments (such as beta-interferon) may actually increase relapse rates in NMO [4]
- The epidemiology of NMO is poorly described worldwide [5]
- A curative treatment for NMO does not exist to date[6]
- Because NMO is rare and frequently severe, adequate prospective, randomized controlled trials are not available to evaluate treatment efficacy [6]
- Most treatment recommendations are mainly based on case reports and retrospective case series [6]

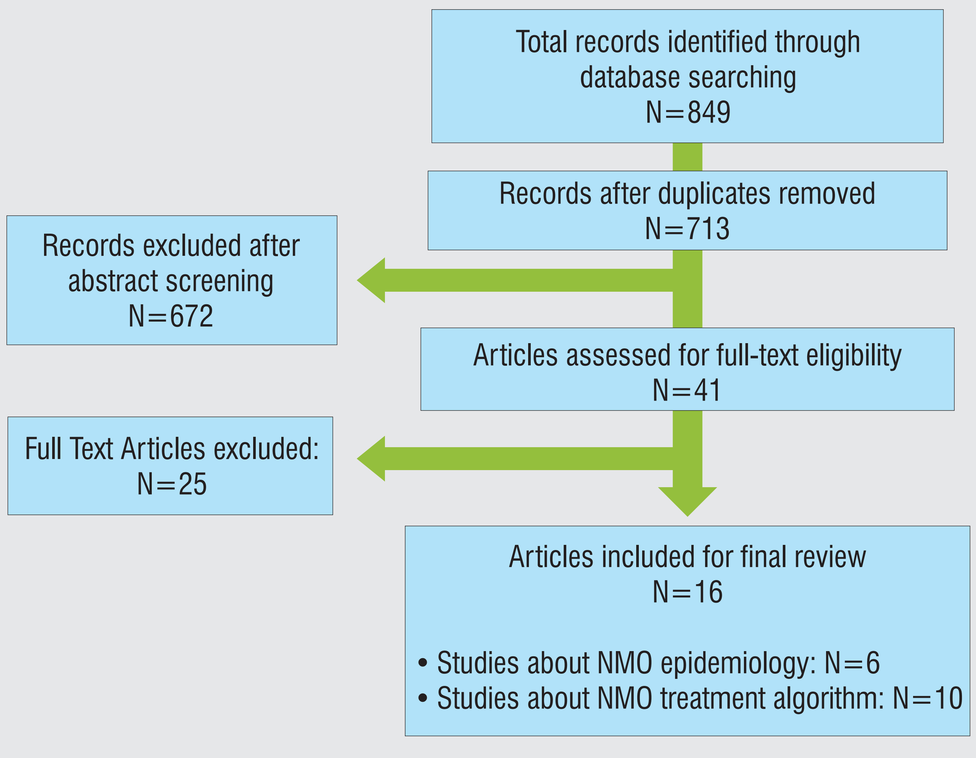
OBJECTIVES

- To determine the epidemiology of NMO
- To provide an algorithm of treatment of NMO

MATERIALS AND METHODS

- A systematic search was conducted of the relevant published evidence from Embase, MEDLINE, and Cochrane
- Search limits were articles in English and human
- Retrieved citations were screened by two independent reviewers according to inclusion criteria:
  - **Population:** NMO patients with any age
  - **Interventions:** Any interventions for treatment for NMO
  - **Outcomes:** Incidence and prevalence
- The analyses of comparable outcomes were carried out as per appropriate statistics along with critical appraisal of the studies

RESULTS



EPIDEMIOLOGY

Incidence

- 0.05 per 1,00,000 (United Kingdom)
- 0.4 per 1,00,000 (Southern Denmark)

Prevalence

- 0.44 per 1,00,000 (United Kingdom)
- 4.4 per 1,00,000 (Southern Denmark)

Peak prevalence of NMO occurs among the people at 40-49 years of age

CURRENT TREATMENT

- Low level evidence recommended methylprednisolone 1g/day for 3 to 5 days or 2 to 3 sessions of plasmapheresis per week, up to 7 sessions for acute attacks of NMO
- Nine studies observed the improvements in the reduction of mean annualized relapse rate

DISCUSSION

- NMO is an unpredictable, often disabling disease of the central nervous system and resulting in permanent disability
- It is more prevalent in female than males[5]
- The worldwide incidence and prevalence of NMO remains poorly characterized [7]
- NMO represents less than 1.5% of individuals with demyelinating disorders [5]
- The highest reported incidence is in Denmark: 4 new cases per 1,000,000 people per year [8]
- There is currently no cure for NMO[6]
- NMO is managed with a variety of medications:[6]
  - Acute NMO attacks: High dose intravenous corticosteroid and plasmapheresis
  - Maintenance therapy: Low-dose oral corticosteroids and non-specific immunosuppressant drugs
- Most treatment recommendations are mainly based on case reports, case series, and a few prospective studies, all of which only meet evidence class III–IV[6]
- Several areas of uncertainty still persist:
  - ? Whether treatments of seronegative NMO and seropositive NMO are similar?
  - ? What is the appropriate treatment for atypical forms of APQ4-Ab-positive NMO?
  - ? What is the relative efficacy of different treatment strategies for different forms of NMO?

CONCLUSIONS

- There is limited evidence on current available treatment therapies for NMO
- The available low level evidence found that high dose intravenous corticosteroid pulse and plasmapheresis may help in acute attacks of NMO
- Further well designed, adequately powered studies are required in this context

REFERENCE

1. Wingerchuk DM et al. Neurology 1999;53:1107-14.
2. Jacob A et al. J Neurol Neurosurg Psychiatry 2013;84:922-30.
3. Lennon VA et al. Lancet 2004;364:2106-12.
4. Palace J, et al. Arch Neurol 2010;66:1016-17.
5. Marie RA, Grypa C. Int J MS Care 2013 Fall;15(3):113-8.
6. Trebst C et al. J Neurol 2014;261(1):1-16.
7. Mealy MA et al. Arch Neurol. 2012 Sep; 69(9):1176-80.
8. Asgari N et al. Neurology. 2011 May 3; 76(18):1589-95.

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