



## Mini Review

### Comorbidities and Neuromyelitis Optica-Spectrum Diseases: What are the current Data?

Comorbidités et Neuromyéélite Optique de Devic-Maladies apparentées : Quelles sont les données actuelles?

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#### Abstract

Neuromyelitis optica (NMO-SD) or Devic disease is an acute transverse myelitis associated with an optic neuritis united - or bilateral. It is an inflammatory disease very disabling evolving by thrust. The long-term prognosis is also difficult to predict due to co-morbidities which determine the evolution and the quality of life of patients. The objective of our study was to determine the different types of co-morbidities found in patients with NMO -SD.

**Methods:** It was a descriptive study through a review of the literature on *PubMed* with the combination (Neuromyelitis optica, comorbidity). The data analysis was made on the software SPSS 23.

**Results:** Total 27 articles were published and available on *PubMed* (June 2017). Among these 27 work we included ten (10) specific studies of co-morbidities in the NMO-SD. Three categories of illnesses have been reported in these 10 articles including coexisting diseases with the NMO-SD without any risk factor common or similar

Nosological substratum, the systemic diseases and no organic disease. Systemic diseases were the most frequent (50% of cases). These studies were carried out in nine different countries and included different types of articles (case control, cross-sectional study, cohort and case report).

**Conclusion:** Knowledge and taking into account of the comorbidities in the NMO-SD and their management to reduce not only the wanderings diagnostic but also to foster an appropriate multidisciplinary therapeutic guarantee of a favourable development of the disease.

**Keywords:** Neuromyelitis optica- Spectrum Diseases, Devic, Comorbidity, PubMed

#### Résumé (French summary)

La Neuromyéélite optique et Maladies apparentées (NMO-MA) ou Maladie de Devic associe une myélite transverse aiguë à une névrite optique uni- ou bilatérale. Il s'agit d'une maladie inflammatoire très handicapante évoluant par

poussée. Le pronostic à long terme est aussi difficilement prévisible du fait des comorbidités qui conditionnent l'évolution et la qualité de vie des patients. L'objectif de notre étude était de déterminer les différents types de comorbidités retrouvées chez les patients atteints de NMO-MA.

**Méthodes:** Il s'agissait d'une étude descriptive à travers une revue de la littérature sur *PubMed* avec la combinaison (*Neuromyelitis, optica, comorbidity*). Les données ont été analysées sur SPSS 23.

**Résultats :** Au total 27 articles étaient publiés et disponibles sur *PubMed* (Juin 2017). Parmi ces 27 travaux nous avons inclus dix (10) études portant spécifiquement sur les comorbidités dans la NMO-MA. Trois catégories de pathologies ont été rapportées dans ces 10 travaux notamment (les maladies coexistant avec la NMO-MA sans aucun facteur de risque commun ni de substratum nosologique similaire), (les maladies systémiques) et (les maladies non organiques). Les maladies systémiques étaient les plus fréquentes avec 50% des cas. Les études avaient été réalisées dans neuf (9) pays différents incluant quatre types d'études (Cas témoins, Transversale, longitudinale et Cas Clinique).

**Conclusion :** La connaissance et la prise en compte des comorbidités dans la NMO-MA et leurs gestions permettent de réduire non seulement les errances diagnostiques mais aussi de favoriser une thérapeutique multidisciplinaire appropriée gage d'une évolution favorable de la maladie.

## Introduction

NMO-SD is an autoimmune disorder of the central nerve system (CNS) that mainly affects the optic nerves and spinal cord and, if not treated, can leave patients blind and wheelchair-bound [1]. The first clinical description of this entity was initially

in 1870 by Albrut [2], who described a case of myelitis acute associated with a type of optic neuritis eye complications. However, it is a known entity under the name *Devic Disease* for discussing in 1894 by Devic [3] the nosological uniqueness of this double manifestation of acute optic neuritis-associated myelitis. Progress on the diagnostic and therapeutic level has been made. However, the disease remains handicapping with physical and psychological consequences. The long-term prognosis is also difficult to predict due to co-morbidities which determine the evolution and the quality of life of patients. The objective of our study was to determine the different types of co-morbidities found in patients with NMO-SD.

## Methods

It was a descriptive study through a review of the literature on *PubMed* with the combination (*Neuromyelitis optica, comorbidity*) from 10 May to 28 June 2017 . All articles answering this research have been reviewed and selected if they were related to the comorbidites. We included in our survey the studies published in journals of neurological speciality and indexed on *PubMed* . We had been excluded from our investigation the studies on other aspects outside the co-morbidities. We had also excluded articles published in the general journals (not in neurology) and /or not indexed on *PubMed*. The data analysis was made on the software SPSS 23.

## Results

In total 27 articles were published and available on *PubMed* (June 2017). Among these 27 work we included ten (10) specific studies of co-morbidities in the NMO-SD. Three categories of illnesses have been reported in these 9 works including "coexisting diseases with the NMO-SD or similar nosological substratum common risk factor", "systemic diseases" and "no organic disease". Systemic diseases accounted for 50% (5 articles),

co-existing diseases 30% (3 studies), and 20% not organic diseases (2 items). It's especially autoimmune diseases who predominated among published cases but also organic disease in particular Oncology, and those non-organic including depression. These studies come from 9 countries including one African country (Morocco). Depending on the type of study 3 case report, 3 case control, 3 case report and a single longitudinal study (Table 1).

**Table 1: Characteristics of the studies: Types and number according to countries origin.**

Country	Number of studies	Types of Studies
Brazil	1	Cross-sectional
China	1	Control Case
Korea	1	Control Case
French	1	Cross-sectional
Japan	1	Cross-sectional
Lebanon	1	Case report
Morocco	1	Case report
Romania	1	Case report
USA	2	Cohort and Control Case

**Commentary**

This is a topic of practical interest that can disrupt the planned evolution of the disease because many studies remain inconclusive and equivocal, because very often the non consideration of the impact of co-morbidities in their protocols. This pilot work thus raises the need for a multicentre investigation in different continents across the comorbidities of patients with NM-SD distinguishing co-assuming the inherent complications of diseases in order to better understand the different nosological frames

still poorly known in this disease.

Autoimmune of thyroid origin more frequent in patients with NMO – SD . Systemic lupus erythematosus with systemic sclerosis and juvenile idiopathic arthritis were also presented in patients with NMO [4]. However, it is difficult to link these autoimmune diseases as complications of NM-SD. In addition, one study was able to demonstrate the independent co-existence of Gougerot sjogren's syndrome and that this was not a complication [5]. Other comorbidities have been described such as sleep disorders, secondary amenorrhoea, hyperprolactinemia-galactorhoea and fatal hypothermia [6]. Inorganic (psychiatric) diseases such as psychosis have been described rarely [7]. There is a list of types of headache that are considered symptoms of NMO-SD (Table 2) The physiopathological causal link remains discussed [8]. Pain is a major and frequent problem in patients with NMO-SD [9].

**Table 2: Headache as symptomatic expression of NMO [8]**

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Headache as symptomatic expression of NMO

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1. Optic neuritis
2. Trigeminal neuralgia
3. Posterior reversible encephalopathy syndrome
4. Preeclampsia
5. Cervicogenic headache
6. Meningoencephalitis-like symptoms
7. Trigeminal autonomic cephalalgia-like headache
8. Neuropathic pruritis

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This study appears to be the first synthesis on comorbidities and NMO-SD about the published articles on this subject. This work shows the scarcity of studies in this field and the necessity of the development of multicentre studies specifically on the comorbidities in patients with NMO. This will allow for a better understanding of the different nosological frameworks and to undertake appropriate treatments taking into account these comorbidities. A thorough knowledge of the autoimmunity of these diseases will also allow in the future to understand why some comorbidities predate the NMO and sometimes they occur well afterwards.

## Conclusion

Knowledge and taking into account of the comorbidities in the NMO-SD and their management to reduce not only the wanderings diagnostic but also to foster an appropriate multidisciplinary therapeutic guarantee of a favourable development of the disease. This consideration of Comorbidities is especially associated with systemic impairment and a possible psychological impact.

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