Aquaporin 4 Antibodies(AQP4)

مقدمة :- Neuromyelitis Optica (NMO) Disorder

. هو مرض شديد ومعقد بما يسببه من تدمير فى الجهاز العصبى وخاصة عصب العين (العصب البصرى)

.هذا المرض يتم الخلط فى تشخيصه مع مرض اخر يسمى(Multiple Sclerosis (MS حيث ان اعراض المرضين متشابهة تماما ولكن العلاج فى كل منهما مختلف تماما لذلك وجب التفرقة فى تشخيصهما .

تم اكتشاف اجسام مضادة شديدة التخصصية موجه لجزء معين فى الجهاز العصبى فى مرض(NMO)

ولهذا سميت وقت اكتشافها(NMO-IgG)

1-هذه الاجسام المضادة غير موجودة فى الاشخاص الاصحاء .

2-غير موجودة فى مرضى MS لذلك فهي تفرق فى تشخيص هذان المرضان المتشابهان وللعلمNMO اكثر خطورة وتطوره سريع .

-يتم قياس(AQP4) بطريقة Immunofluoresence(IF) وهى الطريقة المثلى والادق فى قياس الاجسام المضادة وبالتالى يتم تشخيص NMO بكل دقة ويتم بدء العلاج مبكرا وهو تنشيط للمناعة ثم تتم المتابعة بعد6 شهور من بدء العلاج

Neuromyelitis Optica (NMO) Disorder [1,2&3]

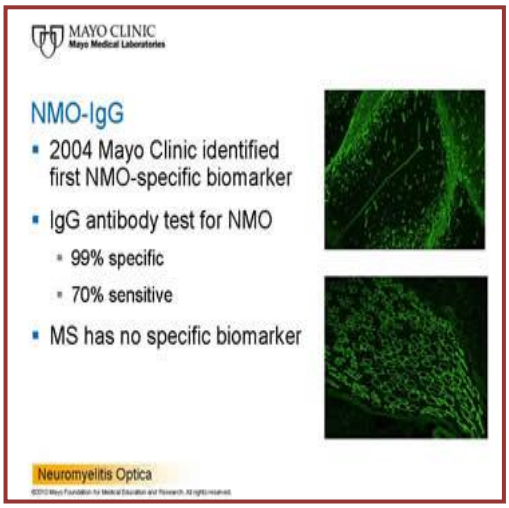
- **Neuromyelitis Optica (NMO)** is a severely disabling inflammatory neurological disorder, which predominantly affects the spinal cord and the optic nerves.

NMO is often mistaken for **Multiple Sclerosis (MS);** however, it is particularly important to distinguish between these two diseases since patients with NMO have a worse prognosis and the recommended treatments for these two disorders are different.

Role of Aquaporin 4 Antibodies in NMO Disorder[3]

•In patients with **NMO**, highly specific serum antibodies were discovered (so called **NMO-IgG**), which are directed against **aquaporin-4 (AQP4), the most abundant water channel in the CNS**.

•**AQP4 autoantibody** markers are found very frequently in NMO, while they are not detected in multiple sclerosis (MS) patients or in healthy subjects.



The major significance of the antibody detection is that antibodies against AQP-4 (NMO-IgG) allow serological differentiation of prognostically poor NMO from classic MS, which can influence therapy decisions significantly.

While MS is predominantly treated with **immune-modulating substances, NMO** requires the use of **immunosuppressive drugs**.

Measurement & Interpretation of AQP4 Antibodies [3,4&5]

- Detection of **AQP4 auto antibodies** is done by using **indirect immunofluoresence (IF)** technique which is a highly sensitive and reproducible diagnostic tool for standardized detection of antibodies to **AQP4** and diagnosing **NMO**. Also, Immunofluoresence technique is more sensitive than immunohistochemistry **(IHC)** using brain tissue.

- **Interpretation:**

✓ This autoantibody is not found in healthy subjects.

✓ A positive value is consistent with a **neuromyelitis optica spectrum disorder (NMOSD)** and justifies initiation of appropriate immunosuppressive therapy at the earliest possible time.

✓ This allows early initiation and maintenance of optimal therapy.

✓ Recommend follow-up in 6 months if NMOSD is suspected.

Aquaporin-4 Autoantibody Test is routinely done in Almokhtabar (Moamena Kamel Laboratories).

Test Name	**Aquaporin-4 Autoantibody Test (AQP4)**
Sample Type	**Serum/Red Stopper Vacutainer**
Methodology	**Immunofluoresence**
Setup Time	
Turn Around Time	
Price	**L.E**
Precautions	**No precautions / instructions**
References	**1. Wingerchuk DM.** Neuromyelitis optica. Int MS J 2006;13:42-50. **2. Wingerchuk DM, et al.** The clinical course of neuromyelitis optica (Devic's syndrome). *Neurology* 1999;53:1107-14. **3. Waters P et al.,** Aquaporin-4 antibodies in neuromyelitis optica and longitudinally extensive transverse myelitis. Arch Neurol 65(7): 913-919 (2008) **4. Waters P, McKeon A, Leite MI, et al:** Multicenter comparison of aquaporin-4 IgG assays in NMO spectrum disorders. Neurology 2012;78:665-671 **5. Lennon VA, Wingerchuk DM, Kryzer TJ, et al:** A serum autoantibody marker of neuromyelitis optica; distinction from multiple sclerosis. Lancet 2004;364:2106-2112