Objectives: To asses the rate of seroconversion of anti- JCV antibody among MS patients in Kuwait.
Methods: A cross-sectional study examined the data of MS patients who were tested for anti-JCV antibody. Several demographic and disease variable along with anti-JCV titers were collected. Chi-square and independent-t tests were used to determine significance
Results: Data of 338 MS patients were assessed; of which 61% were females. Mean age and mean disease duration were 34.7 and 8.9 years respectively. The prevalence of JC seropositivity was 44.1%. There was no statistically significant association between risk of seropositivity and gender ($p = 0.80$), age ($p = 0.06$), disease duration ($p = 0.39$), or prior exposure to disease modifying therapies ($p = 0.06$). It was observed that 25.6% of seropositive patients had received > 24 natalizumab infusions. A subsetof of the cohort ($n = 163$) was followed longitudinally for 14.8 ± 6.56 months. The sero-conversion rate was 14.7%. The number of natalizumab infusion was associated with higher rate of sero-conversion ($p = 0.03$). Few patients ($n = 4$; 2.4%) reverted to seronegative status and their JC titers were persistently below 0.9.
Conclusion: The prevalence of anti-JC virus antibody in Kuwait is lower than international figures. However, the rate of JC sero-conversion appeared to be higher than what was previously reported and this was associated the higher number of natalizumab infusions.

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MS & Demyelinating Diseases
Puberty does not affect clinical presentation of multiple sclerosis in children

R. Alroughani[a], S. Ahmed[b], D. Al-Sherbiny[c], N. Shaalan[c], J. Al-Hashel[d]. [a]*Neurology, Amiri Hospital and Dasman Diabetes Institute, Kuwait, Kuwait;* [b]*Neurology, Ibn Sina Hospital and Faculty of medicine Alminia University Egypt, Kuwait, Kuwait;* [c]*Neurology, Ibn Sina Hospital, Kuwait, Kuwait;* [d]*Neurology, Ibn Sina Hospital and Faculty of medicine Kuwait university, Kuwait, Kuwait*

Background: Multiple sclerosis (MS) is rare before puberty and the data on pre-pubertal patients is scarce.
Objective: To compare the demographic and clinical characteristics between children of pre-pubertal and post-pubertal onset of MS.
Methods: Utilizing the national MS registry in Kuwait, a cross-sectional study was conducted to identify children with MS who had their disease onset ≤ 12 or > 12 years of age (pre-pubertal and post-pubertal cohorts). Chi Square and student *t* test were used to compare the demographics and clinical variables between the two cohorts.
Results: A total of 111 children with MS were identified; of whom 19 (17.12%) had disease onset ≤ 12 years of age. Post-pubertal cohort had higher female to male ratio (2.8:1 versus 1.4:1). Mean disease duration was comparable between both cohorts ($p = 0.64$). Symptoms at onset did not differ between the two cohorts (supratentorial "$p = 0.41$"; optic neuritis "$p = 0.39$" brainstem/ cerebellum "$p = 0.55$" and spinal "$p = 0.29$"). There was no statistical difference in mean number of relapses ($p = 0.89$) and mean EDSS score (2.02 versus 2.45; $p = 0.33$) between both cohorts. Although the time to develop SPMS was longer in patients with pre-pubertal onset, the difference was non statistically significant (17.70 versus 14.58 years; $p = 0.39$).
Conclusions: There was an increase in the proportion of female MS children in the post pubertal age. However, puberty did not affect clinical presentation at the onset, number of relapses or disease progression over the observation period.

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978
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MS & Demyelinating Diseases
Neuromyelitis optica (NMO) antibody positive disorder: a case series from Saudi Arabia

Y. Al-Said[a], A. Hassan[a], R. Al-Yaefi[a], A. Basndwah[a], K. Kurdi[b], Q. Ali[a], O. Wazzan[a], E. Cupler[a]. [a]*Neuroscience, King Faisal Specialist Hospital & Research Center, Jeddah, Kingdom of Saudi Arabia;* [b]*Radiology, King Faisal Specialist Hospital & Research Center, Jeddah, Kingdom of Saudi Arabia*

Background: NMO is a B-cell mediated, autoimmune disease of central nervous system (CNS) associated with aquaporin-4 antibodies. Case reports, but no case series, of NMO have been published from Saudi Arabia.
Objective: To report a case series of seropositive NMO patients from Saudi Arabia
Methods: A retrospective chart review was preformed from 2012 to 2014. All patients with NMO antibodies were included. Demographic, clinical, laboratory and neuroimaging data were collected and analyzed. The study was approved by the Institutional Review Board.
Results: Ten patients, 9 female and 1 male, aged 18 to 78 years were identified. Referring diagnosis included relapsing remitting MS(6), NMO(2), transverse myelitis(1) and spinal cord infarction(1). Symptom onset prior to diagnosis ranged from 2 months to 9 years. MRI of the brain and spine was interpreted as typical MS with cord involvement (5) atypical MS with cord involvement (2), transverse myelitis(2) and spinal cord infarction (1). Cerebrospinal fluid analysis (CSF, 5/10) revealed mildly elevated protein (2/5) oligoclonal bands (1/5) and was otherwise normal. Anti-nuclear (4) and Sjogrens antibodies (2) were elevated.
Conclusions: NMO antibody positive patients exist and pose diagnostic challenges in the Saudi population. There is variability in age of onset and presenting symptomatology. MRI of the brain may demonstrate typical features of MS however spinal cord involvement was present in all. CSF analysis was nonspecific. Additional autoantibodies especially ANA, SSA and SSB are expressed in some perhaps indicating diffuse B-cell activation. A high index of suspicion must be maintained to identify these patients.

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MS & Demyelinating Diseases
Neuromyelitis optica and neuromyelitis optica spectrum disorders: the evaluation of 86 patients followed by Istanbul Bilim University, Department of Neurology

B. Altunrende[a], B. Topcular[a], M. Kocarslan[a], S. Server[b], S. Firtina[c], S. Yenice[c], G. Akman Demir[a]. [a]*Neurology, Istanbul Bilim University, Istanbul, Turkey;* [b]*Radiology, Istanbul Bilim University, Istanbul, Turkey;* [c]*Biochemistry, Istanbul Bilim University, Istanbul, Turkey*

Background and objectives: Neuromyelitis optica (NMO) and its spectrum disorders (NMOSD) are relatively rare disorders. We aimed to evaluate clinical characteristics and disease course of the NMOSD patients followed at our department.
Patients and methods: All the patients with the diagnosis of NMO/NMOSD followed since the establishment of our multipl sclerosis clinic in April 2011, were evaluated.
Results: There were 86 patients (66 female, 20 male) with NMO/NMOSD followed at our MS unit; 24 had NMO, 42 had recurrent optic neuritis (RON); and 20 had longitudinally extensive transverse myelitis (LETM). The disease course was relapsing in 70 patients

(81%). The first attack was bilateral ON (BON) and TM in 3 patients, ON and TM in 1 patient, ON in 50 patients (bilateral in 6) and TM in 26 patients. NMO IgG was positive in 12 patients with NMO (55%), 4 patients with LETM (25%), and 8 patients with RON (25%). Oligoclonal band was positive in 15 out of 44 patients (34%). In NMO/NMOSD patients, cranial magnetic resonance imaging (MRI) showed no abnormality in 48; nonspecific lesions in 37; and 1 patient had hypothalamic lesion. In spinal MRIs, 41 patients had LETM; six had suspected hyperintense T2 lesion in C5.

Conclusion: This is one of the largest single center series collected over 4 years. NMO/NMOSD seems to be over-represented in our center since it is one of the few where NMO IgG testing is available. In NMO/NMOSD, early diagnosis and treatment is important to prevent the patient from the permanent disability.

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MS & Demyelinating Diseases
Intravenous immunoglobulin treatment for neuromyelitis optica and its spectrum disorders

B. Altunrende[a], G. Akdal[b], M. Söylev Bajin[c], A. Yaman[c], A.Y.C.A. Altınkaya[a], M. Kocarslan[a], G. Akman Demir[a]. *[a]Neurology, Istanbul Bilim University, Istanbul, Turkey; [b]Neurology, Dokuz Eylül University Faculty of Medicine, Izmir, Turkey; [c]Ophtalmology, Dokuz Eylül University Faculty of Medicine, Izmir, Turkey*

Background and objective: There are very few reports on the effects of intravenous immunoglobulin (IVIg) treatment for NMO and NMOSD. We aimed to evaluate our patients with NMO/NMOSD who were treated with IVIg.

Methods: Data from all our patients with the diagnosis of NMO/NMOSD, who received IVIg treatment were retrospectively evaluated.

Results: Nine patients had received IVIg, three of these patients had NMO, 5 had recurrent optic neuritis [RION], and one had recurrent longitudinally extensive transverse myelitis [R-LETM]. These patients were aged 20-63, and started receiving monthly IVIg from 1 to 20 years after onset of disease. Two out of three NMO patients and one RION patient and the R-LETM patient were NMO-Ig G positive.

Under current treatments the patients had continued to have attacks therefore IVIg was given in addition to the existing drug. The follow up of was between 12 to 27 months except one patient who received IVIg for acute relapse. Two of the patients with NMO had attacks under IVIg at month 10 and month 13, and month 1, month 6, and month 12, respectively, and were switched to rituximab; the patient with R-LETM also had attacks at month 2 and month 19 when the treatment was interrupted. Only one patient with RION had an attack at month 3.

Conclusion: Monthly IVIg is well-tolerated and safe and it seems to be more effective in RION. It may also be an option for NMO when current therapies are contraindicated or could not be tolerated.

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Disease re-activation during pregnancy after natalizumab suspension in patients with multiple sclerosis

M. Amato[a], C. Tortorella[b], M. Trojano[b], E. Cocco[c], M.G. Marrosu[c], A. Lugaresi[d], P. Annovazzi[e], A. Ghezzi[e], C. Gasperini[f], A. Iudice[g], P. Bellantonio[h], F. Patti[i], P. Cavalla[j], R. Totaro[k], C. Pozzilli[l], A. Bosco[m], A. Uccelli[n], R. Lanzillo[o], V. Brescia Morra[o], E. Portaccio[p], T.H.E. for[q]. *[a]Department of Neurofarba, University of Florence, Florence, Italy; [b]Department of Neurology, University of Bari, Bari, Italy; [c]Department of Neurology, University of Cagliari, Cagliari, Italy; [d]Department of Neurology, University of Chieti, Chieti, Italy; [e]Department of Neurology, Hospital of Gallarate, Gallarate (VA), Italy; [f]Department of Neurology, San Camillo Hospital, Roma, Italy; [g]Department of Neurology, University of Pisa, Pisa, Italy; [h]Department of Neurology, Istituto Neurologico Mediterraneo, Pozzilli (IS), Italy; [i]Department of Neurology, University of Catania, Catania, Italy; [j]Department of Neurology, University of Torino, Torino, Italy; [k]Department of Neurology, University of L'Aquila, L'Aquila, Italy; [l]Department of Neurology, La Sapienza University, Roma, Italy; [m]Department of Neurology, University of Trieste, Trieste, Italy; [n]Department of Neurology, University of Genova, Genvoa, Italy; [o]Department of Neurology, Federico II University of Napoli, Napoli, Italy; [p]Department of Neurofarba, University of Florence, Florence, Italy; [q]Italian Neurological Society, MS Study Group, Italy, Italy*

Background: While the risk of disease re-activation after natalizumab suspension is widely acknowledged, little is known on disease activity during pregnancy occurring after suspension of natalizumab in multiple sclerosis (MS) patients.

Objective: To assess MS disease activity during pregnancy after natalizumab exposure (NE) and the impact of NE on pregnancy outcomes.

Patients and Methods: we recruited NE pregnancies in MS patients prospectively followed-up in 16 Italian MS Centres, in the period 2010-2014. NE was defined as suspension < ten weeks prior to conception. Clinical relapses and pregnancy outcomes were compared with data from the Italian dataset on interferon-beta exposure (IFNBE) (Amato et al., 2010). All the patients were administered a structured interview which gathered detailed information on pregnancy course and outcomes, as well as on possible confounders. Group comparisons were assessed through the chi^2 test, the analysis of variance and mixed factorial design.

Results: so far 50 pregnancies were recruited. Pregnancies resulted in 38 live-births, nine spontaneous abortions and three voluntary abortions. The occurrence of relapses during pregnancy in 14/38 (36.8%) patients was higher than that observed in IFNBE patients (10/75, 13.3%; mixed factorial design $F = 4.162$, $p < 0.001$). Proportion of spontaneous abortion in NE pregnancies (19%) was within the limits expected in the general population. Main pregnancy outcomes were also comparable to those of IFNBE pregnancies ($p > 0.3$).

Conclusions: in our study pregnancy did not protect from disease re-activation after natalizumab suspension. The risk of relapses during pregnancy should be taken into account in the counselling of natalizumab-treated MS patients contemplating pregnancy.

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Prognostic factors associated with long-term disability and secondary progression in patients with multiple sclerosis

J. Aurenção[a], L.C.S. Thuler[b], R.M.P. Alvarenga[c], C.C.F. Vasconcelos[a]. *[a]Neurologia, Hospital Universitário Gaffrée e Guinle, Rio de Janeiro, Brazil; [b]Pesquisa, Instituto Nacional do Cancer, Rio de Janeiro, Brazil; [c]Neurologia, Hospital Federal da Lagoa, Rio de Janeiro, Brazil*

In Multiple Sclerosis, determining prognostic factors in early stages of disease is important, though controversial. Most studies were performed in North American and European cohorts, with different results. The objective of this study is to evaluate in a