A.04

Anatomic variation of the Circle of Willis in perinatal stroke

PN de Jesus (Calgary) A Mineyko (Calgary) A Kirton (Calgary) S Yu (Calgary)*

doi: 10.1017/cjn.2016.56

Background: Perinatal stroke is a common disorder in neonates with unknown etiology. Previous studies have linked anatomic variations in the Circle of Willis to adult stroke. This study aimed to understand the potential relationship between circle anatomy and common forms of perinatal stroke: NAIS, APPIS, and PVI. *Methods:* 94 subjects (62 NAIS/APPIS, and 32 PVI) were identified from the Alberta Perinatal Stroke Project. Inclusion criteria were: MRI-confirmed perinatal stroke, 3D-TOF MRA, and absence of other disorders. Images were classified as complete, incomplete posterior circulation, incomplete anterior circulation, and incomplete anterior and posterior circulation. Fisher Exact Test compared completeness against stroke type and segment absence ipsilateral to stroke. Mann-Whitney U compared completeness and lesion volume. *Results:* Completeness was more common in PVI than NAIS/APPIS (p=0.500) and in healthy controls than total stroke population (p=0.251). Ipsilesional absent segments were more frequent in NAIS/APPIS (p= 0.270). NAIS/APPIS patients with complete CoW had larger median lesion volume was compared to those with incomplete circles (p=0.484), with contralateral absence (p=0.943), and with ipsilateral absence (p=1.00). The opposite was found in PVI patients for all lesion volume comparisons (p=0.321, 0.362, 0.739 respectively). *Conclusions:* Circle anatomy is highly variable in perinatal stroke. Absence of segments is not associated with stroke type, lesion side, and lesion volume.

A.05

Ten years of experience with lamotrigine for the treatment of neonatal and infantile seizures

A St-Arnaud (Québec) É Proulx (Québec) M Thibeault-Eybalin (Québec) F Calon (Québec)*

doi: 10.1017/cjn.2016.57

Background: The therapeutic value of second-generation anticonvulsants such as lamotrigine has not been clearly established in neonates and infants with seizures. To address this issue, we assessed the efficacy of lamotrigine for treating neonatal and infantile seizures, detailed the dosing regimens used, and described its tolerability and safety profile. *Methods:* This retrospective study included patients (age 0-12 months) diagnosed with seizures and treated with lamotrigine, as monotherapy or adjunctive therapy, by pediatric neurologists at Centre mère-enfant Soleil du CHUQ from 2004 to 2014. The frequency of seizures and EEG patterns were compared before and after introduction of lamotrigine during the first months of life. Data on initial and maintenance doses, rate and magnitude of dosing increments, and adverse effects were collected. *Results:* Treatment with lamotrigine was initiated in 32 neonates and 13 infants. At first follow-up (mean duration 3 months), 76 % (n = 34) showed a significant (≥50%) reduction of seizures and 64% (n= 29) improvement of EEG pattern compared to baseline. The efficacy in monotherapy and adjunctive therapy was similar. A single case of cutaneous hypersensitivity reaction requiring cessation of treatment was reported. *Conclusions:* This study suggests that lamotrigine is a useful, safe, and well-tolerated anticonvulsant alternative for the treatment of seizures in neonates and infants.

A.06

Ataluren: an overview of clinical trial results in nonsense mutation Duchenne Muscular Dystrophy (nmDMD)

CM McDonald (Sacramento) K Bushby (Newcastle upon Tyne) M Tulinius (Gothenburg) R Finkel (Orlando) H Topaloglu (Ankara) JW Day (Stanford) K Flanigan (Columbus) L Lowes (Columbus) M Eagle (Newcastle upon Tyne) X Luo (South Plainfield) G Elfring (South Plainfield) H Kroger (South Plainfield) P Riebling (South Plainfield) T Ong (South Plainfield) R Spiegel (South Plainfield) SW Peltz (South Plainfield)*

doi: 10.1017/cjn.2016.58

Background: Ataluren is the first drug to treat the underlying cause of nmDMD. *Methods:* Phase 2 and 3 studies of ataluren in nmDMD were reviewed, with efficacy and safety/tolerability findings summarized. *Results:* Ataluren nmDMD trials include: a Phase 2a proof-of-concept study (N=38); a Phase 2b randomized controlled trial (RCT) (N=174); an ongoing US-based open-label safety extension study (N=108); an ongoing non-US-based open-label safety/efficacy extension study (N=94); and a Phase 3 RCT, ACT DMD (N=228), whose primary endpoint was change in six-minute walk distance (6MWD) over 48 weeks. The proof-of-concept study demonstrated increased dystrophin production in post-treatment muscle biopsies from ataluren-treated patients with nmDMD. The Phase 2b results demonstrated an ataluren treatment effect in 6MWD, timed function tests, and other measures of physical functioning, The Phase 3 ACT DMD results demonstrated an ataluren treatment effect in patients with nmDMD in both primary and secondary endpoints, particularly in those with a baseline 6MWD of 300-400m. Ataluren was consistently well-tolerated in all three trials, as well as in the ongoing extension studies. Trial findings will be presented in detail. *Conclusions:* The totality of the results demonstrates that ataluren enables nonsense mutation readthrough in the dystrophin mRNA, producing functional dystrophin and slowing disease progression.

Supported by: PTC Therapeutics Inc.

A.07

Head circumference in preterm neonates: size at birth and postnatal growth predict neurodevelopment at 18 months

T Selvanathan (Toronto) V Chau (Toronto) R Brant (Vancouver) A Synnes (Vancouver) R Grunau (Vancouver) S Miller (Toronto)*

doi: 10.1017/cjn.2016.111

Background: We determined the association between head circumference (HC) at birth and through neonatal intensive care with neurodevelopmental outcome in preterm neonates, accounting for brain injury on MRI. *Methods:* 169 neonates born 24-32 weeks gestation were studied prospectively with serial MRI. HC was measured at birth and discharge from neonatal intensive care. Outcome was assessed at 18 months corrected age using Bayley Scales of Infant & Toddler Development III motor and cognitive scores. Using multivariate linear regressions we evaluated the association between HC