in reduced amounts and was undetectable on the membrane surface. CD59 deficiency is a common finding in RBCs and WBCs in patients with chronic hemolysis suffering from paroxysmal nocturnal hemoglobinuria in which the acquired mutation in the PIGA gene leads to membrane loss of glycosphingolipid-anchored membrane proteins, including CD59. Based on the results of the present study, we suggest that the Cy589Tyr mutation in CD59 is associated with a failure of proper localization of the CD59 protein in the cell surface and decreased complement inhibition. This mutation is manifested clinically in infancy by relapsing peripheral demyelinating disease and chronic hemolysis.

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P.6.10
Phenotypic variability in a French family presenting with seipinopathy
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Seipinopathies are a group of inherited diseases affecting upper and lower motor neurons due to mutations in the BCS2L2 gene. Phenotype spectrum includes Silver syndrome, a form of hereditary spastic paraplegia (SPG17) and distal hereditary motor neuropathy type V. We report a French family carrying the N88S mutation in the BCS2L2 gene.

A 12-y-o girl complained of bilateral asymmetrical pes cavus. Physical exam revealed right hand motor deficit and atroymorphosis. She also had asymmetrical leg atroymorphosis and pyramidal signs. The electrophysiological exam showed axonal multifocal motor neuropathy with a distal predominance. Motor evoked potentials confirmed bilateral upper neuron impairment. At the age of 17, she was examined together with her father. He was a 46-y-o patient complaining of a rest tremor of the right hand associated with hand weakness. He had also noticed some wasting of the left hand muscles. His main history was a traumaism of the right peroneal tendon at the age of 6, later surgically treated by right ankle arthrodesis. Physical exam revealed left leg, hand and forearm atroymorphosis. It was associated with akinsia and right arm rigidity. Reflexes were brisk at the lower limbs and bilateral Babinski sign was found. The EDX exam showed distal axonal multineuropathy with slight sensitive impairment. There was a moderate reduction of nerve conduction velocity in some nerves. L-Dopa was introduced, improving the Parkinson signs.

Genetic testing revealed the presence of the N88S mutation in the BCS2L2 gene in the proband and her father. BCS2L2 mutations are associated with a wide clinical and electrophysiological spectrum and should be evoked in case of dHMN with pyramidal signs or early hand involvement. Mild demyelinating process could be associated and severity can be variable within the same family. Clinical diagnosis were made more difficult here due to the association with Parkinson symptoms, supposedly not linked to the BCS2L2 gene mutation.

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DYSTROPHINOPATHY: NATURAL HISTORY, REGISTRIES, AND TRAINING SCHEMES

P.7.1
A prospective natural history study of the progression of physical impairment, activity limitation, and quality of life in Duchenne muscular dystrophy
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Duchenne muscular dystrophy (DMD) is characterized by a progressive and irreversible loss in muscle function, with a predictable sequence of loss of ambulation and upper limb function followed by cardiorespiratory failure. There is currently no cure; however, a multidisciplinary approach to the symptoms and the use of corticosteroids has been shown to delay disease progression and is recommended as standard of care. Within the patient population, decreased muscle function and age at loss of ambulation and cardiorespiratory functions are highly variable. This study aims to describe contemporary natural history in the steroid era by measuring muscle strength and function over time, assessing quality of life (QoL), and measuring biomarkers in patients with DMD. A total of 250 boys with DMD (aged 3–18 years), both ambulant and non-ambulant, are planned to be enrolled at 16 sites across 10 countries and followed every 6 months for 3 years. Standardized outcome measures, including the 6-min walk test, timed tests, North Star Ambulant Assessment, Performance of Upper Limb, pulmonary function testing, and QoL surveys, as well as new exploratory measures, will be assessed by experienced clinical evaluators. Blood and urine samples are to be collected to test biomarkers of disease progression and imaging will be performed by magnetic resonance imaging/magnetic resonance spectroscopy at selected sites. Mutations affecting the DMD gene and concomitant medications will also be recorded.

Longitudinal data will also be obtained, including 6-min walk distance, muscle function scores, pulmonary function results, and scores in QoL surveys. Outcome measurements are planned to be assessed by a number of factors, including mutation type and age group.

The measures obtained will give a clear picture of the evolution of muscle function and disease progression that could be used as surrogate placebo data in clinical trials involving investigational drugs.

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P.7.2
Natural history of a steroid naive DMD cohort
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The natural history of Duchenne muscular dystrophy (DMD) is useful for comparison with future studies on DMD with steroid treatment. Since 1983 the National Rehabilitation Centre for Neuromuscular Diseases in Denmark has registered and regularly monitored the total Danish population of boys with DMD from time of diagnosis. In Denmark steroid treatment in DMD started systematically in the years 2000 and therefore we have a steroid naive cohort of adult patients who were only treated with assisted ventilation when required due to respiratory insufficiency. The aim of this study is to examine the natural history in terms of major clinical events in a Danish birth cohort of DMD steroid naive patients born in the period 1983–1992. Methods. Major clinical events are defined as loss of ambulation, spinal surgery, loss of 50% VC, introduction of assisted ventilation, and death. Data on clinical events are collated from the notes of systematic and regular assessments of all the patients born in the period. Kaplan–Meier estimates of time from birth to loss of ambulation, spinal surgery, less than 50% VC, assisted ventilation, and death are calculated. Additional information on heart disease and cause of death will be presented. Preliminary results. Sixty-two patients were born with DMD in Denmark.
in the period 1983–1992. Thirty-nine of these were alive on 1 April 2013. Average age at loss of ambulation was nine years, age at initiating non-invasive and invasive assisted ventilation was 17 and 20 years, respectively.

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P.7.3

The adult Duchenne Muscular Dystrophy (DM) patient: Report of current status and functional issues

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This report brings out the need for continued care for DM patients who survived adolescence. Having become wheel-chair dependent (permanently chair-bound) for many years, it is important to continue to maintain mobility in their power wheelchairs, to use computers and be able to perform tabletop activities.

This poster specifically addresses the following:

- Age 18–44. 25 adult DM patient were individually followed for 10 or more years.
- Muscle biopsy-14, sibling of diagnosed DM child – 5. 6 patients followed the clinical course of DMD patients and were included in the study.
- Most completed high school; 4 were to college, 2 were in special education studies. All patients had adequate family support.
- Almost all received care from their own family member. Supplemental home health services were used occasionally when needed by the family and for respite care. Transfers were by Hoyer lift. Stretching and ranging by parents or family members.
- 12 had long spinal fusions, when the scoliosis became progressive and seating compromised. Maximum correctable spinal curve to neutral = 35deg.
- 19 have cardiomyopathy and are on 2 medications (beta blocker & ACE inhibitor). MUGA scan are done biannually to check for the ejection fraction, related to the contraction strength of the cardiac chamber.
- 15 are ventilator dependent; 2 on CPAP when they enrolled for the study. Because of the underlying lung tissue changes, shortness of breath is of concern. If the pulmonary function tests (PFT) become progressively worse, a sleep study is done and CPAP started. Patients are hospitalized for pneumonia. Decision with regards for the need for tracheostomy and ventilation assist is made with the adult patient.

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P.7.4

Quality of life of adult patients with Duchenne muscular dystrophy

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The purpose of this study is to assess the scale of quality of life (QoL) in adult patients with Duchenne muscular dystrophy (DM). The SEIQoL-DW (Schedule for the Evaluation of Individual QoL- Direct Weighting) and the MDQoL-60 (Muscular Dystrophy Quality of Life Assessment Scale 60) were completed by 16 patients with DM. The age of these patients were 20–37 years old (mean: 28.3). Depression and motor function were also assessed by the SDS (Self-Rating Depression Scale) and the MDFRS (Muscular Dystrophy Functional Rating Scale), respectively. Relationships between these scores were analyzed by Pearson’ correlation coefficient test. The tests were also performed 6 and 12 months after the first test.

In SEIQoL-DW, the most frequently elicited area of life which considered important by the individual were family (75%), hobby (38%), meal (50%), friends (38%), computer (38%). SEIQoL index, the sum of the product of weight and satisfaction levels of the five cues, 68.2 ± 11.4 (mean ± standard deviation (SD)) were in the same range in Japanese healthy students (66.4 ± 16.3). The total of MDQoL-60 was 53.9 ± 11.2 (mean ± SD), which had no correlation with SEIQoL index. Subscale of MDQoL-60 were analyzed again, only “mental stability” as correlated weakly (r = 0.514, p = .041) with SEIQoL index. Satisfaction levels of QoL areas in SEIQoL-DW and associated subscale score in MDQoL-60 were not correlated. SDS score correlated with “family” and “living environment” in MDQoL-60 but did not correlate with SEIQoL index. MDFRS score did not correlate with SEIQoL index and MDQoL-60. SEIQoL index decreased significantly in 12 months. Other scales did not change in 12 months.

SEIQoL-DW and MDQoL-60 showed different aspect of QoL, because the correlation was limited. Both SEIQoL-DW and MDQoL-60 were not sensitive to motor function, which MDFRS measures. The follow up test might show SEIQoL-DW was more unstable than MDQoL-60.

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P.7.5

Sociodemographic and health related profile of adults with Duchenne/Becker Muscular Dystrophy (DBMD): Data from the Muscular Dystrophy Surveillance, Tracking and Research Network (MD STARnet)

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Improved respiratory and cardiac management along with glucocorticoid therapy have contributed to increasing survival of patients with DBMD. This has led to a growing population of adults with DBMD. The purpose of this population based study was to describe the sociodemographic profile and health related outcomes of individuals with DBMD followed in the MD STARnet.

MD STARnet is a multi state population based surveillance system that collects data on all individuals with DBMD born since 1/1/1982. In addition to epidemiologic data, MD STARnet collects extensive sociodemographic and clinical data related to natural history milestones and treatments and services received by individuals with DBMD. The cohort for this analysis was all individuals born from 1/1/1982 to 12/31/1992 and followed through 8/31/2011.

Overall, 384 individuals were identified of which 32% have died [mean age 17.6 years (8.7–25.5)], and 20% were lost to follow up [mean age 15.3 (0.9–25.8)]. The remainder continue to be followed [mean age 21.5 (17–28.6)]. Most individuals were white, non-Hispanic (59%) and live with parent(s)/family (98%), have post high school/college training (24%). The number of individuals and the average age (range) at which they crossed clinical milestones or required specific treatments were as follows: loss of ambulation [N = 300, 11.7 years (6.9–24.0)], scoliosis surgery [N = 128, 14.7 years (10.3–20.2)], night time ventilator support [N = 158, 16.9 years (9.4–26.2)], cardiomyopathy (SF < 28%, EF < 55%) [N = 188, 16.5 years (9–25.5)], PEG [N = 58, 19.2 years (11.8–26.0)]. Forty nine percent have been treated with corticosteroids.

Our population based data support an emerging population of adults with DBMD. This sociodemographic and health related profile provides information for providers, payors and policy makers to help design the appropriate care models for the needs of adults with DBMD and their families.

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