

were normal. Abdominal ultrasound unremarkable. Heart ultrasound: unremarkable. Neurological examination, muscle strength and reflexes are normal. EMG: no miopathic changes. ENG: normal. Rtg of lower extremities found calcifications of soft tissues. Bones with no destruction or osteolyses. Biopsy: on subcutan adipose tissue are found multiple and confluent foci of calcification called Calcinosi. She is without treatment to now and exacerbation of changes has been detected.

**Conclusion** Since there were no systemic metabolic disorders, tissue injury, or other founded reason, and the diagnose of Calcinosi cutis idiopathica was made.

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### 630 NEUROPSYCHOLOGICAL OUTCOME IN CONGENITAL HYPOTHYROIDISM IN AN ITALIAN COHORT: THE DEVELOPMENTAL QUESTIONNAIRE FOR CH (DQCH)

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<sup>1</sup>S Bargagna, <sup>2</sup>A Olivieri, <sup>3</sup>C Fazzini, <sup>1</sup>M Bozza. <sup>1</sup>Stella Maris Scientific Institute, Pisa; <sup>2</sup>Istituto Superiore Sanità, Rome, Italy

**Background and Aims** Several studies on neuropsychological outcome in early treated children with congenital hypothyroidism (CH). have demonstrated the presence of developmental disorders, in particular motor abilities language, emotions 1.2.3 The aim of this study was to individuate the most vulnerable developmental domains and which risk factors are significantly associated with a poor outcome. To this end we have developed a developmental questionnaire on CH (DQCH).

**Methods** The DQCH has been created with dichotomous answers giving a score which hinders the dispersion of data and makes it easy to fill-in for a person knowing the child (clinical psychologist, physician, parents). It consists of 49 questions, in 7 domains - motor skills, personal autonomy, language development, social development, behaviour, biorhythms, and success in school. This questionnaire was designed for an easy way to collect data on developmental milestones and neuropsychological outcome in a large cohort of children with CH and their age-matched controls.

**Results** All domains of our questionnaire show major impairments in children with CH than in controls, in particular in personal autonomy for the group with thyroidal agenesis and social development for ectopic glands.

**Conclusions** We hypothesize that children with a more severe outcome are more frequently those of mothers affected by clinical and subclinical forms of hypothyroidism during pregnancy.

**References** Oerbeck B, et al. Congenital Hypothyroidism: Influence of Disease Severity and L-Thyroxine Treatment on Intellectual, Motor, and School-Associated outcomes in Young Adults. *Pediatrics* 2003; 4:923-930.

Rovet JF. Congenital Hypothyroidism: long-term outcome. *Thyroid* 1999; Neuropsychological Developmental Congenital C Child Neuropsychological 2002.

### 631 INFLUENCE OF ANTHROPOMETRICAL AND MENTAL STATUSES ON OCCURRENCE OF BEHAVIOUR DISEASES AMONG CHILDREN OF SCHOOL AGE

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K Lepiatsila. *Belarussian State Medical University, Minsk, Belarus*

To estimate influence of the anthropometrical status and personal features on occurrence of psychosomatic frustration, in particular, eating disorder, among children of school age.

We studied 57 children (age 15±1.3 years). They were interviewed with Toronto Alexithymia Scale (TAS), scale of Rotter, standardized questionnaire "Aim-Means-Result" (AMR), scale of Rean and divided

into 3 groups on the basis of body mass index (BMI). 1) A (BMI< 19 kg/m<sup>2</sup>, 2) B(19 kg/m<sup>2</sup>< BMI< 24kg/m<sup>2</sup>), 3)C (BMI>24kg/m<sup>2</sup>).

**Results** Based on the TAS 41% of boys showed higher than normal rates of alexithymia (A -40%,B -60%,C -100%). Among girls (75%,50%,43% respectively). AMR: 87%b and 82%g can't substantiate their goals. 50% of children had psychological barriers. Low-energy potential was recorded in Groups A and C (17% and 25%). 66% girls and 88% boys of all groups indicated optimal results. Scale of Rotter. Boys of Group C were dominated by external locus of control. Girls of such group were dominated by internal locus of control of life. Motivational pole is not strongly marked in 61% of girls.

The analysis of TAS showed an increasing trend of alexithymia among boys (from 59% to 100%) and lower among girls (from 75% to 43%) with an increase in BMI. Boys with a BMI> 24 kg/m<sup>2</sup> prevailed external locus of control, the girls - internal locus of control. In analyzing the results of the questionnaire of Rean boys tended to reduce the motivation to succeed and grow with the increase of negative motivation with increasing BMI (success from 70% to 25%).

### 632 EARLY INTERVENTION OF VISUAL IMPAIRMENT MAY PROTECT ADAPTIVE BEHAVIOUR IN DOWN SYNDROME?

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<sup>1</sup>A Dressler, <sup>2</sup>M Bozza, <sup>2</sup>V Perelli, <sup>3</sup>S Bargagna. <sup>1</sup>Division of General Neuropediatrics and Neonatology, Medical University Vienna, Vienna, Austria; <sup>2</sup>IRCCS-Stella Maris Institute; <sup>3</sup>Stella Maris Institute, Pisa, Italy

Down syndrome (DS) is one the most common genetic disorders. Little is known about the impact of visual disorders in DS on daily life. Our aim was to study the relation between the incidence of ocular manifestations and adaptive behaviour.

**Methods** We performed a detailed medical history, including ocular disorders. We tested Hirschberg's corneal reflex method, observed eye movements during fixation of a slowly moving object, cover test, and assessed the Vineland Adaptive Behaviour Scales, as well as the Coloured Progressive Matrices. 52 DS individuals with an age range of 19 to 52 years. Results. We observed a high incidence of ocular anomalies (refractive errors in 59.2%, strabismus in 51%, motility disorders in 63.3% and congenital bilateral cataract in 16.2%), not differing with age. The occurrence of visual disorders did neither lead to total lower adaptive level nor show an influence on cognition. Daily living skills were significantly lower in individuals with not corrected disorders, but these individuals showed a significant high co-morbidity of autism with childhood onset. We observed a majority of individuals with an adaptive functioning above the average. Hyperopia and the presence of refractive errors were significantly more frequent in individuals with an adaptive level above the average. Conclusions. Visual disorders lead to a poorer performance in adaptive behaviour in individuals with DS and also autism. This suggests that early intervention on refractive errors and visuo-motor skills helps in the acquisition of daily living activities, which remain stable over the life-span. Therapeutic options for cataract need to be addressed early.

### 633 WHAT IS THE EFFECTIVENESS OF DIMETHYLGLYCINE IN TREATING AUTISTIC SYMPTOMS IN CHILDREN: A SYSTEMATIC REVIEW

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M Haroon, G Ryan, M Randell, J Wilson, T Khatau, CHARGE: Child Health Applied Research Group, East-midlands. *Leicester Partnership Trust, Leicester, UK*

**Background and Aims** Dimethylglycine, an amino-acid derivative, has been proposed as a treatment for Autism. A systematic review was conducted to synthesize the best evidence relating to this topic.

**Methods** The study was conducted by members of CHARGE (Child Health Applied Research Group: East-midlands) using a methodology informed by The PRISMA Statement (Preferred Reporting Items for Systematic reviews and Meta-Analysis).

A clinical question using a standard PICO (Patient, Intervention, Comparison, Outcome) format was used to inform the search terms and search strategy. The search was executed on Medline, Embase, The Cochrane Library, two meta-search engines and ISI-Web of Science. In addition, a search of the grey literature was conducted. Retrieved studies were independently appraised by two reviewers for relevance and quality using the Cochrane Collaboration's tool for assessing risk of bias. Data was extracted onto a standardised proforma.

**Results** Only one small clinical trial (n=39) could be included in our final analysis and this showed statistically non-significant effects for parentally reported improved behaviour (58% [drug] vs. 53% [placebo]). There was no difference between the two groups for adverse outcomes.

This trial and two excluded trials highlighted the critical importance of proper methodology for conducting future trials in autism. These include the need for appropriate: power, outcomes and follow-up, and due consideration of the clinical spectrum of autistic patients involved in the trials.

**Conclusion** There is insufficient evidence to support the use of dimethylglycine for the treatment of children with autism. Further robust research is required on this topic.

#### 634 DIGEORGE SYNDROME: COGNITIVE AND BEHAVIOURAL DEVELOPMENT FROM BIRTH TO ADOLESCENCE

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<sup>1</sup>M Bua, <sup>1</sup>E Sgaravatti, <sup>1</sup>M Blazina, <sup>1</sup>F Menegazzo, <sup>1</sup>P Facchin, <sup>2</sup>E Ruga. *Rare Diseases Registry, Paediatrics Department, University of Padova, Italy; <sup>2</sup>Paediatrics Department, University of Padova, Padova, Italy*

**Background and Aims** DiGeorge syndrome (DGS) is a rare disease associated with a microdeletion of chromosome 22q11.2. Among clinical signs: heart defects, immunological alterations, psychiatric disorders. DGS children present developmental delay. The aim of this study is to assess cognitive and behavioural development of DGS paediatric patients.

**Methods** Cognitive profile was assessed in a prospective cohort of DGS children referred to Paediatrics Department-Padua University (1993-2012). For a sample of 20 children (11 females, 9 males; 25% < 2 yrs, 25% 3-5 yrs, 50% > 6 yrs), informations were collected on diagnosis, surgical interventions, hospitalizations, treatments/rehab training programs. Cognitive profile was assessed using Griffith's Mental Development Scales (GMDS) and Wechsler Intelligence Scale for Children-III (WISC-III), depending on children's age. Behavioural profile was assessed using Child Behavior Checklist (CBCL). Univariate and multivariate descriptive analyses were performed.

**Results** For younger children (GMDS, 10 children), global mental development resulted: 15.4% moderate retardation, 61.5% mild retardation, 30.8% borderline, 7.7% low normal, 15.4% normal. Worse scores are observed in the subscales: language, performance, eye-hand coordination and practical reasoning. For older children (WISC-III, 10 children), 76.9% had Mental Retardation (15.4% moderate MR, 61.5% mild MR), and 23.1% got low Global IQ scores (7.7% borderline, 15.4% low normal). Behavioural profile is barely normal in pre-school children and becomes borderline/clinical in school children (100% disadaptive functioning, 40% internalizing problems, 20% externalizing problems).

**Conclusions** DGS patients have a wide spectrum of developmental delays, which require tailor-made rehab programs, and a worsening in behavioural profile in pre-adolescence and adolescence.

#### 635 DEFICITS OF MOTION PERCEPTION IN CHILDREN WITH TREATED CONGENITAL HYPOTHYROIDISM (CI)

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F Tinelli, G Purpura, G Cioni, S Bargagna. *Department of Developmental Neuroscience, IRCCS-Stella Maris Institute, Calambrone, Italy*

**Background and Aims** Thyroid hormones have an important role throughout prenatal and postnatal nervous system development. They are involved in several processes such as neurogenesis, gliogenesis, myelination, as shown in many cases of deficiency like CI. Some could be reversed after adequate supplementation of thyroid hormones at birth, however there are other cellular processes highly sensitive to low levels of thyroid hormones and lasting a limited period of time during which if thyroid hormone action is lacking or deficient, the functional and structural damages would produce permanent defects. Visual system is particular vulnerable to thyroid hormones and for this reason we decided to study children with CI early treated by means of visual motion tasks to evaluate basic and high level functions.

**Methods** and results: Ten children with early treated CI and ten controls matched for sex and age and Intelligence Quotient were enrolled in the study. We found no differences in basic visual functions. Motion perception was assessed by two alternative forced choice of direction of motion for different levels of noise corruption displayed on the screen for a limited lifetime. Three types of coherent motion were studied: rotational, radial and translational motion. We found a statistical difference in the thresholds for radial motion.

**Conclusions** Our results seem to confirm that CI can influence the development of the visual dorsal stream, a pathway particularly vulnerable during the last three months of intrauterine life.

#### 636 BIPOLAR DISORDER AND PREGNANCY - NEURODEVELOPMENTAL OUTCOME OF CHILDREN EXPOSED TO MATERNAL ILLNESS WITH OR WITHOUT LITHIUM DURING PREGNANCY

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<sup>1,2</sup>L Forsberg, <sup>2</sup>G Berglund, <sup>1,3</sup>L Navér, <sup>4</sup>M Ljungdahl, <sup>4,5</sup>M Adler, <sup>1,2</sup>K Wide. *<sup>1</sup>Dep of Clinical Science, Intervention and Technology, Karolinska Institutet; <sup>2</sup>Dep of Pediatric Neurology; <sup>3</sup>Dep of Neonatology, Astrid Lindgrens Pediatric Hospital, Karolinska University Hospital Huddinge; <sup>4</sup>Dep of Psychiatry Southwest Stockholm, SLSO; <sup>5</sup>Dep of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden*

**Background and Aims** Bipolar disorder (BD) is a chronic psychiatric condition. Lithium is the most common mood stabilizing drug during pregnancy. It is unknown whether lithium exposure *in utero* may have negative effects on neurodevelopment. This study aims to investigate the health and cognitive development of preschool children born to mothers with BD.

**Methods** 10 women with BD who had given birth 2006 or 2007 were recruited from a psychiatric center. 4 of them had been medicating with lithium during pregnancy. 4 women without psychiatric illness were included. At age 4-5 the children were tested by a child psychologist, using Wechsler Preschool and Primary Scale of Intelligence (WPPSI) and physically examined. The mental health and social situation of the mother was assessed by a psychiatric nurse or psychiatrist.

**Results** WPPSI results were available for 9 children. Mean full scale IQ of children exposed to lithium during pregnancy (n=3) was 108 and for unexposed children (n=6) 111, no significant difference. One child, born to a mother with bipolar disease but not exposed to lithium, was born prematurely and tested in the lower normal range of the IQ scale. One child, not exposed to lithium, had been diagnosed with ADHD. All children were in good general health.