poral, palpebral, labial, nasal, submental, occipital, postauricular, infraorbital and buccal regions. Ultrasonography has shown a lesion with regular or irregular contours, heterogeneous structure with high and low echogenic sites. MDCT-angiography allowed to define size and depth of the lesion, vessel diameter, bone tissue involvement and participation of intracranial vessels in blood supply of the AVM. Combined treatment was performed in 17 cases (including embolization with surgical removal of AVM in 16 cases and electrochemical lysis and surgical removal of AVM in 1 case), and combined treatment was performed in 7 cases.

Conclusions. Complementary diagnostic tools allow determining different parameters of AVMs that are necessary for treatment planning. Combined use of ultrasonography and 3D MSCTA provided precise treatment planning and helped to obtain good results.

TRACTOGRAPHY OF THE BASAL GANGLIA IN PATIENTS WITH ALZHEIMER'S DISEASE

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Key words: *alzheimer's disease, basal ganglia, tractography*

Background. Although there are many studies of Alzheimer's disease (AD) focused on temporal and cortical atrophy, basal ganglia have received only little attention.

Aim. Our aim was to visualise neural tracts of the basal ganglia and measure their parameters in patients with AD and healthy controls.

Material and Methods. 10 patients with AD and 10 healthy controls underwent MRI. Neural tracts were reconstructed in caudate, putamen and pallidum using DSI Studio Following parameters were obtained: number of tracts (NT), tract length (TL), tract volume (TV), generalized fractional anisotropy (GFA) and normalized quantitative anisotropy (NQA). Results were analysed using Statistica 10.0 software.

Results and Discussion. Based on statistical analysis we obtained following statistically significant ($p<0.05$) results. There was seen decrease of NT in right caudate in patients with AD. On the contrary, in right and left putamen was observed an increase in NT and NQA in patients with AD. Similarly, in left pallidum was observed an increase of NQA and in right pallidum an increase of NT and NQA in patients with AD.

Conclusions. Increase of NQA represents higher density of neural tracts in putamen and pallidum in patients with AD suggesting a compensatory mechanism.

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RELATION BETWEEN THE GROWTH OF 0–18 MONTH-OLD INFANTS AND BMI OF THEIR MOTHERS

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Key words: *growth, breastfeeding, BMI, weight-for-age, weight-for-length*

Background. Overweight and obesity belong to major civilisation diseases in developed countries. Their impact is recorded not only for mothers (loss of breastfeeding, especially after 4–6 months after delivery) but also on the child growth and development (hypertension, dyslipidemia or high birth weight). This situation is also triggered by family environment.

Aim. Our study compared basic anthropometric parameters of children until 18 months of age with percentile growth charts of Czech population.

Material and Methods. Data of 1765 children and their mothers collected in 2009–2010 were used for the study. The children were divided according to BMI categories of mothers. Software RustCZ based on the Czech growth charts was used for finding the percentile values of length-for-age, weight-for-age, weight-for-length and BMI-for-age for all measurements of every child at all monitored ages. Reference data are results of the 5th and 6th Nationwide Anthropological Survey (1991 and 2001).

Results and Discussion. Studied group composed of 7.6% obese mothers, 9 of whom had BMI above 40 kg/m^2. Full breastfeeding at the maternity hospital discharge was present in 90% of normal BMI mothers (average time 8.5 months) but only in 76%

of obese ones (average time 6.1 months, one month less compared to non-obese). During all the monitoring period, children of obese mothers had the highest weight-for-age, BMI-for-age, weight-for-length and length-for-age at the age of 18 months.

Conclusions. With an increasing BMI of mothers, duration of breastfeeding shortens and weight of the children increases. However, we found lean children in the group of obese mothers.

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THIRD-YEAR MEDICAL STUDENTS' ANATOMICAL SCIENCE KNOWLEDGE VS. CLERKSHIP DIRECTOR EXPECTATIONS

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Key words: *competency-based medical education (CBME), anatomical science education, pre-clerkship curriculum*

Background. Our school is implementing competency-based medical education (CBME) in undergraduate medical education (UME); however, the effectiveness of integration of anatomical sciences in this model is unknown. The anatomical knowledge that clerkship directors expect of students prior to clerkship is unclear, nor do we know if it is retained under the old curriculum.

Aim. The specific aims of this research are to: 1) determine which anatomical concepts are necessary for clerkship, and 2) assess clerkship students' anatomical knowledge prior to and at the end of each clerkship rotation.

Methodology. 1. Questionnaires were used as a guide during interviews with UME clerkship directors (family, internal, OB/GYN, surgery, paediatrics, psych.) to determine which anatomical concepts are necessary for each clerkship rotation. 2. Using Aim 1 results, assessments were created to measure students' anatomical knowledge prior to and at the completion of each clerkship rotation.

Results and Discussion. Embryology was the most, and histology the least, prevalent concept deemed necessary by directors. Gross anatomy was identified as a student strength by family and internal medicine; however, it was deemed a weakness in all other rotations. Only students entering internal, OB/GYN, paediatrics, and psychiatry rotations achieved a passing grade (>60%) on the pre-test, and only family med and paediatrics students demonstrated improvement in the post test.

Conclusions. Embryology was the most prevalent theme identified by clerkship directors as most specialties deal with development. Weaknesses included a lack of understanding of arterial branches, anatomical relationships, and MSK. Only paediatrics consistently improved between pre- and post-test scores, which may reflect more clerkship hours in the classroom.

NORMALIZED TOTAL BRAIN, CORTEX AND WHITE MATTER VOLUMES SHOW SEX DEPENDENT DIFFERENCES BETWEEN THE CONTROL SUBJECTS AND SCHIZOPHRENICS: A BRAIN SEGMENTATION STUDY

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Key words: *schizophrenics, normalized volume, sex differences, magnetic resonance imaging, brain segmentation*

Background. The brain size of the brain varies depending on the body size of the normal subjects. Meanwhile, the size of the brain decreases in the schizophrenics. However, only volume comparison may not give realistic results unless they are normalized.

Aim. In the present study, we compared the normalized volume data between the controls and schizophrenics.

Material and Methods. 88 controls (37 females, 51 males) and 57 schizophrenic patients included to the study. Structural magnetic resonance imaging was performed and the DICOM images were analyzed using the FreeSurfer which is an automatic brain segmentation software. The total volumes of brain, cortex and white matter divided to the estimated total intracranial volume for the normalization of the data and results compared between the groups.

Results and Discussion. The normalized total brain fraction was smaller in schizophrenic females (72.86%) than that of control females (75.73%). But there was not differences for the normalized total brain fraction between the schizophrenic males (72.89%) and control males (74.17%, $p \geq 0.05$). The normalized cortical volume fraction was smaller in schizophrenics both for females and males (28.52 and 28.77%) that of the control females and males (29.97%, 29.87%). The normalized white matter volume fraction was smaller in schizophrenic females (30.26%) than that of control females (31.47%). But there was not differences for the normalized total brain fraction between the schizophrenic males (29.50%) and control males (30.32%, $p \geq 0.05$).