

jugular vein. The anatomy is complicated and the classification of variations is incompletely characterized in previous reports.

Procedure Details: Two neuroradiologists retrospectively evaluated the images of cases which had undergone contrast-enhanced fat-suppressed 3D fast-gradient-echo MR imaging or contrast-enhanced CT by using multidetector row CT from the database of our institution. The obtained images were evaluated on a viewer with transverse section or multiplanar reformat images, regarding normal anatomy and variations.

Conclusion: Contrast-enhanced fat-suppressed 3D fast-gradient-echo MR imaging and contrast-enhanced CT by using multidetector row CT depicted the skull base venous structures and venous networks through the cranial base well. Knowledge of accurate anatomy and variations is important for diagnosis and consideration of strategies of endovascular treatment for some pathological conditions involving the veins.

C-634

Central nervous system complications during pregnancy and the postpartum period

Y.O. Tanaka, H. Hamada, I. Anno, Y. Okamoto, H. Yoshikawa, M. Minami; Tsukuba/JP (ytanaka@md.tsukuba.ac.jp)

Learning Objectives: To know imaging findings of CNS complications during pregnancy and the postpartum period with incidence, causes and clinical importance.

Background: Most complications during pregnancy which affect the central nervous system have a close relationship to pregnancy-induced hypertension. However, imaging findings of cerebrovascular accidents during pregnancy are slightly different from those in elderly people. In addition, available imaging tools during pregnancy are limited. Therefore, it is important for radiologists to know the specific imaging findings and indications of examinations for CNS complications during pregnancy.

Imaging Findings: Eclampsia is defined as newly developed convulsions occurring at 20 weeks gestation or later, and is closely related to hypertension. Recently, imaging findings of eclampsia have been recognized as one of the causes of reversible posterior edema. Stroke is one of the most critical complications during pregnancy. Intracerebral hemorrhage due to ruptured aneurysm or arteriovenous malformation also occurs during pregnancy, especially at 16 weeks gestation or later. Ischemic stroke is also caused by both arterial and venous occlusion during pregnancy. Dural sinus thrombosis is known for its tendency to develop hemorrhagic infarction, which often affects pregnant women. Compared to stroke, it is not a life-threatening problem, but lymphocytic hypophysitis is well known for almost always affecting pregnant women.

Conclusion: We will present typical imaging finding of these disorders with incidence and clinical information.

C-635

Seed method: A method to carry out semiautomatic quantitative analysis of cerebrospinal fluid flow through the aqueduct of Sylvius using phase contrast magnetic resonance imaging

N. Flórez-Ordoñez, D. Moratal-Pérez, J. Forner-Giner, E. Arana, L. Martí-Bonmatí, J. Millet-Roig; Valencia/ES (marti_lui@gva.es)

Purpose: To develop a method that allows the user to mark a seed point within the aqueduct of Sylvius to semiautomatically define the region of interest (ROI) providing, at the same time, reproducibility in the measurements and reducing the interobservers' variability. This method corrects errors that may lead to inaccuracies in the calculus of the different parameters that characterize the motion of CSF (mean flow, mean velocity and stroke volume) as well as errors introduced by background offset and aliased pixels.

Methods and Materials: Our method was evaluated by two observers analyzing 21 healthy subjects. MR examinations were performed using a 1.5 T scanner with a phase contrast sequence (V_{enc} of 20 cm/s, FOV = 160 mm, 3 mm slice thickness, matrix size = 256 x 256, TR = 53 ms, TE = 11 ms, NSA = 2 and 23 frames per cardiac cycle with peripheral retrospective pulse gating). It was developed using MATLAB R7. To correct possible residual systematic errors an average value of offset per frame is measured in background baseline regions where brain motion is minimal or absent during the cardiac cycle, as in midbrain and regions surrounding the ROI.

Results: Differences in outcomes between the two observers are expressed in terms of mean flow, stroke volume, standard deviation, ICC, and systematic difference. The method was highly reproducible, our results can be observed in (table 1).

Conclusion: Our semiautomatic method is significantly reproducible, allowing a

generalization of the calculus of flow parameters with great consistency and independency of the operator.

C-636

Diffusion-tensor-imaging: How to get exemplary protocols

H. Rumpel, L.L. Chan; Singapore/SG (helmut.rumpel@pacific.net.sg)

Learning Objectives: To demonstrate the concepts of diffusion-tensor-imaging to investigate the brain white matter structures regarding location, orientation, and fractional anisotropy (FA). Strategies for reproducible definition of regions-of-interest will be illustrated and artifacts related to partial volume effects with large white-matter tracts and crossed-fiber anisotropic diffusion will be discussed. **Background:** Recently, diffusion-tensor-imaging has been used to characterize brain development and aging, as well as structural changes induced by infectious, neurological, and neuropsychiatric disorders.

Procedure Details: To illustrate these strategies, diffusion-tensor-imaging results of early pathological changes of the motor connectivity circuit underlying Parkinsonism are presented. There were 18 patients (stage 2, mean age 65y) and 25 controls (mean age 60y) in the study based on a 2D EPI diffusion tensor imaging acquisition. The results showed significantly decreased FA along the nigrostriatal projection fibers and in other relay-stations of this motor circuit.

Conclusion: Subtle changes in FA might be hidden by fiber orientation heterogeneity in a region-of-interest.

C-637

MRI of intracranial hypotension syndrome: The role of the "internal auditory canal" sign

A. Catalucci, V. Pupillo, L. Zugaro, R. De Amicis, M. Gallucci, C. Masciocchi; L'Aquila/IT (alessiacat@tiscali.it)

Purpose: Spontaneous intracranial hypotension (SIH) is a rare condition mainly consisting on postural headache. It could be spontaneous (spinal CSF leakage) or secondary. We retrospectively reviewed and reported the main MR imaging features in cases of intracranial hypotension, pointing our attention to the "internal auditory canal sign" (IAC sign), up to today never described in literature.

Methods and Materials: MR imaging of 30 patients affected by SIH were evaluated to identify the main MR imaging features of this pathological condition (diffuse pachymeningeal thickening and enhancement, brain "sagging", pituitary and cavernous sinus enlargement) and the "internal auditory canal" sign: Gd enhancement close to the IAC wall. The presence of this sign was evaluated in 10 cases with meningeal changes by different causes (3 meningitis in otomastoiditis, 3 pachymeningeal carcinomatosis, 3 bilateral subdural haematomas, 1 sarcoidosis). Axial images before and after Gd were always available; sagittal images in 19 cases, coronal ones after Gd in 24 cases; 3 patients underwent to myelo-MR imaging, 3 patients to both myelography and myelo-CT.

Results: Dural thickening/enhancement were observed in all cases; brain sagging in 18/19, pituitary and cavernous sinus enlargement in 23/24; the IAC sign in 26/27. In the 10 cases examined as control it was never observed. In 2/3 cases in which myelo-MR imaging showed the CSF leak, it was confirmed by myelo-CT.

Conclusion: Our experience confirms the diagnostic role of MR imaging in cases of SIH. We believe the IAC sign to have a diagnostic accuracy equal or superior to the other MR imaging features; it could be useful in cases of atypical presentation.

C-638

Clinical indications of low dose (LD) head computer tomography (CT) scans

S. Tripathi, K. Das, S. Niven, S. Chakraborty; Liverpool/UK (sankalptripathi@hotmail.com)

Purpose: CT is an invaluable diagnostic tool but its growing use has led to increasing radiation exposure to the patient. Efforts have been made to minimize radiation dose. Although a number of studies have shown the images produced by LD CT to be of acceptable diagnostic quality, none have addressed the issue of their clinical indication. We aimed to formulate a list of clinical indications for LD CT of the head.

Methods and Materials: Patients included in the study had serial scans within 2 weeks of each other, where one was a LD CT and other a normal dose (ND) CT. Indications for CT included: Shunt position, hydrocephalus; post-biopsy. The study was double blinded where two neuroradiologists independently reported 46 LD scans and the corresponding ND scans two weeks later. Abnormalities, and whether the neuroradiologist felt that the examinations adequately answered the clinical question, were tabulated. A list of possible clinical indications for LD CT was then formulated.