PO-A3 + PO-A4

PO-VA-19

NEUROLOGICAL EMERGENCIES IN ISCHEMIC STROKES IN THE BRAIN STEM

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This study was undertaken in an attempt to determine the causes of critical condition and indications for intensive care of 127 patients with ischemic stroke in the brain stem (ISBS).

Result. The main cause in ISBS was acute respiratory insufficiency which developed under the influence of three factors: glossopharyngolaryngeal palsy and pulmonary pathology. Disturbance of the central respiratory regulation is of secondary significance.

Intensive care provided patency of the respiratory airways (toilet of tracheobronchial tree, tracheostomy, nasogastral feeding) and the mechanical ventilation. Emergencies therapy was promising: in our series 76 patients survived, 51 patients (40,2%) died. In lateral medullary infarct of 15 patients 14 survived. In extensive focus of 112 patients 62 survived. Locked-in syndrome developed in 6 patients, 3 of them lived for from 3 months to 8 years.

Conclusions. Intensive care may be used in all patients with ISBS. In extensive focus and severe neurological deficit, in particular locked-in syndrome, neurological emergency is a problem of ethics.

PO-A4-01

EVALUATION OF CNS PATHOLOGY USING NEW MRI TECHNIQUES

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We have introduced some recent improvements of magnetic resonance imaging (MRI) which are anticipated to improve diagnostic accuracy and broaden the clinical application of this modality with regard to central nervous system (CNS) pathology. On this occasion we intend to demonstrate the results attained with the use of three technical advancements, namely the three-dimensional (3-D) imaging, the signal suppression techniques, and magnetic resonance angiography (MRA). These new imaging techniques were in some instances combined with gadolinium enhancement. They had been used in about 220 patients in the course of the past year, who all had had a complete clinical evaluation, and some pathological exploration.

Not long ago the possibility of 3-D or volume-acquired imaging became available, representing a major advancement in MR technology. The 3-D technique has the capability to collect MRI data from the entire volume of the region rather than from a single scan at a time, as is the case with 2-D imaging used so far. Furthermore, the data obtained can be reformatted so that one can see any part of the examined area from any angle. In our recent experience, 3-D MRI provides high-resolution pictures of a pathological process in all dimensions from a single acquisition, which means that the long MRI time is considerably shortened, thus eliminating a major disadvantage of MRI. On different examples we shall demonstrate the advantages of 3-D imaging. The signal suppression technique, especially of the fat tissue or water, has already, in our experience, upgraded the quality of images and improved the detection and specification of pathological processes, in particular those lodging in the area of the orbit or spine and posterior fossa. We have been using our version of a hybrid technique, but tested also the solvent suppression in proton spectroscopy with the chopper fat-suppression sequence and the Dixon's technique. We shall demonstrate the results obtained with suppression technique. MRA is the next new modality which has great clinical potentials and may reduce the risks of the selective angiography. We shall present its clinical usage.

PO-A4-02

MAGNETIC RESONANCE FINDINGS IN THORACIC RADIATION MYELOPATHY

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Radiation myelopathy (RM) is a complication of therapeutic irradiation for primary or metastatic tumors and may occur in 1-10% of the patients if the spinal cord is included into the radiation field. Characteristics are intramedullary symptoms, related to the exposed area, which develop with a latency of months up to several years. We identified two patients suffering from RM, who underwent MRI of the spinal cord. Both patients were female and primary tumor was histologically proven breast-carcinoma. In the first patient irradiation was performed after incomplete mastectomy, using a large latero-dorsal field and a fractionated telecobalt-scheme. In the second patient a one-field dorsal irradiation was performed directly to the spinal column because of metastatic involvement of the vertebral-bodies, also using a fractionated telecobalt-protocol. The latent period was 15 months in the first and 30 months in the second patient. Both presented with an intramedullary cord syndrom. MRI was performed on a 1.5 T Magnetom (Siemens-FRG) using a 30 cm surface-coil and T1- as well as T2-weighted sequences. In the past, neuroradiological diagnosis of RM depended on the exclusion of spinal cord compression by myelography and/or CT. MRI in both of our patients showed fatty replacement of the vertebral bone marrow and proved the absence of cord compression. Furthermore MRI was able to demonstrate intramedullary signal changes, suggesting the direct visualisation of radiation induced parenchymal damage. In conclusion, MRI should be recommended as the first imaging modality in RM due to its noninvasiveness and the capability to offer more diagnostic information than other methods.

PO-A4-03

TREATED PHENYLKETONURIA: EVALUATION WITH CRANIAL MR IMAGES

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Phenylketonuria (PKU) being the most frequent of the aminoacidurias is transmitted as an autosomal recessive trait with an incidence of 1/8000. The deficiency of phenylalanine hydroxylase results in elevated levels of phenylalanine and its organic acid metabolites in blood and tissue. Recognized by biochemical screening on the first days of life an early restriction of phenylalanine controls the biochemical abnormalities and prevents mental retardation. Discontinuation of diet in adolescent and adult patients is still very common. The clinical consequences of resulting excessive hyperphenylalaninemia are still unknown.

Twenty patients (mean age: 20.1 years, age range: 8 years, median: 20 years) with treated PKU were studied with magnetic resonance (MR) images with spin-echo T2- and T1- weighted sequences in order to correlate MR-findings with clinical data.

In all but one patients we found confluent and patchy areas of abnormal high signal intensity on T2-weighted images. These none-space-occupying lesions were located most frequently in the periventricular white matter of the parieto-occipital lobe, extending to the frontal lobe and to the subcortical u-fibres in more advanced cases. Five patients showed comparable signal abnormalities involving the cerebellar hemispheres and the brain stem. The severity of these findings did not correlate with the documented levels of phenylalanine from birth to the time of examination and were independent on the initiation of dietary treatment.

The histopathological substrate of these changes in treated PKU-patients is not yet defined. They may be a result of a disturbance of myelination corresponding well with earlier neuropathological studies in untreated patients.

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