3.15.1 Division of Neuroradiology

The independent Department of Neuroradiology is integrated into the Head Clinic of the University Hospital Würzburg and was founded in 1977. All modern diagnostic exams and therapeutic interventions available to the neuroradiological specialty are practiced at the technically highest standard. The following equipment is linked into the PACS: a modern digital imaging system for X-ray diagnostics, a multifunctional X-ray imaging system with fluoroscopy and DSA capability, a multislice CT scanner, a biplane digital subtraction angiography system with flat panel technology and Dyna-CT, a digital subtraction angiography system, a multislice CT scanner, a biplane digital subtraction angiography system with flat panel technology and Dyna-CT, a digital subtraction angiography system, a multifunctional X-ray imaging system with fluoroscopy and DSA capability.

Mission and Structure

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Major Research Interests

Neuroimaging

(M. Bendszus)

This focus is funded by an endowed professorship assigned to Dr. Bendszus in conjunction with the Department of Neurology. Here, new innovative contrast media are investigated in inflammatory and regenerative processes of the central as well as peripheral nervous system. Furthermore, prospective studies are conducted on brain regeneration after toxic insults (such as from alcohol) and on the occurrence of specific neuropsychological deficits in the course of various procedures.

Neurooncology

(M. Warmuth-Metz)

The department acts as the neuroradiological reference site to all German multi-centric, pediatric neurooncological studies. MR-examinations are evaluated to assess the therapy of experimental gliomas and novel MR contrast agents. Third-party funded.

Pediatric Neuroradiology

(M. Warmuth-Metz)

Close collaboration with the Department of Pediatric Neurosurgery in the diagnosis and treatment of CNS neoplasms, spinal and vascular malformations.

MR Imaging of Neuromuscular Diseases

(M. Bendszus)

Animal experiments and clinical studies on the detection of peripheral nerve injuries and denervated muscles.

MR-Diffusion Imaging

(A. Bartsch)

Development of new analysis methods for MR-diffusion data to establish white matter integrity (e.g. Tract Based Spatial Statistics) and establishing and testing of diffusion tractography under aversive conditions.

Functional MR-Imaging

(A. Bartsch)

In cooperation with the Depts. of Neurosurgery, ENT, Neurology and Psychiatry. DFG (German Research Council) funded subproject in the Clinical Research Group on ADHD. Characterization and quantification of neuronal resting-state networks by fMRI. Mapping prior to neurosurgical resections and cochlear implantation.
lear, brainstem and midbrain implants. Examination of the effects of a series of electroconvulsive therapies and acute alcohol ingestions on the brain. FMRI and quantified perfusion in malignant brain tumors.

**Interventional Neuroradiology – Vessel-occlusive Therapies**
(L. Solymosi)

Endovascular treatment of vascular malformations and highly-vascularized tumors in international and national studies. Optimization of embolization materials and techniques. Third-party funded.

**Interventional Neuroradiology – Vessel-recanalizing Therapies**
(L. Solymosi)


**Teaching**

The department participates in the university education of students by conducting lectures and courses within the radiological and neuroradiological teaching. The head of the department is authorized to full neuroradiological training (3 years).

The department organizes regular teaching and training events with national and international neuroradiological lecturers. Its staff is constantly active in various in- and out-of-house courses (such as refresher programs at the annual Convention of German Radiologists and regular neuroradiological training for the Bavarian Medical Association) and organizes or instructs various courses at the international level (such as the FSL & Freesurfer Courses 2006 in Siena and 2007 in Cardiff or the Clinical FMRI Course on the Human Brain Mapping Conference 2007 in Chicago).

**SELECTED PUBLICATIONS**


Neuroradiological reference site for all German multi-centric therapy studies of pediatric brain tumors. Various international studies on malignant brain tumors (glioblastomas, pontine gliomas). International (worldwide) therapy studies on cerebral aneurysms (detachable coils, bioactive coils, stents).

Participation on therapy studies of inflammatory CNS diseases.