

Correspondence

Abdul Aziz Z, Jethwani D, Ananta Ram G, Sharath Kumar GG, Saini J.

N-acetyl peak in proton MR spectroscopy of metastatic mucinous adenocarcinoma of brain.

Clin Neuroradiol. 2013;23:153-6.

10.1007/s00062-012-0137-2

Original Article

Abuhandan M, Cece H, Calik M, Karakas E, Dogan F, Karakas O.

An evaluation of subacute sclerosing panencephalitis patients with diffusion-weighted magnetic resonance imaging.

Clin Neuroradiol. 2013;23:25-30.

10.1007/s00062-012-0163-0

PURPOSE: This study aimed to evaluate the contribution of diffusion weighted magnetic resonance imaging to the diagnosis and staging of subacute sclerosing panencephalitis.

MATERIAL AND METHOD: The study comprised 26 patients diagnosed with subacute sclerosing panencephalitis at our clinic who were undergoing regular follow-up, and a control group of 18 subjects. Clinical staging was determined by Risk and Haddad classification; 12 at Stage II and 14 at Stage III. Diffusion weighted magnetic resonance images were taken of six areas (frontal, parieto-occipital, cerebellar, deep white matter, thalamus and basal ganglia) and by calculating the apparent diffusion coefficient (ADC) values, and a comparison was made between the stages and with the control group.

RESULTS: The ADC values of all the areas of the subacute sclerosing panencephalitis patients were found to be significantly higher compared to the control group ($p < 0.05$). While the mean ADC values of the deep white matter, basal ganglia, frontal and parieto-occipital areas of the Stage II patients were found to be significant compared to the control group ($p < 0.05$), there was no significance in the other areas ($p > 0.05$). The ADC values of all the areas of the Stage III patients were found to be significantly high compared to the Stage II values ($p < 0.05$).

CONCLUSION: Diffusion weighted magnetic resonance imaging can be used with other diagnostic criteria to confirm diagnosis of subacute sclerosing panencephalitis and to reveal differences between the stages.

SSPE – DWI – Staging

Correspondence

Aksoy Ozcan U, Yildiz M E, Isik U, Dincer A.

Prenatal Diagnosis of Cerebral Venous Pathologies: Findings in Diffusion-Weighted Imaging (DWI), Time-of-Flight (TOF), and Gradient-Echo Sequences.

Clin Neuroradiol. 2014;24:165-7

10.1007/s00062-013-0213-2

Correspondence

Amene CS, Yeh-Nayre LA, Crawford JR.

Isolated sensorineural hearing loss as initial presentation of recurrent medulloblastoma: neuroimaging and audiological correlates.

Clin Neuroradiol. 2013;23:301-3.

10.1007/s00062-012-0186-6

Abstracts

[Abstracts of the 48th Annual Meeting of the German Society for Neuroradiology-joint Annual Meeting of the DGNR and ÖGNER. October 10-12, 2013. Gürzenich, Köln, Germany]

Clin Neuroradiol. 2013;23 Suppl 1:4-112.
10.1007/s00062-013-0248-4.

Original Article

Beckmann YY, Gelal F, Eren S, Ozdemir V, Cancuni O.

Diagnostics to look beyond the normal appearing brain tissue (NABT)? A neuroimaging study of patients with primary headache and NABT using magnetization transfer imaging and diffusion magnetic resonance.

Clin Neuroradiol. 2013;23:277-83.

10.1007/s00062-013-0203-4

OBJECTIVE: Novel diagnostics can allow us to "look beyond" normal-appearing brain tissue (NABT) to unravel subtle alterations pertinent to the pathophysiology of primary headache, one of the most common complaints of patients who present to their physician across the medical specialties. Using both magnetization transfer imaging (MTI) and diffusion weighted imaging (DWI), we assessed the putative microstructural changes in patients with primary headache who display the NABT on conventional magnetic resonance imaging (conventional MRI).

METHODS: Subjects were 53 consecutive patients with primary headache disorders (40 = migraine with aura; 9 = tension headache; 4 = cluster headache) and 20 sex- and age-matched healthy volunteers. All subjects underwent evaluation with MRI, MTI, and DWI in order to measure the magnetization transfer ratio (MTR) and the apparent diffusion coefficient (ADC), respectively, in eight and six different regions of interest (ROIs).

RESULTS: Compared to healthy controls, we found a significant 4.3 % increase in the average ADC value of the occipital white matter in the full sample of patients ($p = 0.035$) and in patients with migraine ($p = 0.046$). MTR values did not differ significantly in ROIs between patients and healthy controls ($p > 0.05$).

CONCLUSIONS: The present study lends evidence, for the first time to the best of our knowledge, for a statistically significant microstructural change in the occipital lobes, as measured by ADC, in patients with primary headache who exhibit a NABT on MRI.

Importantly, future longitudinal mechanistic clinical studies of primary headache (e.g., vis-a-vis neuroimaging biomarkers) would be well served by characterizing, via DWI, occipital white matter microstructural changes to decipher their broader biological significance.

Correspondence

Brockmann C, Sommer T, Pirzer R, Kerl HU, Nolte IS, Forster A, Brockmann MA.

Repeated MRI of a patient with an intramedullary tumour and implanted cardiac resynchronization therapy defibrillator (CRT-D).

Clin Neuroradiol. 2013;23:237-41.

10.1007/s00062-012-0176-8

Correspondence

Chen CF, Hsu SW, Ko SF, Chen KY.

High-flow hemodialysis arteriovenous shunt with concurrent central vein stenosis masquerading as sigmoid sinus dural arteriovenous fistula.

Clin Neuroradiol. 2013;23:59-62.

10.1007/s00062-011-0118-x

Correspondence

Choi CY, Yee GT, Lee CH, Joo M.

Large cystic glioblastoma multiforme.

Clin Neuroradiol. 2013;23:145-7.

10.1007/s00062-011-0129-7

Editorial

Doerfler A

The Annual Meeting of the German Society of Neuroradiology Cologne, October 10th to 12th, 2013.

Clin Neuroradiol. 2013;23:79.

10.1007/s00062-013-0227-9

Correspondence

Dorn F, Brinker G, Blau T, Kabbasch C, Reiner M, Liebig T.

Spontaneous thrombosis of a DVA with subsequent intracranial hemorrhage.

Clin Neuroradiol. 2013;23:315-7.

10.1007/s00062-012-0190-x

Correspondence

Dundar NO, Aralasmak A, Gurer IE, Haspolat S.

Subacute Sclerosing Panencephalitis Case Presenting with Cortical Blindness: Early Diagnosis with MRI and MR Spectroscopy.

Clin Neuroradiol. 2014;24:185-8.

10.1007/s00062-013-0218-x

Correspondence

Elshikh S, Schumacher M, Dohmen A, Weber J.

Recurrent aortic dissection presenting with repeated transient ischemic attacks: a novel pathophysiology and successful endovascular treatment.

Clin Neuroradiol. 2013;23:327-30.

10.1007/s00062-012-0194-6

Aortic dissection is the most common and the most lethal event that can involve the aorta. Typically, aortic dissection presents with sharp, tearing, or ripping pain. Alternatively, the patients may suffer from possible extension of the dissecting aneurysm into the supra-aortic vessels resulting in syncope in 9.4 % of patients cerebrovascular accidents in 4.7 %. We present a case of recurrent aortic dissection, which presented with recurrent transient ischemic attacks (TIAs). The etiology of the neurological symptoms was attributed to a steal phenomenon. The right subclavian artery was supplied by retrograde flow from the right internal carotid artery through the false lumen of the dissection. To prevent further hemodynamic TIAs, we successfully occluded the proximal part of the false lumen of the dissection responsible for the steal phenomenon.

Original Article

Fermin-Delgado R, Roa-Sanchez P, Speckter H, Perez-Then E, Rivera-Mejia D, Foerster B, Stoeter P.

Involvement of globus pallidus and midbrain nuclei in pantothenate kinase-associated neurodegeneration: measurement of T2 and T2* time.

Clin Neuroradiol. 2013;23:11-5.

10.1007/s00062-011-0127-9

PURPOSE: To quantify involvement of globus pallidus and two midbrain nuclei (substantia nigra and red nucleus) in Pantothenate Kinase-Associated Neurodegeneration (PKAN).
MATERIAL AND METHODS: We performed T2 and T2* weighted imaging with calculation of the corresponding relaxation times on a subset of 5 patients from a larger group of 20 patients with PKAN from the southwest part of the Dominican Republic. Examinations were carried out on a 3T scanner and included a multi-echo spin-echo as well as a multi-echo gradient echo sequence. Results were compared to a control group of 19 volunteers.
RESULTS: T2 and T2* weighted sequences showed abnormal signal reduction in the globus

pallidus of all patients. On T2* weighted imaging, abnormal signal in the substantia nigra could reliably be detected in 75% of cases, but differentiation from normal was less reliable in T2 weighted scans. Correspondingly, relaxation times differed from normal with very high significance ($p < 0.0001$) in the globus pallidus, but with less significance in the substantia nigra ($p \leq 0.03$). The red nucleus was not affected.

CONCLUSIONS: Signal reduction in the globus pallidus, which probably is due to abnormal accumulation of iron, is severe in PKAN and can be differentiated from normal with high reliability. The substantia nigra is affected to a lesser degree, and the red nucleus is not involved. The reason for this selective susceptibility of normally iron-rich brain structures for pathological accumulation of iron remains speculative. Our quantitative results might be helpful to assess the value of an iron chelation approach to therapy.

Pantothenate kinase-associated neurodegeneration – Tiger's eye – Relaxation times – Magnetic resonance imaging – Globus pallidus

Correspondence

Fischer S, Aguilar Perez M, Bassiouni H, Hopf N, Bazner H, Henkes H.

Arteriovenous fistula of the filum terminale: diagnosis, treatment, and literature review.

Clin Neuroradiol. 2013;23:309-14.

10.1007/s00062-012-0188-4

Correspondence

Fischer S, Bätzner H, Henkes H.

Cervical artery dissection in a young patient with Rubinstein-Taybi syndrome.

Clin Neuroradiol. 2013;23:41-4.

10.1007/s00062-011-0100-7

Correspondence

Folstein MK, Brewer MB, Chopra K, Christy MR.

Traumatic aneurysm of the parietal branch of the superficial temporal artery : case presentation, diagnosis and review of the literature.

Clin Neuroradiol. 2013;23:55-8.

10.1007/s00062-011-0117-y

Original Article

Forkert ND, Fiehler J, Schönfeld M, Sedlacik J, Regelsberger J, Handels H, Illies T.

Intranidal signal distribution in post-contrast time-of-flight MRA is associated with rupture risk factors in arteriovenous malformations.

Clin Neuroradiol. 2013;23:97-101.

10.1007/s00062-012-0168-8

PURPOSE: To evaluate if arteriovenous malformations (AVMs) that are associated with a high rupture risk (HRR) are represented by different intranidal Time-of-Flight (TOF) magnetic resonance angiography intensity distributions compared to those with presumably low rupture risk (LRR). **METHODS:** Fifty post-contrast TOF datasets of patients with an AVM were analyzed in this study. The patients were classified to the HRR group in case of a deep location, presence of exclusive deep venous drainage, previous hemorrhagic event or a combination thereof. For each TOF dataset, the AVM nidus was semi-automatically delineated and used for histogram extraction. Each histogram was analyzed by calculating the skewness, kurtosis, mean and median intensity and full-width-half-maximum. Statistical analysis was performed using parameter-wise two-sided t-tests of the parameters between the two groups.

RESULTS: Based on morphological analysis, 21 patients were classified to the HRR and 29 patients to the LRR group. Statistical analysis revealed that TOF intensity distributions of

HRR AVMs exhibit a significant higher skewness ($p=0.0005$) parameter compared to LRR AVMs. Contrary to these findings, no significant differences were found for the other parameters evaluated.

CONCLUSION: Intracranial flow heterogeneity, for example, caused by turbulent flow conditions, may play an important role for risk of a hemorrhage. An analysis of post-contrast TOF intensities within the nidus of an AVM may offer simple and valuable information for clinical risk estimation of AVMs and needs to be tested prospectively.

Intracranial arteriovenous malformations – Hemodynamics – Cerebral hemorrhage – Magnetic resonance angiography

Original Article

Gölitz P, Struffert T, Lücking H, Rösch J, Knossalla F, Ganslandt O, Deuerling-Zheng Y, Doerfler A.

Parametric color coding of digital subtraction angiography in the evaluation of carotid cavernous fistulas.

Clin Neuroradiol. 2013;23:113-20.
10.1007/s00062-012-0184-8

PURPOSE: Angiographic assessment of carotid cavernous fistulas (CCFs) can be complex. Our purpose was to examine whether the use of parametric color coding in the postprocessing of DSA series is advantageous in the evaluation of CCFs.

METHODS: We enrolled 16 patients with angiographically proven CCFs. Endovascular treatment was performed in 14 cases. For postprocessing of digital subtraction angiography (DSA) series, a newly implemented algorithm of parametric color coding was used, turning sequential images of two-dimensional (2D)-DSA series into a single color-coded image. Angiographic data of initial, interventional, and postinterventional 2D-DSA series were compared with color-coded images. Whether parametric color coding could facilitate evaluation of fistula architecture and provide a more precise estimation of fistula venous drainage patterns as well as whether flow analysis could reveal objective changes during and after treatment were investigated.

RESULTS: In 56 % of the cases, parametric color coding was observed to facilitate visualization of fistula angioarchitecture. Estimation of fistula drainage flow patterns was considered to be improved in 31 % of the cases. For assessment of hemodynamic changes during and after treatment, parametric color coding was assumed to be helpful in 21 % of the cases, especially because revealing flow changes that were not visible on 2D-DSA series were now visible.

CONCLUSIONS: Parametric color coding is a fast application tool that might provide additional support in the angiographic evaluation of CCFs. Visualization of complex fistula architecture could be facilitated, and flow analysis might improve assessment of venous drainage patterns, thereby increasing overall diagnostic confidence. During and after treatment, hemodynamic changes that were not visible on 2D-DSA series could now be depicted.

Cerebrovascular disease – Digital subtraction angiography – Image postprocessing – Endovascular treatment

Original Article

Grams AE, Kraff O, Kalkmann J, Orzada S, Maderwald S, Ladd ME, Forsting M, Gizewski ER.

Magnetic resonance imaging of cranial nerves at 7 Tesla.

Clin Neuroradiol. 2013;23:17-23.
10.1007/s00062-012-0144-3

PURPOSE: The aim of this study was to demonstrate the feasibility of cranial nerve (CN II-XII) imaging with 7 Tesla magnetic resonance imaging (MRI).

METHODS: In this study four sequences were evaluated in three healthy volunteers using

magnetization preparation rapid gradient echo (MPRAGE), constructive interference in steady state (CISS), true fast imaging with steady state precession (TrueFISP) and proton density (PD) T2-weighted turbo spin echo (TSE) sequences.

RESULTS: It was found that MPRAGE did not always provide sufficient contrast to delineate in particular small CNs but displayed an overall good identification rate. The T2 sequence was not able to adequately differentiate the small CNs but showed a very good contrast between nerves and cerebrospinal fluid (CSF). As at lower magnetic fields steady state sequences displayed a high identification rate of all CNs in the axial plane but CISS suffered from susceptibility and pulsation artifacts, furthermore it was limited as no parallel imaging could be performed. The TrueFISP technique was reliable in identifying most CNs although suffering from banding artifacts. **CONCLUSIONS:** The TrueFISP sequence showed superior spatial resolution and contrast in comparison to the other sequences for imaging of CNs at 7 T.

Diagnostic imaging – Cranial nerves – Imaging, three-dimensional – Image enhancement – Artifacts

Original Article

Guo LF, Geng J, Qiu MH, Mao CH, Liu C, Cui L.

Quantification of Phase Values of Cerebral Microbleeds in Hypertensive Patients Using ESWAN MRI.

Clin Neuroradiol. 2013;23:197-205.

10.1007/s00062-012-0196-4

PURPOSE: The presence of cerebral microbleeds (CMBs) may have predictive and diagnostic value for cerebrovascular diseases. The purpose of our study was to measure the phase values (PVs) of CMBs by phase maps.

METHODS: We retrospectively analyzed 75 patients with hypertension who had CMBs using enhanced T2*-weighted angiography (ESWAN). The PVs of CMBs were measured and documented. The mean PVs of CMBs were correlated with demographic features and the grade of white matter lesions for seven brain regions.

RESULTS: A total of 275 CMBs were found. Their mean PV was -1.39 ± 0.29 radians. The mean PV of CMBs in seven brain regions was significantly lower than that of red nucleus and substantia nigra of healthy controls ($P < .05$). The mean PV of CMBs in the basal ganglia gray matter was significantly lower than that of the brainstem, subcortical white matter, and cerebellum ($P < 0.05$). In subcortical white matter, the PVs were significantly lower in patients with hypertension < 10 years than for those patients with hypertension ≥ 10 years ($P < 0.05$). In basal ganglia gray matter, the PVs were significantly lower in men than in women ($P < 0.05$). There was no significant correlation between the PVs of CMBs and the demographic features addressed or the grade of white matter lesions. **CONCLUSIONS:** Measurement of the PV of phase maps using ESWAN sequence provides quantitative information for detection of CMBs. The measurement data reported herein will provide a reference for a longitudinal study of CMBs in the future.

Cerebral microbleeds – Hypertensive – Phase value – T2-weighted – Magnetic resonance imaging*

Original Article

Guo LF, Wang G, Zhu XY, Liu C, Cui L.

Comparison of ESWAN, SWI-SPGR, and 2D T2*-weighted GRE sequence for depicting cerebral microbleeds.

Clin Neuroradiol. 2013;23:121-7.

10.1007/s00062-012-0185-7

PURPOSE: We aimed to compare images obtained with an Enhanced 3D multi-echo GRE T2*-weighted angiography (ESWAN) sequence with those obtained with a susceptibility-weighted imaging-spoiled gradient-recalled echo (SWI-SPGR) sequence and a two-

dimensional (2D) T2*-weighted gradient-recalled echo (GRE) sequence for the description of cerebral microbleeds (CMBs) in hypertensive patients (elderly people).

METHODS: A total of 273 elderly hypertensive patients were imaged in a 3.0-T MR scanner using ESWAN, SWI-SPGR, and 2D T2*-weighted GRE sequence, respectively. The presence, number, and location of CMBs and scanning and postprocessing time were recorded for both sequences, and the differences were tested using nonparametric McNemar and Friedman tests.

RESULTS: CMBs were detected by 2D T2*-weighted GRE images in 54 participants, SWI-SPGR images in 83 participants, and ESWAN images in 88 participants. The participants with CMBs detected by 2D T2*-weighted GRE sequence were fewer than those with CMBs detected by SWI-SPGR or ESWAN sequences ($P < 0.05$). There was no significant difference between SWI-SPGR and ESWAN sequences to detect the CMBs in number ($P > 0.05$). Among the participants with CMBs visualized in both sequences, most patients had CMBs in the subcortical white matter and at deep locations. The participants who had CMBs in the infratentorial region were fewer. The acquisition time of ESWAN images was slightly longer than that of SWI-SPGR images.

CONCLUSIONS: ESWAN sequence was not superior to SWI-SPGR sequence in depicting CMBs at 3.0-T MR, but both of these sequences were superior to 2D T2*-weighted GRE sequence.

Cerebral microbleeds – Hypertensive – T2 weighted – Magnetic resonance imaging*

Review

Huang Q, Liu J, Zhao R, Hong B, Xu Y, Zhao W, Yang P, Li W.

The safety and efficacy of stenting in the treatment of complex posterior cerebral artery aneurysms: a seven-case report and literature review.

Clin Neuroradiol. 2013;23:175-87.

10.1007/s00062-013-0219-9

OBJECTIVE: To investigate the safety and efficacy of stenting with coil in the endovascular treatment of complex posterior cerebral artery (PCA) aneurysms.

METHODS: The data on PCA aneurysms treated with stents were retrospectively reviewed from a prospectively collected intervention database. The literature was reviewed concerning the use of stents for PCA aneurysms.

RESULTS: Seven cases with complex PCA aneurysms (male: female = 6:1; ruptured: unruptured = 4:3) were retrieved from our database. Three aneurysms were localized at the junction of P1 and P2 segments (P1-2), two at P1, and two at P2A. Four were wide-necked saccular aneurysms, while the other three were dissecting ones. A total of nine stents (one Neuroform and eight Enterprise stents) were successfully deployed. Two aneurysms were totally eliminated, three were with neck residues and two were partially occluded. No procedure-related complications occurred. All patients recovered well. Angiographic follow-ups (FU) showed that three aneurysms achieved total obliterations, one got improved, two remained stable, and one recurred. The recurred aneurysm caused no symptom and was treated with two stents. Clinical FU demonstrated no neurological deterioration or bleeding. In literature review, the procedure-related mortality is 5.3 % (2/38). The incidence of permanent neurologic deficit is 2.6 % (1/38). Three (3/23) aneurysms recurred, of which one caused rebleeding. Four (4/23) in-stent stenoses were all asymptomatic. No other hemorrhagic or ischemic event occurred in clinical FU.

CONCLUSION: Stent offers a therapeutic alternative for complex PCA aneurysms especially when PVO cannot be tolerated. Long-term therapeutic efficacy requires further observations in clinical series with larger case numbers.

Posterior cerebral artery – Aneurysm – Stent – Endovascular treatment

Correspondence

Kalayci TO, Tekes A, Huisman TA, Poretti A.

Chiari II malformation and syntelencephaly in a young woman: coincidence or

pathogenetic association?

Clin Neuroradiol. 2013 Dec;23(4):319-21.
10.1007/s00062-012-0191-9

Correspondence

Kallenberg K, Rühlmann J, Baudewig J, Larsen J, Gröschel S, Dechent P, Kastrup A, Knauth M.

Analysis of reserve capacity and subsequent stenting in a case of subacute occlusion of the internal carotid artery.

Clin Neuroradiol. 2013;23:225-9.
10.1007/s00062-012-0172-z

Correspondence

Kalra V, Malhotra A.

Actinomycosis of the nasopharynx causing carotid occlusion.

Clin Neuroradiol. 2013;23:129-31.
10.1007/s00062-011-0119-9

Original Article

Kara B, Kiyat Atamer A, Onat L, Ulusoy L, Mutlu A, Sirvanci M.

DTI findings during spontaneous migraine attacks.

Clin Neuroradiol. 2013;23:31-6.
10.1007/s00062-012-0165-y

PURPOSE: Previous functional neuroimaging studies showed that the brainstem may have an important role in migraine and recently, DTI studies demonstrated that structural alterations in migraineurs may extend beyond the normal appearing brain tissue. The aim of our study was to find out if DTI may detect any abnormality during the spontaneous migraine attacks.

METHODS: The DTI images obtained in a 3T system during spontaneous migraine episodes. Patients with any systemic or metabolic disorder and abnormal signal intensity in conventional sequences were excluded. We measured the FA and ADC values of red nuclei, periaqueductal gray matter, thalami, posterior limbs of internal capsules and subcortical white matter. Fifteen healthy volunteers served as control

group. **RESULTS:** Fourteen patients enrolled in the study. The only site where we found an abnormality was the red nuclei, where the ADC values in migraineurs were statistically higher than in healthy volunteers. There was no statistical correlation between the DTI measurements and patients' ages, duration of disease, frequency of attacks and localization of pain.

CONCLUSION: Our findings supported the findings of previous functional neuroimaging studies, which concluded that the brainstem might have a role in the pathogenesis of a migraine episode. We think that the increase of ADC values in red nuclei may reflect vasogenic edema, which cannot be detected in conventional sequences. However, the exact underlying mechanism for this observation is unclear and we do not know whether these changes are responsible for triggering an attack or if they are the consequents of the attack itself.

DTI – Spontaneous – Migraine – Attack

Correspondence

Kim DW, Im HJ, Oh J.

Selective injury of the globus pallidus and hippocampus in methamphetamine-induced encephalopathy.

Clin Neuroradiol. 2013;23:51-3.
10.1007/s00062-011-0115-0

Correspondence

Kim EY, Lee SY, Cha SH, Yi KS, Cho BS, Kang MH.

Subacute combined degeneration revealed by diffusion-weighted imaging: a case study.

Clin Neuroradiol. 2013;23:157-9.

10.1007/s00062-012-0141-6

Original Article

Korn A, Bender B, Brodoefel H, Hauser TK, Danz S, Ernemann U, Thomas C.

Grading of Carotid Artery Stenosis in the Presence of Extensive Calcifications: Dual-Energy CT Angiography in Comparison with Contrast-Enhanced MR Angiography.

Clin Neuroradiol. 2013 Dec 17. [Epub ahead of print]

10.1007/s00062-013-0276-0

PURPOSE: We investigated the agreement of dual-energy computed tomography angiography (DE-CTA) and contrast-enhanced magnetic resonance angiography (CE-MRA) in the quantitative measurement of stenoses of the internal carotid artery in comparison with digital subtraction angiography (DSA).

METHODS: A total of 21 patients with stenoses of the external carotid artery were investigated with a DE-CTA and CE-MRA before undergoing carotid angioplasty. The grade of the stenoses was assessed in axial multiplanar reformations (MPR) before and multi-intensity projections (MIP) after plaque subtraction (PS) and compared with results from CE-MRA and DSA according to the North American Symptomatic Carotid Endarterectomy Trial.

RESULTS: Average grades of stenoses were 80.7 +/- 16.1 % (DSA), 81.4 +/- 15.3 % (MRA), 80.0 +/- 16.7 % (DE-CTA-MPR), and 85.2 +/- 14.7 % (DE-CTA-PS-MIP). Of 21 stenoses, 6 were filiform (stenosis grade, 99 %) in the DSA examination. Five of these cases were identified as pseudo-occlusions in MRA, while four were considered as occlusions in DE-CTA-PS-MIP. Another four cases were identified as pseudo-occlusion in DE-CTA-PS-MIP, which were identified as 90 % stenosis in the DSA examination.

CONCLUSIONS: In comparison with the gold standard DSA, DE-CTA-MPR had a slightly better agreement in measuring the degree of stenosis of the internal carotid arteries than CE-MRA. In DE-CTA-PS-MIP images, a systematic overestimation has to be taken into account due to partial extinction of the lumen by the PS algorithm. Nevertheless, DE-CTA should be preferred in imaging patients with carotid artery stenosis in the presence of extensive calcifications.

Carotid artery stenosis – Calcified plaques – Dual-energy CT angiography – MR angiography

Correspondence

Kwon HG, Jang SH.

Cingulum Injury by External Ventricular Drainage Procedure: Diffusion Tensor Tractography Study.

Clin Neuroradiol. 2013 Nov 13. [Epub ahead of print]

10.1007/s00062-013-0269-z

Correspondence

Lettau M, Jedrusik P, Laible M.

Dural metastases of a glioblastoma.

Clin Neuroradiol. 2013;23:323-5.

10.1007/s00062-012-0192-8

Correspondence

Leykamm S, Wessling B, Mühlenbruch G.

Atretic cephalocele and associated anomalies in a newborn child.

Clin Neuroradiol. 2013;23:37-40.
10.1007/s00062-011-0067-4

Correspondence

Loewenhardt B, Bernhard M, Pierskalla A, Neumann-Haefelin T, Hofmann E.

Neurointerventional treatment of amphetamine-induced acute occlusion of the middle cerebral artery by intracranial balloon angioplasty.

Clin Neuroradiol. 2013;23:137-43.
10.1007/s00062-011-0122-1

Editorial

Mader I, Urbach H.

Walk the line: from diffusion imaging to the microstructure of the brain.

Clin Neuroradiol. 2013;23:261-2.
10.1007/s00062-013-0265-3

Original Article

Mansour O, Megahed M, Schumacher M, Weber J, Khalil M.

Coiling of ruptured tiny cerebral aneurysms, feasibility, safety, and durability at midterm follow-up, and individual experience.

Clin Neuroradiol. 2013;23:103-11.
10.1007/s00062-012-0182-x

BACKGROUND AND PURPOSE: The tiny size of cerebral aneurysms represents one of the challenging facets for endovascular treatment, with a high risk for intraoperative rupture (IOR). We report on the treatment of tiny ruptured saccular cerebral aneurysms by coil embolization. All cases were that of pound 2-3 mm aneurysms with at least one of the dimensions < 2 mm.

MATERIALS AND METHODS: Between April 2008 and December 2010, we performed a retrospective analysis of nine consecutive cases of tiny aneurysms treated by coil embolization in our institution. **RESULTS:** Coil embolization was successfully performed in nine cases, whereas in one case, intraoperative rupture (IOR) of the fundus was encountered before complete obliteration of the aneurysm expected to be achieved with two coils. Complete occlusion (in n = 7 aneurysms) or near-complete immediate occlusion (in n = 2 aneurysms) was achieved. A total of 18 coils was used for coiling of the nine aneurysms, wherein five aneurysms were coiled with two coils each, two aneurysms with three coils each, and two aneurysms with only one coil each to achieve accepted results. Balloon assistance was used in three cases. Although a minimal coil projection in the parent vessel was seen in three cases, no untoward clinical complications were seen. At mean follow-up (6.7 months, interquartile range (IQR) 3-12 months), digital subtraction angiography (DSA) and magnetic resonance angiography (MRA) in nine patients demonstrated persistent complete occlusion in six of the aneurysms; one aneurysm showed marked filling of the fundus, and two showed neck remnant but did not need retreatment. All patients with available follow-up were independent in day-to-day activities with a modified Rankin score (mRS) of 0 or 1.

CONCLUSIONS: Coil embolization of tiny ruptured cerebral aneurysms is feasible. Careful consideration of the technical issues in treatment of such aneurysms is essential to achieve technical success while avoiding complications.

Tiny aneurysms – Coiling – Safety – Endovascular

Correspondence

Moses JE.

Lacrimo-auriculo-dento-digital syndrome with unilateral inner ear dysplasia and craniocervical osseous abnormalities: case report and review of literature.

Clin Neuroradiol. 2013;23:221-4.
10.1007/s00062-012-0170-1

Original Article

Mpotsaris A, Bussmeyer M, Buchner H, Weber W.

Clinical outcome of neurointerventional emergency treatment of extra- or intracranial tandem occlusions in acute major stroke: antegrade approach with wallstent and solitaire stent retriever.

Clin Neuroradiol. 2013;23:207-15.
10.1007/s00062-013-0197-y

BACKGROUND: Acute large cerebral artery occlusions respond poorly to systemic thrombolysis with recombinant tissue plasminogen activator (rTPA) alone. The value of stent retriever-based mechanical thrombectomy in patients with additional extracranial occlusion of the internal carotid artery (ICA), who require acute a priori extracranial stenting in order to reach the intracranial obstruction site, is not well known. We determined the outcome after emergency revascularization in acute stroke with tandem occlusions of the anterior circulation.

METHODS: According to specific inclusion/exclusion criteria, eligible stroke patients with large artery occlusions underwent mechanical recanalization with the Solitaire stent retriever. In case of a tandem occlusion, we performed an acute stenting with the Wallstent before thrombectomy. From October 2009 to March 2011, 50 patients were treated according to this protocol; time frames, clinical data, recanalization rates, and midterm outcome were recorded.

RESULTS: Forty-one patients had a large artery occlusion in the anterior circulation and nine in the posterior circulation. Mechanical recanalization was successful in 35/41 cases (85 %). Six of 41 patients (15 %) died in the acute phase. In 17/41 patients (42 %), thrombectomy was preceded by an emergency stenting in the extracranial portion of the internal carotid artery (ICA). National Institutes of Health Stroke Scale (NIHSS)/modified Rankin Scale (mRS) scores showed significant improvement in both the stenting group and the nonstenting group; there were no significant differences between the groups. At 90 days, 54 % of patients with emergency stenting had a good outcome. **CONCLUSIONS:** Acute extracranial stenting with the Wallstent combined with intracranial Solitaire-based thrombectomy is safe and may lead to an improvement in neurological outcome in patients with an otherwise poor prognosis under i.v. thrombolysis alone.,

Acute stroke – Mechanical thrombectomy – Acute stenting – Solitaire – Stent retriever – Tandem occlusion

Correspondence

Nakajima R, Uchino A, Sakai S.

Cerebral venous malformation associated with a varix and abnormal signal in surrounding brain parenchyma on magnetic resonance imaging: a case report.

Clin Neuroradiol. 2013;23:231-4.
10.1007/s00062-012-0174-x

Correspondence

Neidert MC, Prömmel P, Schuknecht B, Sürücü O.

Tumor or hematoma? An unusual case of an extradural lesion of the lumbar spine.

Clin Neuroradiol. 2013;23:305-8.
10.1007/s00062-012-0187-5

PURPOSE: Spinal epidural hematoma is a rare clinical entity. We present a case of atypical contrast enhancement pattern in a chronic epidural hematoma of the lumbar spine mimicking an extradural tumor.

CASE REPORT: A 76-year-old man on treatment with oral anticoagulants presented with a

1-month history of lower back pain radiating into his right upper thigh accompanied by spinal claudication. Preoperative MRI showed a posterior epidural lesion compressing the cauda equina with almost homogeneous contrast enhancement. Surgery was performed under the presumptive diagnosis of spinal extradural neoplasm. Intraoperative and histological findings were consistent with a chronic spinal epidural hematoma. Postoperatively, the patient had instant relief of his symptoms. **CONCLUSION:** Chronic spinal epidural hematoma may resemble an extradural tumor, requiring surgery for histological confirmation and decompression.

Epidural hematoma – Chronic – Extradural tumor – Lumbar spine – Contrast enhancement

Original Article

Nguyen-Thanh T, Reisert M, Anastasopoulos C, Hamzei F, Reithmeier T, Vry MS, Kiselev VG, Weyerbrock A, Mader I.

Global tracking in human gliomas: a comparison with established tracking methods.

Clin Neuroradiol. 2013;23:263-75.

10.1007/s00062-013-0198-x

PURPOSE: Global tracking (GT) is a recently published fibre tractography (FT) method that takes simultaneously all fibres into account during their reconstruction. The purpose of this study was to compare this new method with fibre assignment by continuous tracking (FACT) and probabilistic tractography (PT) for the detection of the corticospinal tract (CST) in patients with gliomas. **METHODS:** Tractography of the CST was performed in 17 patients with eight low grade and nine anaplastic astrocytomas located in the motor cortex or the corticospinal tract. Diffusions metrics as fractional anisotropy (FA), mean (MD), axial (AD) and radial diffusivity (RD) were obtained. The methods were additionally applied on a physical phantom to assess their accuracy. **RESULTS:** PT was successful in all (100 %), GT in 16 (94 %) and FACT in 15 patients (88 %). The case where GT and FACT, both, missed the CST showed the highest AD and RD, whereas the one where FACT algorithm, alone, was not successfully showed the lowest AD and RD of the group. FA was reduced on the pathologic side ($FA_{path} 0.35 \pm 0.16$ (mean \pm SD) versus $FA_{contralateral} 0.51 \pm 0.15$, $p_{corr} < 0.03$). RD was increased on the pathologic side ($RD_{path} 0.67 \pm 0.29 \times 10^{-3}$ mm²/s versus $RD_{contralateral} 0.46 \pm 0.08 \times 10^{-3}$ mm²/s, $p_{corr} < 0.03$). In the phantom measurement, only GT did not detect false positive fibres at fibre crossings. **CONCLUSION:** PT performed well even in areas of increased diffusivities indicating a severe oedema or disintegration of tissue. FACT was also susceptible to a decrease of diffusivities and to a susceptibility artefact, where GT was robust.

Global tracking – FACT algorithm – Probabilistic tractography – Glioma – Eigenvalues

New in the web

Ozdoğa C.

Everything you always wanted to know about cone beam computed tomography: 3D-Roentgen.ch.

Clin Neuroradiol. 2013;23:255-6.

10.1007/s00062-013-0238-6

New in the web

Ozdoğa C.

Imaios.com: "e-MRI" reloaded and more.

Clin Neuroradiol. 2013;23:69-71.

10.1007/s00062-012-0193-7

Original Article

Paniagua Bravo A, Forkert ND, Schulz A, Löbel U, Fiehler J, Ding X, Sedlacik J, Rosenkranz M, Goebell E.

Quantitative t2 measurements in juvenile and late infantile neuronal ceroid lipofuscinosis.

Clin Neuroradiol. 2013;23:189-96.
10.1007/s00062-012-0189-3

PURPOSE: The two most prevalent forms of neuronal ceroid lipofuscinosis (NCL) are the juvenile form (Batten disease, CLN3) and late infantile form (Jansky-Bielschowsky disease, CLN2). The aim of this study was to compare quantitative T2-values of brain tissue in CLN2 and CLN3 patients with reference values from age-matched normal subjects.

METHODS: Twenty-three CLN2 (n = 6) and CLN3 (n = 17) patients (m:f = 11:12) underwent MRI examination including a multiecho T2 sequence. Quantitative T2-values were measured in six defined regions of interest (ROIs) in the calculated quantitative T2 maps within the white matter (WM) and gray matter (GM). The extracted quantitative T2-values were compared with reference values from healthy children and young adults. Informed consent was obtained from the patients or their parents for all patients.

RESULTS: Statistical analysis revealed elevated quantitative T2-values in nearly all ROIs placed in the WM of the CLN2 patients. In contrast to this finding, no significant differences were found for the quantitative T2-values of the CLN3 patients compared to the age-matched healthy controls in any of the defined WM ROIs. Both groups exhibited no significant alterations of the quantitative T2-values in the GM ROIs compared to the healthy subjects.

CONCLUSION: Alterations of quantitative T2-values in the cerebral WM may not be a reliable sign to confirm the diagnosis in CLN3 patients but could prove valuable for diagnosis confirmation, follow-up examinations, and longitudinal monitoring of the disease progression in CLN2 patients.

Neuronal ceroid lipofuscinosis – T2 relaxometry – Neurodegeneration – CLN2 – CLN3 – Quantitative T2 measurement – Neurodegeneration in children

Correspondence

Papathanasiou A, Zouvelou V, Kyriazi S, Rentzos M, Evdokimidis I.

Metronidazole-induced reversible encephalopathy in a patient with facioscapulohumeral muscular dystrophy.

Clin Neuroradiol. 2013;23:217-9.
10.1007/s00062-012-0169-7

Correspondence

Piette C, Hoyoux C, Luckers O, Tebache M.

Atypical Location of Intracranial Germinoma: A Case Report.

Clin Neuroradiol. 2013 Dec 6. [Epub ahead of print]
10.1007/s00062-013-0274-2

Correspondence

Rennert J, Ullrich WO, Schuierer G.

A rare case of supraclinoid internal carotid artery (ICA) fenestration in combination with duplication of the middle cerebral artery (MCA) originating from the ICA fenestration and an associated aneurysm.

Clin Neuroradiol. 2013;23:133-6.
10.1007/s00062-011-0120-3

Fenestrations and duplications of the cervical and intracranial arteries are rare anatomic variants, reported to be associated with aneurysms or other vascular anomalies. We here present a patient with a supraclinoid ICA fenestration in combination with a duplication of the MCA originating from the ICA fenestration and an associated aneurysm.

Original Article

Ringelstein A, Mueller O, Goericke SL, Moeninghoff C, Sure U, Wanke I, Forsting M, Schlamann M.

Benefit of Second Catheter Angiography in Patients with Nontraumatic Subarachnoidal Hemorrhage.

Clin Neuroradiol. 2013 Nov 28. [Epub ahead of print]

10.1007/s00062-013-0271-5

PURPOSE: This study aimed to determine the yield of repetitive catheter angiography (digital subtraction angiography (DSA)) for the detection of causative vascular lesions in patients with nontraumatic subarachnoidal hemorrhage (SAH) and negative initial DSA. We hypothesize that a second DSA might be helpful to detect an initially occult bleeding source.

METHODS: We retrospectively evaluated 649 patients with acute SAH and invasive catheter angiographies between 2004 and 2012. In 90 SAH patients initial imaging was negative concerning a causative bleeding source. A total of 113 repetitive DSA were performed. Two neuroradiologists reanalyzed the initial imaging and the result of the reangiography independently.

RESULTS: In 4/90 patients (4.5 %) bleeding source was first detected in the second or third DSA. In all other patients, no causative vascular lesion was found. Reasons for the initially false negative diagnostics were one dissecting aneurysm and thrombosis of three aneurysms within the acute phase of SAH.

CONCLUSIONS: Repetitive DSA revealed the cause of SAH in 4.5 % of the cases. These findings have a therapeutic and prognostic impact. We think that at least a second DSA should be part of diagnostic work-up in patients with SAH and missing bleeding source, even considering the risk of an additional invasive angiography itself.

Correspondence

Schelhorn J, Habenicht U, Malessa R, Dannenberg C.

Magnetic resonance imaging-guided perineural therapy as a treatment option in young adults with pudendal nerve entrapment syndrome.

Clin Neuroradiol. 2013;23:161-3.

10.1007/s00062-012-0146-1

Correspondence

Schultheiss T, Mucha D, Gerber J.

The importance of experienced computer tomographic reading in the setting of telemedical stroke management.

Clin Neuroradiol. 2013;23:149-52.

10.1007/s00062-012-0132-7

Correspondence

She DJ, Xing Z, Liu Y, Cao DR.

Supratentorial hemangioblastomas: three case reports and review of the literature.

Clin Neuroradiol. 2013;23:243-7

10.1007/s00062-012-0183-9

Hemangioblastoma (HBL) within the central nervous system is a benign vascular neoplasm that usually occurs in the cerebellum. Supratentorial occurrence of HBL is an extremely rare event. Till date, approximately 129 cases of supratentorial HBL have been reported in the literature. Here, we present three new cases of supratentorial hemangioblastomas, one of which was found to have the lesions in a unique location of the choroidal fissure. The clinical, histopathological, and neuroradiological characteristics, as well as management of this rare disease are discussed with a review of the pertinent literature.

Retraction

Solymosi L.

Retraction note to: Familial aplasia of the olfactory bulb: a report of two cases.

Clin Neuroradiol. 2013;23:73.

10.1007/s00062-012-0148-z

Editorial

Solymosi L.

We're on the right path.

Clin Neuroradiol. 2013;23:173.

10.1007/s00062-013-0244-8

Correspondence

Son B, Yang S, Sung J, Lee S.

Bilateral persistent primitive trigeminal arteries associated with trigeminal neuralgia.

Clin Neuroradiol. 2013;23:45-9.

10.1007/s00062-011-0114-1

Persistent carotid-vertebrobasilar anastomoses (PCVBA) include the primitive trigeminal artery (PTA), the primitive otic artery (POA), the primitive hypoglossal artery and proatlantal arteries (ProAs). The PTA is the most commonly seen of these accounting for approximately 80-85% of PCVBAs. The PTA which connects the internal carotid artery (ICA) to the basilar artery (BA) may occasionally connect to the superior or posterior inferior cerebellar arteries without interposition to the BA. It is then referred to as a persistent trigeminal artery variant (PTAV), an anomalous carotid-cerebellar anastomosis. Bilateral occurrence of PTA is extremely rare. During vertebral artery (VA) development the anterior radicular artery of segment C1 from the proatlantal artery of Padget evolves into the intradural component of the VA (V4 segment) plus a short extradural segment (distal V3 segment). Agenesis of a single anterior radicular artery of ProA results in the absence of one distal VA associated with an unremarkable contralateral VA and the BA. Absence or hypoplasia of the terminal portion of one VA is a commonly observed anatomic variant. However, absence of the terminal portions of both VAs is exceptional. A rare case of bilateral PTAs is presented with unilateral PTA and a contralateral PTAV causing trigeminal neuralgia. Furthermore, the bilateral PTAs were associated with the absence of the proximal portion of the BA in addition to the bilateral lack of a distal VA. This finding comes as a logical consequence of the developmental anatomy of the vertebrobasilar junction and is consistent with the assumed congenital nature of the anatomic variant.

Original Article

Struffert T, Deuerling-Zheng Y, Engelhorn T, Kloska S, Göllitz P, Bozzato A, Kapsreiter M, Strother CM, Doerfler A.

Monitoring of balloon test occlusion of the internal carotid artery by parametric color coding and perfusion imaging within the angio suite: first results.

Clin Neuroradiol. 2013;23:285-92.

10.1007/s00062-013-0208-z

BACKGROUND: Temporary balloon test occlusion (BTO) might be performed prior to procedures in which occlusion of the internal carotid artery (ICA) might be necessary. We tested the hypothesis that parametric color coding (PCC) of angiographic series (digital subtraction angiography (DSA)) along with the assessment of cerebral blood volume (CBV) in the angiography suite would simplify and enhance the identification of candidates who are most likely to tolerate occlusion.

MATERIALS AND METHODS: Fifteen patients underwent angiographic series (DSA) and perfusion imaging before and during BTO. Pre- and postocclusion DSA acquisitions were evaluated for venous delay by conventional methods ("eye balling") and by PCC

measurements. Comparison of CBV values between the left and right hemisphere in 6 defined regions was performed.

RESULTS: Values of venous delay by eye balling and PCC showed a high correlation ($r = 0.87$, $p < 0.01$). Bland-Altman plot indicated slightly lower values (-0.05 s) by the PCC method. One of the 15 patients developed an asymmetrical CBV map with an increase in CBV of more than one standard deviation in 3 of the 6 regions of interest (ROIs). Acquisition of angiographic series and perfusion imaging did not prolong the test occlusion time.

CONCLUSION: PCC and CBV mapping are feasible during BTO. The use of PCC seems to simplify the ability to measure changes in venous filling delay. Perfusion imaging may show an increase in CBV in patients reaching the limits of cerebral autoregulation. These patients may be at risk for delayed infarction, even though they seem to tolerate temporary occlusion, and could be unsuitable candidates for permanent ICA occlusion.

Balloon test occlusion – Perfusion imaging – Parametric color coding – Angiography

Correspondence

Suer D, Yusifova L, Arsava EM, Ekinici G, Us O, Uluc K.

A Case Report of CLIPPERS (Chronic Lymphocytic Inflammation with Pontocerebellar Perivascular Enhancement Responsive to Steroids) Syndrome.

Clin Neuroradiol. 2013 Sep 26. [Epub ahead of print]

10.1007/s00062-013-0260-8

Clinical Case

Taschner CA, Brendecke S, Trippel M, Keuler A, Prinz M.

Freiburg neuropathology case conference: contrast-enhancing white matter lesion adjacent to the lateral ventricle.

Clin Neuroradiol. 2013;23:165-8.

10.1007/s00062-013-0226-x

Clinical Case

Taschner CA, Brendecke S, van Velthoven V, Maurer CJ, Prinz M.

Freiburg neuropathology case conference: a pineal region tumour in a child.

Clin Neuroradiol. 2013;23:331-8.

10.1007/s00062-013-0262-6

Clinical Case

Taschner CA, Staszewski O, Jabbarli R, Keuler A, Prinz M.

Freiburg neuropathology case conference: a partially calcified, dura-based tumour of the frontal lobe.

Clin Neuroradiol. 2013;23:63-8.

10.1007/s00062-013-0199-9

Clinical Case

Taschner CA, Staszewski O, Scheiwe C, Mader I, Prinz M.

Freiburg neuropathology case conference: a contrast-enhancing orbital, intra-conal lesion.

Clin Neuroradiol. 2013;23:249-53.

10.1007/s00062-013-0240-z

Correspondence

Trivelato FP, Manzato LB, Rezende MT, Uihôa AC.

Transitory Brain Stem Edema Following Successfully Transvenous Embolization of a Posterior Fossa Arteriovenous Malformation.

Clin Neuroradiol. 2014;24:151-3.
10.1007/s00062-013-0209-y

Review

Tsutsumi S, Yasumoto Y, Ito M.

Solitary spinal extradural plasmacytoma: a case report and literature review.

Clin Neuroradiol. 2013;23:5-9.

10.1007/s00062-012-0156-z

Solitary spinal extradural plasmacytoma (SSEP) is a rare but distinct form of plasma cell disorder. The clinical picture and treatment of SSEP are reviewed using the seven previously reported cases. The three male and four female patients were aged 40-85 years. The location was cervical spine in one patient, cervicothoracic in one, thoracic in two, thoracolumbar in one, lumbar in one, and extensive involvement in one. Progressive paraparesis and sensory disturbance were the predominant symptoms. Neuroimaging showed a compressive extradural mass lesion in the dorsal spinal canal without findings of local bone destructive changes in all cases. Four of five patients who underwent decompressive surgical maneuver and tumor resection showed neurological improvement. Immunoglobulin (IgG) kappa subtype was the most predominant histological type, followed by IgD lambda and IgA kappa subtypes. SSEP should be included in the differential diagnosis of an extradural tumor located in the dorsal spinal canal without associated bony changes. Surgery may be effective for symptomatic relief.

Plasmacytoma – Spinal – Extradural – Neuroimaging findings

Original Article

Tsutsumi S, Yasumoto Y, Manabe A, Ogino I, Arai H, Ito M.

Magnetic resonance imaging appearance of primary spinal extradural Ewing's sarcoma: case report and literature review.

Clin Neuroradiol. 2013;23:81-5.

10.1007/s00062-013-0222-1

PURPOSE: Primary spinal extradural Ewing's sarcoma (PSEES) or primitive neuroectodermal tumor (PNET) is uncommon. The present study summarizes the magnetic resonance (MR) imaging appearance of PSEES.

METHODS: Literature search from 1994 to 2012 with our representative case presentation.

RESULTS: Twenty-one patients, 12 males and 9 females, aged 3 weeks to 44 years, were identified. The thoracic spine was most frequently affected, followed by the cervical, cervicothoracic, and thoracolumbar spine. Superior-inferior extension of lesions was three vertebral levels in 7, two in 7, five in 4, four in 1, one in 1 and unknown in 1. PSEESs appeared isointense in 9 cases, hypointense in 2, hyperintense in 1, and no description in 9 on T1-weighted imaging, while hyperintense in 6, hypointense in 3, heterogeneous in 1, and no description in 11 on T2-weighted imaging. Varying enhancement was noted in 13 cases (62 %), with no description of contrast study in the other 8 cases. Dumbbell-shaped configuration of PSEES was found in 5 cases, foraminal widening in 4, and erosions or scalloping of the adjacent vertebral bodies in 4.

CONCLUSION: The MR imaging appearance of PSEESs is indistinguishable from other tumors. PSEES should be assumed as the differential diagnosis of spinal extradural tumors in pediatric, adolescent, and young adult patients, and prompt surgical exploration should be performed.

Ewing's sarcoma – PNET – Spinal – Extradural – MRI

Correspondence

Uysal S, Demirtas-Tatlidede A, Selcuk OY, Yayla V..

Diffusion-weighted imaging in eight-and-a-half syndrome presenting with transient hemiparesis.

Clin Neuroradiol. 2013;23:235-6.
10.1007/s00062-012-0175-9

Editorial

von Kummer R, Gerber J.

IMS-3, synthesis, and MR Rescue: no disaster, but down to earth.

Clin Neuroradiol. 2013;23:1-3.

10.1007/s00062-013-0214-1

Original Article

Wagner M, Steinbeis P, Güresir E, Hattingen E, du Mesnil de Rochemont R, Weidauer S, Berkefeld J.

Beyond delayed cerebral vasospasm: infarct patterns in patients with subarachnoid hemorrhage.

Clin Neuroradiol. 2013;23:87-95.

10.1007/s00062-012-0166-x

PURPOSE: Angiographic vasospasm (CVS) has been accused to be the main cause of delayed cerebral ischemia (DCI) after aneurysmal subarachnoid hemorrhage (SAH). However, treatment success including endovascular treatment remains to be improved. We performed a pattern analysis of ischemic lesions in SAH patients in the absence of angiographic cerebral vasospasm to generate further hypotheses concerning etiology and risk factors of DCI apart from vasospastic narrowing. **METHODS:** We retrospectively included 309 patients with cerebral infarcts after SAH. Vasospasm was assessed by means of CT or MR angiography and perfusion measurement or digital subtraction angiography. All clinical and radiological data were used to determine the most probable etiology for new infarcts.

RESULTS: Twenty-seven percent of patients showed infarcts without presence of angiographic vasospasm. Seventy-three percent of these "atypical infarcts" were induced by complications of aneurysm therapy, 7 % by hypoxia, 2 % by ICP-related herniation. In 17 %, the etiology remained unclear; however, disturbances of the microcirculation for different reasons were the most likely cause in these patients.

CONCLUSION: Beyond CVS and treatment complications, a not insignificant number of SAH patients suffered from infarcts of other etiology probably due to disturbance of the microcirculation. Therapeutic approaches for vasodilation of angiographic vasospasm alone should be reconsidered.

Cerebral vasospasm – Delayed cerebral ischemia – Aneurysmal subarachnoid hemorrhage – Cortical spreading depolarization – Microcirculation

Original Article

Zhang Y, Yan X, Gao Y, Xu D, Wu J, Li Y.

A preliminary study of epilepsy in children using diffusional kurtosis imaging.

Clin Neuroradiol. 2013;23:293-300.

10.1007/s00062-013-0212-3

OBJECTIVE: To study brain abnormalities, in terms of non-Gaussian water diffusion properties using diffusional kurtosis imaging (DKI) in children with electroencephalography (EEG) confirmed epilepsy lateralized to both hemispheres.

METHODS: A total of 15 children with epileptiform waves on EEG in both hemispheres and 18 children as normal controls (NC) matched for age and sex were recruited. Data from DKI for all children were used to characterize non-Gaussian properties. Fractional anisotropy (FA), mean diffusivity (MD), and mean kurtosis (MK) maps were estimated from the DKI

datasets. Voxel-based analyses (VBA) based on these measures were performed and compared between the epilepsy and NC groups.

RESULTS: The VBA showed abnormal regions in both white matter (WM) and gray matter (GM) in those with epilepsy. Analysis of FA values revealed that the abnormal regions were significant mainly in the left frontal and temporal lobes of the WM. Analysis of MD values revealed that differences were significant mainly in the right hemisphere of the limbic lobe, uncus, parahippocampal region, both in GM and WM of frontal and temporal lobes, and GM of the rectus of the left cerebrum. Finally, analysis of MK values revealed significant differences mainly in WM of the frontal lobes of both cerebrum, and GM and WM of the parietal lobe of the right cerebrum.

CONCLUSIONS: These preliminary results suggest that DKI is sensitive for the characterization of diffusion abnormalities in both WM and GM of children with epilepsy.
Epilepsy – Children – Diffusional kurtosis imaging – Magnetic resonance imaging

Review

Abela E, Rummel C, Hauf M, Weisstanner C, Schindler K, Wiest R.

Neuroimaging of epilepsy: lesions, networks, oscillations.

Clin Neuroradiol. 2014;24:5-15.

10.1007/s00062-014-0284-8

While analysis and interpretation of structural epileptogenic lesion is an essential task for the neuroradiologist in clinical practice, a substantial body of epilepsy research has shown that focal lesions influence brain areas beyond the epileptogenic lesion, across ensembles of functionally and anatomically connected brain areas. In this review article, we aim to provide an overview about altered network compositions in epilepsy, as measured with current advanced neuroimaging techniques to characterize the initiation and spread of epileptic activity in the brain with multimodal noninvasive imaging techniques. We focus on resting-state functional magnetic resonance imaging (MRI) and simultaneous electroencephalography/fMRI, and oppose the findings in idiopathic generalized versus focal epilepsies. These data indicate that circumscribed epileptogenic lesions can have extended effects on many brain systems. Although epileptic seizures may involve various brain areas, seizure activity does not spread diffusely throughout the brain but propagates along specific anatomic pathways that characterize the underlying epilepsy syndrome. Such a functionally oriented approach may help to better understand a range of clinical phenomena such as the type of cognitive impairment, the development of pharmacoresistance, the propagation pathways of seizures, or the success of epilepsy surgery.

Epilepsy – Networks – Functional neuroimaging

Correspondence

Alibas H, Koytak PK, Ekinci G, Uluc K..

A case with leukoencephalopathy with brainstem and spinal cord involvement and elevated lactate (LBSL) with Its Characteristic Clinical and Neuroimaging Findings.

Clin Neuroradiol. 2014;24:297-300.

10.1007/s00062-013-0250-x

Correspondence

Berghoff M, Dassinger B, Iwinska-Zelder J, Giraldo M, Bilgin S, Kaps M, Gizewski ER.

A case of natalizumab-associated progressive multifocal leukoencephalopathy-role for advanced MRI?

Clin Neuroradiol. 2014;24:173-6.

10.1007/s00062-013-0216-z

Correspondence

Bothe AM, Berkefeld J, Singer OC, Foerch C, Hattingen E.

Intracranial hypotension as an important differential diagnosis of deep brain swelling: a case report.

Clin Neuroradiol. 2014;24:65-8.
10.1007/s00062-013-0202-5

Correspondence

Champeaux C, Jecko V, Penchet G, Chibbaro S.

Scalp arteriovenous fistula following hair transplantation.

Clin Neuroradiol. 2014;24:285-8.
10.1007/s00062-013-0241-y

Correspondence

Coleman SL, Setty BN, Tan JN, Sakai O.

Beyond B-cell lymphomas: a case of optic nerve anaplastic large cell lymphoma in a HIV positive patient.

Clin Neuroradiol. 2014;24:373-6.
10.1007/s00062-013-0252-8

Original Article

Diehn FE, Schwartz KM, Hunt CH, Eckel LJ, Campeau NG, Carter RE, Allred JB, Kallmes DF.

Prevalence of incidental narrowing of the superior segment of the internal jugular vein in patients without multiple sclerosis.

Clin Neuroradiol. 2014;24:121-7.
10.1007/s00062-013-0232-z

PURPOSE: Internal jugular vein (IJV) narrowing superiorly is likely relatively frequent. IJV narrowing has been proposed as a potential pathophysiologic component for multiple sclerosis (MS). Our purpose was to investigate the prevalence of incidental superior IJV narrowing in patients imaged with neck computed tomography angiography (CTA) for reasons unrelated to IJV pathology or MS. **METHODS:** We retrospectively identified 164 consecutive adult patients who had undergone neck CTA in which at least one IJV superior segment was opacified (158 right, 155 left IJVs). At the narrowest point of the upper IJV, each IJV was assessed for dominance, graded (shape and narrowing), measured (diameter and area), and located (axially and craniocaudally). Associations were analyzed using Spearman rank correlations ($p < 0.05$ significant). Medical records were reviewed for MS. **RESULTS:** Among 164 patients, at least one IJV was: absent/pinpoint in 15 % (25/164), occluded/nearly occluded in 26 % (43/164). Shape, narrowing, and the three measurements all correlated with each other (all $p < 0.01$). Lateral location with respect to C1 transverse foramen correlated with subjectively and objectively smaller IJVs ($p < 0.01$). The most common craniocaudal location was at the C1 transverse process (79 % (125/158) of right and 81 % (126/155) of left IJVs). No patient had a diagnosis of MS.

CONCLUSIONS: The appearance of the superior IJV is variable, with an occlusive/near-occlusive appearance present in approximately one-quarter of patients without known MS undergoing CTA. Radiologists should be aware of and cautious to report or ascribe clinical significance to this frequent anatomic variant.

Internal jugular vein narrowing – IJV – Anatomic variant – Multiple sclerosis

Correspondence

Egger K, Harloff A, Jung B, Meckel S.

Pitfall of fluid-attenuated inversion recovery (FLAIR) MR imaging in acute stroke-does magnetic field strength influence the tissue clock?

Clin Neuroradiol. 2014;24:269-71.
10.1007/s00062-013-0229-7

Original Article

Engelhorn T, Schwarz MA, Hess A, Budinsky L, Pitann P, Eyüpoglu I, Doerfler A.

Definition of K(trans) and FA thresholds for better assessment of experimental glioma using high-field MRI: a feasibility study.

Clin Neuroradiol. 2014;24:337-45.

10.1007/s00062-013-0257-3

PURPOSE: To define K(trans) and fractional anisotropy (FA) thresholds in correlation to histology for improved magnetic resonance imaging (MRI) tumor assessment in an animal model of brain glioma. **METHODS:** Twelve rats underwent 4.7 T MRI at day 10 after tumor implantation. Anatomical scans (T2, T1 at 8 min after double dose contrast application) as well as dynamic contrast-enhanced (DCE) imaging with calculation of K(trans) and diffusion tensor imaging (DTI) with calculation of FA were performed. T2- and T1-derived tumor volumes were calculated and thresholds for K(trans) and FA were defined for best MRI tumor assessment correlated to histology.

RESULTS: Tumor volumes were 159 +/- 14 mm(3) (histology), 126 +/- 26 mm(3) (T1 with contrast, $r=0.76$), and 153 +/- 12 mm(3) (T2, $r=0.84$), respectively. K(trans)- and FA-derived tumor volumes were 160 +/- 16 mm(3) (for K(trans) $\geq 0.04 \text{ min}^{-1}$, $r=0.94$), and 159 +/- 14 mm(3) (for FA ≥ 0.14 , $r=0.96$), respectively.

CONCLUSIONS: DCE-MRI and DTI with calculation of K(trans) and FA maps allow very precise brain glioma assessment comparable to histology if established thresholds for the given tumor model are used.

Glioma – MRI – Dynamic contrast enhancement – DTI

Original Article

Erol FS, Donmez O, Akgun B, Yildirim H, Kaplan M.

Correlation of diffusion MRI findings with lesion progression in patients with traumatic intracerebral hemorrhage : diffusion MRI in traumatic intracerebral hemorrhages with progression.

Clin Neuroradiol. 2014;24:321-8.

10.1007/s00062-013-0251-9

PURPOSE: The aim of this study is to evaluate the association between lesion progression and the ischemic or edematous area that can develop around the hemorrhage in intraparenchymal hemorrhagic lesions originating after head trauma.

METHODS: Thirty patients with intracerebral hemorrhage due to head trauma of a mild or intermediate degree were evaluated in this study. Brain diffusion MRI examinations were performed in the first 6 h after trauma in all patients. In addition, a computerized cranial tomography (CCT) was performed upon admission (in the first hour), and at 24 and 48 h after admission. Patients with or without progression of the lesion were compared.

RESULTS: The increase in the risk of progression of the lesion in patients with an ischemia/hemorrhage rate > 2 identified in the diffusion MRIs by evaluation of the hemorrhagic and the surrounding ischemic area, obtained in the first 6 h after trauma was found to be statistically significant. The possibility of progression was found to be very low when this rate was less than two. **CONCLUSIONS:** As a result of the study, the ischemic area was found to be proportionally larger in patients with progression compared to nonprogressing patients with traumatic intracerebral hemorrhage. The ischemia/hemorrhage rate in the diffusion MRI is thought to be an important parameter, beneficial to identify the risk of lesion progression.

Head injury – Diffusion weighted MRI – Intracerebral hemorrhage – Progression

Correspondence

Fadili S, Clarençon F, Bonneville F, Savatovsky J, Deltour S, Dormont D.

Occlusion of vertebral artery due to transverse canal osteochondroma.

Clin Neuroradiol. 2014;24:395-7.
10.1007/s00062-013-0259-1

Original Article

Fatima Z, Ichikawa T, Ishigame K, Motosugi U, Waqar AB, Hori M, Iijima H, Araki T.

Orbital masses: the usefulness of diffusion-weighted imaging in lesion categorization.

Clin Neuroradiol. 2014;24:129-34.

10.1007/s00062-013-0234-x

INTRODUCTION: Diffusion-weighted imaging (DWI) produces contrast among different kinds of tissues according to their diffusibility characteristics. The purpose of our study was to evaluate the role of DWI including measurement of apparent diffusion coefficient (ADC) values in recognizing benignancy or malignancy of orbital masses.

METHODS: A total of 39 orbital masses were evaluated visually for signal characteristics on DWI and ADC maps. ADC values were calculated for each lesion. Visual signal characteristics were compared using the Fisher exact test. Receiver operating characteristic (ROC) analysis was carried out to determine sensitivity and specificity for distinguishing malignant from benign lesions using ADC values. The Mann-Whitney U test was applied to compare the ADC values between orbital lymphomas and idiopathic orbital inflammatory (IOI) lesions, and between optic nerve sheath meningiomas and gliomas.

RESULTS: Visual assessment revealed no significant difference between benign and malignant lesions on DWI (p-value = 0.66). However, visual assessment of ADC maps revealed a statistically significant (p-value \leq 0.0001) between benign and malignant lesions. ROC analysis showed a sensitivity of 83.33 % and a specificity of 85.71 % when using an optimal cut off ADC value of 0.84×10^{-3} mm²/s for differentiating malignant from benign lesions. Significant differences in mean ADC values were observed between lymphomas and IOI lesions (p-value = 0.05), and between optic nerve sheath meningiomas and gliomas (p-value = 0.03).

CONCLUSION: DWI is useful for differentiating malignant and benign orbital tumors if accompanied by visual assessment of ADC maps and ADC value calculations.

Diffusion-weighted imaging – Orbital masses – ADC values

Correspondence

Fichter N, von Arx G, Kirsch EC.

Accessory lateral rectus muscle in graves' orbitopathy: a case report.

Clin Neuroradiol. 2014;24:277-9.

10.1007/s00062-013-0233-y

Editorial

Fiehler J.

Studies in intracranial stenting: we must not retire from the game of science.

Clin Neuroradiol. 2014;24:309-11.

10.1007/s00062-014-0358-7

Original Article

Förster A, Ssozi J, Al-Zghloul M, Brockmann MA, Kerl HU, Groden C.

A comparison of CT/CT angiography and MRI/MR angiography for imaging of vertebrobasilar dolichoectasia.

Clin Neuroradiol. 2014;24:347-53.

10.1007/s00062-013-0261-7

PURPOSE: Vertebrobasilar dolichoectasia (VBD) is a rare dilatative arteriopathy predominantly affecting the basilar artery (BA) and vertebral arteries. Until today, the value of computed tomography (CT)/CT angiography (CTA) compared with magnetic resonance

imaging (MRI)/time-of-flight MR angiography (TOF-MRA) has not been studied systematically.

METHODS: We (1) compare CTA and TOF-MRA according to the established criteria (diameter at the mid-pons level, height, and lateral position), (2) explore the value of further CTA- and TOF-MRA-derived measures (maximum transverse diameter and length), as well as (3) explore the value of further non-contrast-enhanced MRI sequences such as T1, fluid-attenuated inversion recovery, and T2* for a detailed characterization of VBD in a series of 18 patients.

RESULTS: Comparison of CTA and TOF-MRA revealed very good consistency of the measured diameter (Pearson's $r = 0.994$, $p = 0.01$) and the noted height of the BA (Kendall's tau = 1.0, $p = 0.001$). The same held true for the maximum transverse diameter (Pearson's $r = 0.988$, $p = 0.01$) and length of the BA (Pearson's $r = 0.986$, $p = 0.01$). In contrast to this, there was a lower agreement concerning the lateral position (Kendall's tau = 0.866, $p = 0.01$). In comparison with the diameter at the mid-pons level, the maximum transverse diameter was significantly larger ($p = 0.002$). Luminal thrombus was detected equally well by CTA and TOF-MRA. CT was useful to detect small circumscribed calcifications, whereas MRI was advantageous to demonstrate perifocal brainstem edema.

CONCLUSIONS: We could demonstrate a substantial comparability of CT/CTA and MRI/TOF-MRA in the diagnosis of VBD. The maximum transverse diameter and length may be useful when an endovascular treatment is considered. Taking into account the different informative value of both techniques, it may be worth to perform both imaging procedures.
Vertebrobasilar – Dolichoectasia – CT – MRI – CTA – TOF-MRA

Correspondence

Froböse T, Förstl H, Förschler A.

Fatal familial insomnia (FFI) complicated by posterior reversible encephalopathy syndrome (PRES).

Clin Neuroradiol. 2014;24:289-91.
10.1007/s00062-013-0243-9

Original Article

Gökçe E, Acu B, Beyhan M, Celikyay F, Celikyay R.

Magnetic resonance imaging findings of developmental venous anomalies.

Clin Neuroradiol. 2014;24:135-43.
10.1007/s00062-013-0235-9

PURPOSE: This study evaluated morphological features of developmental venous anomalies (DVAs) based on magnetic resonance imaging (MRI) findings. The study also evaluated the factors affecting the visibility of DVAs on MRI.

METHODS: We reviewed contrast-enhanced MRIs of 75 patients with DVA. The images were selected from 1,165 consecutive cranial MRIs. The images were examined for the DVA location, the number of collecting veins, the collecting vein diameter, drainage veins and sinuses, any accompanying parenchymal abnormalities or lesions, and the DVA visibility on MRI.

RESULTS: DVAs prevalence was determined as 6.4 %. A total of 88 DVAs were observed. Single DVAs were observed in 65 patients, two were observed in 7 patients and three were observed in 3 patients. The DVA caputs had deep localization most frequently in 54.5 % of patients. A total of 98 collecting veins were identified, with a single vein identified in 80 DVAs. A statistically significant difference ($p = 0.000$) was found in the diameter of the collecting veins between DVAs that were the visible and nonvisible on noncontrast MRI.

CONCLUSIONS: Most frequently, a single DVA was observed in the patients. A DVA caput could be located in the deep, subcortical, juxtacortical or deep + subcortical and juxtacortical + subcortical regions. Increasing collecting vein diameter increased visibility on noncontrast MRI, and small DVAs could be overlooked, even with contrast-enhanced MRI series if the images were not examined carefully.

Collecting vein – Developmental venous anomalies – Magnetic resonance imaging – Vascular malformations

Correspondence

Greschus S, Kuchelmeister K, Oeynhausien S, Fischer HP, Urbach H.

Cerebral tuberculoma mimicking brain tumor.

Clin Neuroradiol. 2014;24:389-93.

10.1007/s00062-013-0258-2

Original Article

Hayakawa M, Tanaka T, Sadato A, Adachi K, Ito K, Hattori N, Omi T, Oheda M, Katada K, Murayama K, Kato Y, Hirose Y.

Detection of pulsation in unruptured cerebral aneurysms by ECG-gated 3D-CT angiography (4D-CTA) with 320-row area detector CT (ADCT) and follow-up evaluation results: assessment based on heart rate at the time of scanning.

Clin Neuroradiol. 2014;24:145-50.

10.1007/s00062-013-0236-8

PURPOSE: Many epidemiological studies on unruptured cerebral aneurysms have reported that the larger the aneurysm, the higher the risk of rupture. However, many ruptured aneurysms are not large. Electrocardiography (ECG)-gated 3D-computed tomography angiography (4D-CTA) was used to detect pulsation in unruptured cerebral aneurysms. The differences in the clinical course of patients in whom pulsation was or was not detected were then evaluated.

METHODS: Forty-two patients with 62 unruptured cystiform cerebral aneurysms who underwent 4D-CTA and follow-up 3D-CTA more than 120 days later were studied. The tube voltage, tube current, and rotation speed were 120 kV, 270 mA, and 0.35 s/rot., respectively. ECG-gated reconstruction was performed, with the cardiac cycle divided into 20 phases. Patients with heart rates higher than 80 bpm were excluded, so 37 patients with 56 aneurysms were analyzed.

RESULTS: Pulsation was detected in 20 of the 56 unruptured aneurysms. Of these 20 aneurysms, 6 showed a change in shape at the time of follow-up. Of the 36 aneurysms in which pulsation was not detected, 2 showed a change in shape at follow-up. There was no significant difference in the follow-up interval between the two groups. The aneurysms in which pulsation was detected were significantly more likely to show a change in shape ($P = 0.04$), with a higher odds ratio of 7.286. **CONCLUSION:** Unruptured aneurysms in which pulsation was detected by 4D-CTA were more likely to show a change in shape at follow-up, suggesting that 4D-CTA may be useful for identifying aneurysms with a higher risk of rupture. *Cerebral aneurysm – 3D-CTA – MRA – 4D-CTA – Subarachnoid hemorrhage – Aspect ratio*

Correspondence

Hopf-Jensen S, Rubarth O, von D Ahe I, Riis P, Preuss H, Preiss M, Börm W, Müller-Hülsbeck S.

Isolated oculomotor nerve palsy caused by a mucocele of an aerated anterior clinoid process.

Clin Neuroradiol. 2014;24:161-4.

10.1007/s00062-013-0211-4

Correspondence

Kanzaki F, Hiwatashi A, Yoshiura T, Togao O, Yamashita K, Kamano H, Kikuchi K, Honda H.

Minute subsequent fracture at prophylactically treated adjacent vertebra after percutaneous vertebroplasty.

Clin Neuroradiol. 2014;24:381-3.

10.1007/s00062-013-0254-6

Original Article

Khalilzadeh O, Sabel B, Sung Y, Parikh A, Phan CM, Dinkel J, Yoo AJ, Romero J, Gupta R.
Temporal evolution of intraparenchymal hyperdensity after intra-arterial therapy in patients with ischemic stroke: optimal discrimination between hemorrhage and iodinated contrast.

Clin Neuroradiol. 2014;24:365-71.
10.1007/s00062-013-0268-0

PURPOSE: CT hyperattenuation arising from iodinated contrast has a different temporal evolution than that arising due to hemorrhage. This paper presents a method for optimal discrimination between hemorrhage and iodinated contrast in a postintervention CT in stroke patients.

METHODS: We analyzed the brain computed tomography (CT) scans of consecutive patients with intraparenchymal hyperattenuation due to hemorrhage (n=41), those due to iodinated contrast alone (n=24), and those due to contrast mixed with hemorrhage after reperfusion therapy (n=14) in stroke patients. The difference between the maximum enhancement in hyperattenuation in the affected area and the corresponding contralateral area, dubbed Relative Maximum Enhancement (RME), was tracked over time. We fitted regression models to the RME changes due to hemorrhage and contrast to describe their temporal decay, and then derived the optimal discriminant curve that distinguishes the two. A computer algorithm coregistered the baseline and follow-up CT scans and performed pixel-by-pixel comparison to determine hemorrhage and iodinated contrast based on the RME changes with respect to the discriminant curve.

RESULTS: For both hemorrhage ($k = -0.004$, $R(2) = 0.7$) and iodinated contrast ($k = -0.064$, $R(2) = 0.9$), the temporal evolution of RMEs were best fitted by exponential decay curves, with respective half-lives of 192.3 and 10.7 h. An exponential decay model ($k = -0.026$) for optimal discrimination of hemorrhage vs. contrast was fitted. The computer algorithm implementing this model was successful in predicting the presence of hemorrhage in a hyperdense lesion with sensitivity =93% and specificity =91%.

CONCLUSION: Intraparenchymal hemorrhage and contrast have markedly different decay half-lives that can be used to assess hemorrhage in a hyperdense lesion on a CT scan after intra-arterial therapy.

Computed tomography – Conventional CT – Ischemic stroke – Intra-arterial thrombolysis – Thrombectomy – Intraparenchymal hemorrhage

Correspondence

Kim SJ, Kim JH, Son B, Yoo C.

A giant congenital melanocytic nevus associated with neurocutaneous melanosis.

Clin Neuroradiol. 2014;24:177-84.
10.1007/s00062-013-0217-y

Original Article

Kurian KM, Zhang Y, Haynes HR, Macaskill NA, Bradley M.

Diagnostic challenges of primary thalamic gliomas-identification of a minimally enhancing neuroradiological subtype with aggressive neuropathology and poor clinical outcome.

Clin Neuroradiol. 2014;24:231-8.
10.1007/s00062-013-0225-y

AIM: To evaluate neuropathology and neuroradiology in the diagnosis and clinical outcome of a retrospective cohort of thalamic gliomas.

METHODS: Neuropathological and neuroradiological review was undertaken in 25 cases of radiologically suspected thalamic glioma (excluding childhood pilocytic astrocytoma) over an 8 year period (2004-2012) at Frenchay Hospital and compared to the clinical outcome.

RESULTS: In 12/25 (48%) there was a difference in neuropathological and suspected

neuroradiological grading of the lesion of one or more grades. In 5/12 (42%) cases, the neuroradiology was lower grade than the pathology. In 4/5 (80%) of these cases, we identified a minimally enhancing subtype where the neuroradiology was predicted to be of lower grade than neuropathology. In 4/12, (33%) the suspected neuroradiology grade was higher than the final pathology. In 3/4, (75%) of these cases the suspected neuroradiology grade was higher than the neuropathology possibly because of unusual differentiation within the thalamic glioma (central neurocytoma, anaplastic oligoastrocytoma, and diffuse astrocytoma with pilocytic features). In 3/12 (25%) the biopsy was non-diagnostic. Neuropathology was a better predictor of clinical outcome than neuroradiology. 9/10 (90%) WHO Grade 4 gliomas and 8/9 (88%) Grade 3 gliomas on neuropathology were dead between 3-7 years after diagnosis. 3/3 (100%) Grade 2 gliomas on neuropathology were alive 3-7 years after diagnosis. 2/3 (67%) of the non-diagnostic cases were alive 3-7 years after biopsy. In 1/3 (33%) of the non-diagnostic cases the outcome was unknown. CONCLUSIONS: Diagnosis of primary thalamic glioma is challenging. We have identified that in the thalamus, a pattern of diffuse infiltration with minimal enhancement on imaging may often represent high-grade glioma. Neuropathology is overall the best predictor of clinical outcome.

Glioma – Thalamus – Pathological grade – Radiology

Correspondence

Lee YJ, Shon YM, Yoo WJ, Jung SL, Kim BS, Ahn KJ.

Diminished visibility of cerebral venous vasculature in subclinical status epilepticus by susceptibility-weighted imaging: a case report.

Clin Neuroradiol. 2014;24:69-72.

10.1007/s00062-013-0204-3

Correspondence

Lichtenstein T, Lockau H, Beutner D, Dorn F, Liebig T.

Life threatening transmural arteritis of the internal carotid artery: reconstructive treatment with flow diverting stents.

Clin Neuroradiol. 2014;24:377-80.

10.1007/s00062-013-0253-7

Original Article

Löbel U, Eckert B, Simova O, Meier-Cillien M, Kluge S, Gerloff C, Röther J, Magnus T, Fiehler J.

Cerebral magnetic resonance imaging findings in adults with haemolytic uraemic syndrome following an infection with Escherichia coli, subtype O104:H4.

Clin Neuroradiol. 2014;24:111-9.

10.1007/s00062-013-0231-0

PURPOSE: Infections with Enterohaemorrhagic Escherichia coli typically occur in children causing haemolytic uraemic syndrome (HUS) and neurological symptoms in 20-50 %. Little information is available on the morphology of brain manifestations in adults. The purpose of this study was to identify a characteristic magnetic resonance imaging (MRI) pattern during the outbreak of a novel mutation of Escherichia coli O104:H4.

METHODS: Patients were recruited from two hospitals between May and July 2011. The MRI protocol included standard anatomical, diffusion-weighted, and susceptibility-sensitive sequences.

RESULTS: A total of 104 MRIs of 57 (32 female, 25 male) patients (mean 45.5 +/- 18.4 years) showed abnormal signal intensity on 51 MRIs (49 %). Bilateral thalamus (39 %), bilateral pons (35 %), centrum semiovale and splenium of corpus callosum (33 %) were most often involved. Acute lesions were reversible in 81 % of cases. There was no statistically significant association between symptom onset and the MRI findings (P = 0.2).

CONCLUSIONS: Neuroimaging findings in this adult patient cohort were non-specific and

similar to previous findings in children. A characteristic neuroimaging pattern of an infection with *Escherichia coli* O104:H4 was not identified. However, bilateral symmetric T2 hyperintense lesions of the thalami and dorsal pons characterized by restricted diffusion suggest a metabolic toxic effect of the disease on the brain.

Enterohaemorrhagic Escherichia coli – Haemolytic uraemic syndrome – Neuroimaging – Magnetic resonance imaging – Diffusion magnetic resonance imaging

Correspondence

Mazzeo LA, Boari N, Gagliardi F, Mortini P.

Active role of cerebellar flocculus in hemifacial spasm: case report.

Clin Neuroradiol. 2014;24:273-5.

10.1007/s00062-013-0230-1

Review

Mordasini P, Zubler C, Wha-Vei Hsieh K, Chan PK, Gralla J.

Stent-retriever thrombectomy: impact on the future of interventional stroke treatment.

Clin Neuroradiol. 2014;24:17-22.

10.1007/s00062-014-0299-1

Endovascular treatment for acute ischemic stroke has evolved in the past years. The current development of stent-retriever thrombectomy is a landmark in the clinical treatment and study results of acute ischemic stroke. This review summarizes the recent study results, elucidates the shortcomings of endovascular stroke treatment, and takes the opportunity for an outlook on the role of stroke interventions in the future.

Endovascular stroke treatment – Mechanical thrombectomy – Stent-retriever

Correspondence

Mosimann PJ, Stauder M, Nordmeyer H, Chapot R.

Isolated emergence of a dorsopinal artery from the aorta supplying the Adamkiewicz artery.

Clin Neuroradiol. 2014;24:55-7.

10.1007/s00062-013-0200-7

Original Article

Mpotsaris A, Bussmeyer M, Weber W.

Mechanical thrombectomy with the penumbra 3D separator and lesional aspiration: technical feasibility and clinical outcome.

Clin Neuroradiol. 2014;24:245-50.

10.1007/s00062-013-0242-x

BACKGROUND AND PURPOSE: Intravenous recombinant human tissue plasminogen activator (IV rtPA) therapy has limited revascularization rates in large artery occlusions. We describe the safety and effectiveness of the self-expanding, fully retrievable Separator 3D device as a component of the Penumbra System in revascularization of large artery occlusion in acute ischemic stroke. The 3D secures thrombus with lesional aspiration and functions by retrieving or debulking the clot. **MATERIALS AND METHODS:** Prospective, single-center pilot study of 20 patients with an acute ischemic stroke secondary to a large artery occlusion within 9 h from symptom onset. The occlusion sites were middle cerebral artery in nine patients, internal carotid artery terminus in eight patients, and basilar artery in three patients. Thrombectomy was performed in 18 patients who had previously received IV rtPA, and of these, two patients had prior failed treatment with the Solitaire stent. One patient had prior failed treatment with the Revive stent.

RESULTS: Successful revascularization defined by Thrombolysis in Cerebral Infarction grade 2b-3 was achieved in 17 of 20 (85%) treated vessels. The median time from symptom

onset to recanalization was 4.4 h (interquartile range 3.8-5.6 h). No procedural complications occurred, and no symptomatic intracranial hemorrhage was observed. Three (15%) patients died. At 90 days, 50% of patients showed good functional outcome (modified Rankin Scale score \leq 2).

CONCLUSION: Early results suggest that the Separator 3D, which combines a retriever with lesional aspiration, enables safe and effective revascularization.

Ischemic stroke – Mechanical thrombectomy – Penumbra system – Recanalization

Original Article

Nagy SA, Juhasz I, Komaromy H, Pozsar K, Zsigmond I, Perlaki G, Orsi G, Schwarcz A, Walter N, Doczi T, Bogner P.

A statistical model for intervertebral disc degeneration: determination of the optimal T2 cut-off values.

Clin Neuroradiol. 2014;24:355-63.

10.1007/s00062-013-0266-2

PURPOSE: The aim of this study was to investigate the possibility of quantitative classification in intervertebral disc degeneration using spin-spin relaxation time (T2) cut-off values with regard to morphological classifications.

METHODS: Lumbar magnetic resonance (MR) imaging was performed on 21 subjects (a total of 104 lumbar disks). The T2 relaxation time was measured in the nucleus pulposus using a sagittal multi-echo spin-echo sequence. The morphological classification of disc degeneration was assessed independently by three experienced neuroradiologists according to the Pfirrmann and Schneiderman classifications. Receiver operating characteristic analysis was performed among grades to determine T2 cut-off values in each classification. Intra- and interobserver differences were calculated using kappa statistics.

RESULTS: Moderate overall interobserver agreement was found between observers in both the Pfirrmann and Schneiderman classification schemes (kappa 0.46 and 0.51), while intraobserver reliability was substantial to almost perfect. The interobserver reliability was only fair in Pfirrmann grades III and IV (kappa 0.33 and 0.36), but the T2 cut-off values still indicated a significant difference between grades ($p < 0.05$).

CONCLUSIONS: Interobserver agreement of MR evaluation in patients with intervertebral disc degeneration was only fair to moderate on the classification of more severe disc degeneration in the Pfirrmann and Schneiderman schemes. Based on our results, quantitative T2 cut-off values seem to be a more reliable method to define the degree of disc degeneration, which may help staging intervertebral disc degeneration (IVDD) even if the interobserver reliability is low.

MRI – Molecular imaging – Intervertebral disc degeneration – Receiver operating characteristic (ROC) analysis

Original Article

Nania A, Granata F, Vinci S, Pitrone A, Barresi V, Morabito R, Settineri N, Tomasello F, Alafaci C, Longo M.

Necrosis score, surgical time, and transfused blood volume in patients treated with preoperative embolization of intracranial meningiomas. Analysis of a single-centre experience and a review of literature.

Clin Neuroradiol. 2014;24:29-36.

10.1007/s00062-013-0215-0

PURPOSE: Several authors have demonstrated that preoperative embolization of meningiomas reduces blood loss during surgery. However, preoperative embolization is still under debate. Aim of this study is the retrospective evaluation of necrosis score, surgical time, and transfused blood volume, on patients affected by intracranial meningiomas treated with preoperative embolization before surgery, compared with a control group treated only with surgery.

METHOD: Twenty-eight patients with meningiomas were subjected to a preoperative embolization with polyvinyl alcohol (PVA). These patients were divided into two groups: group 1, patients with preoperative embolization performed at least 7 days before surgery; and group 2, patients with preoperative embolization performed less than 7 days before surgery. A statistical evaluation was made by comparing necrosis score, surgical time, and transfused blood volume of these groups. Then, we compared these parameters also with group 3, which included patients with surgically treated meningioma who did not undergo preoperative embolization.

RESULTS: Surgery time and transfused blood volume were significantly lower in patients who had been embolized at least 7 days before definitive surgery. Furthermore, large confluent areas of necrosis were significantly more frequent in patients with a larger time span between embolization and surgery.

CONCLUSION: Preoperative embolization with PVA in patients with intracranial meningiomas is safe and effective, as it reduces the volume of transfused blood during surgical operation. However, patients should undergo surgery at least 7 days after embolization, as a shorter time interval has been correlated with a longer surgical time and a higher transfused blood volume.

Meningioma – DSA – Endovascular embolization – PVA

Original Article

Nelles M, Greschus S, Möhlenbruch M, Simon B, Wüllner U, Urbach H.

Patient selection for mechanical thrombectomy.

Clin Neuroradiol. 2014;24:239-44.

10.1007/s00062-013-0237-7

PURPOSE: To evaluate the influence of tissue parameters as assessed by multimodal computed tomography and procedural parameters on clinical outcome after mechanical thrombectomy. **METHODS:** A total of 301 consecutive patients with acute onset ischemic stroke were included in this study. Of these, 65 had thromboembolic occlusions of the carotid T or middle cerebral artery (MCA) and underwent mechanical thrombectomy. Tissue parameters were given by unenhanced CT and perfusion CT (PCT) parameter maps of total hypoperfused tissue, infarct core, and tissue at risk. Procedural parameters comprised time from symptom onset (SO) to PCT, from SO to the first angiographic series, and from SO to vessel recanalization (occlusion time). In a subset of 22 fully recanalized occlusions, infarcted tissue and "tissue at risk" as defined by PCT were coregistered to final infarcts on follow-up imaging.

RESULTS: Thrombolysis in cerebral infarction score (TICI) 2b/3 recanalization was achieved in 58/65 patients (89%). Only the infarct core size ($p = 0.007$) and the ratio of the infarct core relative to the tissue at risk ($p = 0.001$) yielded significant differences regarding the clinical outcome. Small infarct cores and low ratios of core size relative to the tissue at risk were correlated with a favorable outcome after mechanical thrombectomy. In the PCT coregistration subset, the congruency between predicted infarct cores and final infarcts was 68%, and between tissue at risk and final infarcts 7%, respectively.

CONCLUSIONS: The size of the infarct core and the ratio relative to the tissue at risk are more relevant parameters for clinical outcome after mechanical thrombectomy than time related factors.

CT perfusion – Thrombectomy – Stroke – MRI

Correspondence

Nozaki T, Hiramatsu H, Yamashita S, Namba H.

Spontaneous multiple-channel recanalization of internal carotid artery occlusion with unusual radiological features.

Clin Neuroradiol. 2014;24:73-5.

10.1007/s00062-013-0205-2

Correspondence

Ozcan UA, Yildiz ME, Işık U, Dinçer A.

Prenatal diagnosis of cerebral venous pathologies: findings in diffusion-weighted imaging (DWI), time-of-flight (TOF), and gradient-echo sequences.

Clin Neuroradiol. 2014;24:165-71.

10.1007/s00062-013-0213-2

Original Article

Ozdoba C, Slotboom J, Schroth G, Ulzheimer S, Kottke R, Watzal H, Weisstanner C.

Dose reduction in standard head CT: first results from a new scanner using iterative reconstruction and a new detector type in comparison with two previous generations of multi-slice CT.

Clin Neuroradiol. 2014;24:23-8.

10.1007/s00062-013-0263-5

PURPOSE: Computed tomography (CT) accounts for more than half of the total radiation exposure from medical procedures, which makes dose reduction in CT an effective means of reducing radiation exposure. We analysed the dose reduction that can be achieved with a new CT scanner [Somatom Edge (E)] that incorporates new developments in hardware (detector) and software (iterative reconstruction).

METHODS: We compared weighted volume CT dose index (CTDI(vol)) and dose length product (DLP) values of 25 consecutive patients studied with non-enhanced standard brain CT with the new scanner and with two previous models each, a 64-slice 64-row multi-detector CT (MDCT) scanner with 64 rows (S64) and a 16-slice 16-row MDCT scanner with 16 rows (S16). We analysed signal-to-noise and contrast-to-noise ratios in images from the three scanners and performed a quality rating by three neuroradiologists to analyse whether dose reduction techniques still yield sufficient diagnostic quality.

RESULTS: CTDI(Vol) of scanner E was 41.5 and 36.4 % less than the values of scanners S16 and S64, respectively; the DLP values were 40 and 38.3 % less. All differences were statistically significant ($p < 0.0001$). Signal-to-noise and contrast-to-noise ratios were best in S64; these differences also reached statistical significance. Image analysis, however, showed "non-inferiority" of scanner E regarding image quality.

CONCLUSIONS: The first experience with the new scanner shows that new dose reduction techniques allow for up to 40 % dose reduction while still maintaining image quality at a diagnostically usable level.

Tomography/X-ray computed/scanners – Dosage/radiation – Sv radiation dose equivalent – Image reconstruction – Neuroimaging

Editorial

Ozdoba C.

Retirement of Prof. Dr. Gerhard Schroth.

Clin Neuroradiol. 2014;24:3.

10.1007/s00062-014-0296-4

Original Article

Prokscha T, Guo J, Hirsch S, Braun J, Sack I, Meyer T, Scheel M.

Diffusion tensor imaging in amyotrophic lateral sclerosis--increased sensitivity with optimized region-of-interest delineation.

Clin Neuroradiol. 2014;24:37-42.

10.1007/s00062-013-0221-2

PURPOSE: Diagnosis of amyotrophic lateral sclerosis (ALS) can be difficult from clinical symptoms alone. Diffusion tensor imaging (DTI) has been suggested as an adjunct diagnostic method. DTI parameter changes have been repeatedly demonstrated, especially in the corticospinal tract (CST) as the predominantly affected structure. However, a recent

meta-analysis reported only a modest discriminatory capability, questioning the value of this method as a confirmatory test in single subjects with suspected ALS. We investigated how methodological differences in CST delineation influence the discriminatory capability.

METHODS: DTI data were acquired in 13 ALS patients and an age-matched healthy control group. We calculated and compared receiver operation characteristic (ROC) curves of four different analysis methods using either a manual or an atlas-based region of interest (ROI) of the CST in combination with and without tract-based spatial statistics (TBSS).

RESULTS: The analysis method combining atlas-based ROIs with TBSS yielded an area under the curve (AUC) of 0.936 and a sensitivity and specificity of 100 % and 91.67 %. These are the best results among the four analysis methods evaluated: manual ROIs (AUC = 0.846, sensitivity: 69.23, specificity: 91.67), atlas-based ROIs alone (AUC = 0.917, sensitivity: 76.92, specificity: 91.67), manual ROIs in combination with TBSS (AUC = 0.885, sensitivity: 76.92, specificity: 91.67).

CONCLUSIONS: Sensitivity and specificity strongly depend on the CST delineation approach. The combination of an atlas-based ROI with TBSS is a promising fully automatic method with improved discriminatory capability compared to other approaches. It could ultimately serve as a confirmatory test in single ALS patients.

Amyotrophic lateral sclerosis – Magnetic resonance imaging – Diffusion-tensor imaging – Tract-based spatial statistics

Review

Rehman I, Chokshi FH, Khosa F.

MR imaging of the brachial plexus.

Clin Neuroradiol. 2014;24:207-16.

10.1007/s00062-014-0297-3

The characterization of brachial plexus (BP) pathology can be perplexing for the radiologist, especially due to varying combination of sensory and motor symptoms depending on the extent of disease and the level of disease process. Localization can be difficult due to inherently complex anatomy of the BP complicated by a variety of benign and malignant disease processes. Infrequently requested imaging of the BP, can be a challenge to both the novice and experienced reader. Invasive methods of diagnosis, such as biopsy, yield variable results and carry the risk of causing permanent sensory and/or motor deficit and may also cause long-term neuralgic pain. The purpose of this article is to provide a straightforward review of BP pathology as seen by conventional magnetic resonance imaging and to illustrate the value of this noninvasive technique in guiding management.

MRI – Multiplanar – Peripheral nerve – Head and neck – Neuroradiology – Anatomy – Brachial plexus – Plexopathy – Brachial neuritis

Editorial

Reiss-Zimmermann M, Nikoubashman O.

Class dismissed: first course of neuroradiology successfully concluded.

Clin Neuroradiol. 2014;24:205.

10.1007/s00062-014-0326-2

Correspondence

Sabou TC, Kamusella P, Andresen R.

Leptomeningeal carcinomatosis with involvement of the cerebellar hemispheres and the spinal cord as first manifestation of a metastasizing breast carcinoma.

Clin Neuroradiol. 2014;24:281-4.

10.1007/s00062-013-0239-5

Correspondence

Sabouri S, Ebrahimzadeh SA, Rahimian N.

Unusual variant of persistent primitive hypoglossal artery diagnosed by CT angiography: a case report and literature review.

Clin Neuroradiol. 2014;24:59-63.
10.1007/s00062-013-0201-6

Correspondence

Shi YZ, Wang ZQ, Xu YM, Lin YF.

MR findings of primary choroid plexus papilloma of the cerebellopontine angle: report of three cases and literature reviews.

Clin Neuroradiol. 2014;24:263-7.
10.1007/s00062-013-0228-8

Correspondence

Skowronska M, Dziezyc K, Członkowska A.

Transcranial sonography in manganese-induced parkinsonism caused by drug abuse.

Clin Neuroradiol. 2014;24:385-7.
10.1007/s00062-013-0256-4

Editorial

Solymosi L.

Breaking news.

Clin Neuroradiol. 2014;24:203.
10.1007/s00062-014-0334-2

Editorial

Solymosi L.

The CNR continues to grow; the editorial board keeps pace.

Clin Neuroradiol. 2014;24:1.
10.1007/s00062-014-0291-9

Review

Starkey J, Moritani T, Kirby P.

MRI of CNS fungal infections: review of aspergillosis to histoplasmosis and everything in between.

Clin Neuroradiol. 2014;24:217-30.
10.1007/s00062-014-0305-7

Fungal infections of the central nervous system (CNS) represent a wide spectrum of diseases with some common magnetic resonance imaging (MRI) features. Risk factors include immunocompromise of any cause and living in endemic areas. CNS infection occurs through hematogenous spread, cerebrospinal fluid seeding, or direct extension. MRI features include heterogeneous or ring reduced diffusion and weak ring enhancement. Angioinvasive aspergillosis is characterized by multifocal hemorrhagic lesions with reduced diffusion. Cryptococcosis results in gelatinous pseudocyst formation in the basal ganglia. Mucormycosis is characterized by frontal lobe lesions with markedly reduced diffusion. Candidiasis is usually manifest by numerous microabscesses of less than 3 mm occurring at the corticomedullary junction, basal ganglia, or cerebellum. Coccidioidomycosis often results in meningitis with contrast enhancement of the basal cisterns. Blastomycosis and histoplasmosis are rare infections with parenchymal abscesses or meningitis. Recognizing the imaging features of CNS infections allows for early, aggressive treatment of these otherwise rapidly fatal infections.

Fungal infection – Brain – CNS – MRI – DWI

Original Article

Struffert T, Lang S, Adamek E, Engelhorn T, Strother CM, Doerfler A.

Angiographic C-arm CT visualization of the Woven EndoBridge cerebral aneurysm embolization device (WEB): first experience in an animal aneurysm model.

Clin Neuroradiol. 2014;24:43-9.

10.1007/s00062-013-0224-z

INTRODUCTION: Improvements in the imaging capabilities of angiographic C-arm computed tomography (CT) using flat detector angiographic (FD-CT) systems now provide a means for the in vivo visualization of devices used for the treatment of intracranial aneurysms. One such device, the WEB embolization device, is made of a braided mesh of nitinol wires, the size of which are near to the limits of visualization using conventional x-ray fluoroscopy. Our hypothesis was that the imaging of these implants C-arm CT would provide useful information regarding their positioning and deployment.

METHODS: In five New Zealand white rabbits elastase induced aneurysms were created and subsequently treated using a WEB. Imaging was performed using digital subtraction angiography (DSA), X-ray imaging and two different Angiographic C-arm CT protocols. The images were evaluated by two neuroradiologists using an evaluation scale.

RESULTS: The mesh of the WEB was barely visible on the DSA or x-ray fluoroscopy images. Volume rendering technique (VRT) reconstruction and multiplanar reconstruction (MPR) of images done using the C-arm CT protocols clearly delineated the shape and structure of the device. Contrast-enhanced MPR and VRT reconstructions allowed assessment of the status of blood flow in the aneurysms. Beam hardening artifacts caused by platinum markers on the WEB were present. **CONCLUSION:** In vivo C-arm CT imaging of the WEB is feasible and allows precise determination of the position and deployment status of the device. On contrast-enhanced images the occlusion status of aneurysms and the positioning of the WEB in relationship to the parent artery can be evaluated. C-arm-CT may serve as a minimal-invasive follow-up imaging modality.

WEB device – Flat-detector computed tomography – Angiographic C-arm CT – Endovascular treatment – aneurysm

Clinical Case

Taschner CA, Erny D, Scheiwe C, Urbach H, Mader I, Prinz M.

Freiburg neuropathology case conference: a temporal, partially calcified tumor in a child.

Clin Neuroradiol. 2014;24:83-7.

10.1007/s00062-014-0290-x

Clinical Case

Taschner CA, Doostkam S, Weyerbrock A, Schaefer HE, Urbach H, Keuler A, Prinz M.

Freiburg neuropathology case conference: multiple small ring-enhancing lesions in a 75-year-old patient.

Clin Neuroradiol. 2014;24:193-7.

10.1007/s00062-014-0307-5

Clinical Case

Taschner CA, Brendecke S, Campos M, Urbach H, Lützen N, Prinz M.

Freiburg neuropathology case conference: periorbital bone lesion causing proptosis in a 31-year-old patient.

Clin Neuroradiol. 2014;24:399-403.

10.1007/s00062-014-0354-y

Clinical Case

Taschner CA, Staszewski O, Weyerbrock A, Urbach H, Egger K, Prinz M.

Freiburg neuropathology case conference: tumor of the cerebellum with mild, gyriform enhancement in a 19-year-old patient.

Clin Neuroradiol. 2014;24:301-6.

10.1007/s00062-014-0325-3

Correspondence

Tritschler P, Rezazadeh Azar A, De Coene B, Maraite N, Michotte A.

Trigeminal melanoma metastasis.

Clin Neuroradiol. 2014;24:51-4.

10.1007/s00062-012-0195-5

We present the case of a 70-year-old patient presented to our institution for paresthesia of the right hemiface associated with dysarthria in aggravation since 1 year. He was diagnosed with right trigeminal melanoma metastasis. This case is characterized by a thickening of the right trigeminal nerve from his cisternal segment to his mandibular branch V3. MRI demonstrated an intensive perineural spread by a melanotic melanoma.

Original Article

Trivelato FP, Salles Rezende MT, Castro GD, Manzato LB, Santoro Araújo JF, Uihôa AC.

Endovascular treatment of isolated posterior inferior cerebellar artery dissecting aneurysms: parent artery occlusion or selective coiling?

Clin Neuroradiol. 2014;24:255-61.

10.1007/s00062-013-0247-5

PURPOSE: Isolated posterior inferior cerebellar artery dissecting aneurysms are rare lesions. Their underlying pathology, presentation, and natural history are poorly understood. Their treatment is controversial, and few data are available regarding the best treatment. We conducted the first study comparing selective coiling and parent artery occlusion for the treatment of isolated PICA dissecting aneurysms.

METHODS: All patients harboring isolated PICA dissecting aneurysms treated between January 2006 and October 2012, in a single center, were retrospectively evaluated. Patients were consecutively submitted either to selective coiling or parent artery occlusion. The safety and durability (recanalization and rebleeding rates) of each treatment were established. In order to compare the results of both treatment modalities, we also performed a literature search of all cases of isolated PICA dissecting aneurysms endovascularly treated.

RESULTS: Fourteen patients harboring isolated PICA dissecting aneurysms were assigned to endovascular treatment in our center (eight to selective coiling vs six to parent artery occlusion). There was no statistical difference between both groups regarding complications. No patient experienced rebleeding. One recanalization was observed in the selective coiling group. Based on literature review (83 cases), selective coiling and parent artery occlusion showed similar success rate in preventing rebleeding. Parent artery occlusion was significantly associated with a higher risk of ischemic complication ($p = 0.013$).

CONCLUSIONS: Both selective coiling and parent artery occlusion are highly effective in preventing rebleeding in isolated PICA dissecting aneurysms. Although total complication rate is similar between both modalities, parent artery occlusion is significantly associated to a higher risk of ischemic events.

Aneurysm – Dissecting – Posterior inferior cerebellar artery – Embolization – Endovascular

Correspondence

Trivelato FP, Manzato LB, Rezende MT, Uihôa AC.

Transitory brain stem edema following successfully transvenous embolization of a posterior fossa arteriovenous malformation.

Clin Neuroradiol. 2014;24:151-3.

10.1007/s00062-013-0209-y

Correspondence

Tsutsumi S, Yasumoto Y, Saeki H, Ito M.

Cranial dural cavernous angioma.

Clin Neuroradiol. 2014;24:155-9.

10.1007/s00062-013-0210-5

Review

Tsutsumi S, Akiba C, Suzuki T, Nakanishi H, Izumi H, Yasumoto Y, Ito M.

Skull base chondroid chordoma: atypical case manifesting as intratumoral hemorrhage and literature review.

Clin Neuroradiol. 2014;24:313-20.

10.1007/s00062-014-0321-7

OBJECTIVE: Chondroid chordoma (CC) is a rare but commonest subtype of chordoma with little reported clinical information. The present study summarizes and updates present knowledge of CC. **METHODS:** Literature search for demographic data and clinical appearance of cranial CCs except for those entirely confined to the sinonasal region. **RESULTS:** A total of 48 English language papers published from 1968-2013 were retrieved describing 132 CCs as skull base tumors. The male-to-female ratio was 1:1. The mean age at diagnosis was 43 years, predisposing to the third to fifth decades of life. The clival (34%) and spheno-occipital (29%) regions were the most frequent sites of origin followed by the sellar (12%) and sphenoid (5%) regions. Intratumoral calcification and bony erosion were identified as the characteristic neuroimaging findings. Surgical resection by the transcranial, transsphenoidal, transnasal, transpharyngeal, or transpalatal route with or without adjuvant radiotherapy was the main treatment option. The initial treatment outcome was satisfactory in 82% of cases with considerably better prognosis compared with typical chordomas. **CONCLUSION:** CC is a distinct entity to be discriminated from the typical type of chordoma. There are no distinguishing features on magnetic resonance imaging between CC and typical chordoma. Intratumoral calcification and concurrent bony erosion on neuroimaging should suggest the possibility of CC. Extensive surgical resection and adjuvant radiotherapy can achieve satisfactory outcome.

Chondroid chordoma – Skull base – Intratumoral hemorrhage – Neuroimaging findings

Review

Weidauer S, Nichtweiss M, Hattingen E.

Differential diagnosis of white matter lesions: Nonvascular causes-Part II.

Clin Neuroradiol. 2014;24:93-110.

10.1007/s00062-013-0267-1

The knowledge of characteristic lesion patterns is important in daily practice imaging, as the radiologist increasingly is required to provide precise differential diagnosis despite unspecific clinical symptoms like cognitive impairment and missed elaborated neurological workup. This part II dealing with nonvascular white matter changes of proven cause and diagnostic significance aimed to assist the evaluation of diseases exhibiting lesions exclusively or predominantly located in the white matter. The etiologies commented on are classified as follows: (a) toxic-metabolic, (b) leukodystrophies and mitochondriopathies, (c) infectious, (d) neoplastic, and (e) immune mediated. The respective mode of lesion formation is characterized, and typical radiological findings are displayed. More or less symmetrical lesion patterns on the one hand as well as focal and multifocal ones on the other are to be analyzed with reference to clinical data and knowledge of predilection sites characterizing major disease categories. Complementing spinal cord imaging may be useful not only in acute and relapsing demyelinating diseases but in certain leukodystrophies as well. In neuromyelitis optica (NMO), the detection of a specific antibody and some recently published observations may lead to a new understanding of certain deep white matter lesions occasionally complicating systemic autoimmune disease.

White matter changes – Cognitive impairment – MR imaging – Differential diagnosis – Infection – Inflammation – Leukoencephalopathy

Original Article

Wenger KJ, Berkefeld J, Wagner M.

Flat panel detector computed tomography for the interaction between contrast-enhanced thrombi and stent retrievers in stroke therapy: a pilot study.

Clin Neuroradiol. 2014;24:251-4.

10.1007/s00062-013-0246-6

OBJECTIVES: The purpose of this study was to create virtual 3D views of the interaction between contrast-enhanced thrombi and three different types of stent retrievers.

MATERIALS AND METHODS: Artificial thrombi with and without contrast agent were created and introduced into a silicone tube with saline solution. The stent retrievers (Aperio (A), Solitaire FR (B), Revive (C)) were released around the thrombi. For each retriever, two sets (0 min, 5 min) of flat panel computed tomography (CT) data were acquired on a Siemens Axiom Artis Zee biplane angiography system and reconstructed using syngo InSpace 3D software.

RESULTS: The filaments of all three stent retrievers were displaced by the thrombus immediately after deployment. Another study series after 5 min showed further expansion of the stents into the thrombus. A tends to appose best around obstacles. A and B allow cushion-like bulging of clot material into the stent lumen. C showed only moderate curvilinear bulging and a minor degree of interaction in between stent filaments and thrombus.

CONCLUSIONS: Flexible design allows better apposition of the device to the surface of the thrombus. A relatively strong longitudinal structure combined with large gaps in between the stent filaments seems to favor migration into the clot. The main capture mechanism seems to be engagement of the clot between the crossings of stent struts.

Stent retriever – Aperio – Solitaire FR – Revive – Interaction – Thrombus – Mechanical – Recanalization – Stroke – Flat panel CT – Dyna-CT – 3D-VRT

Correspondence

Wilson DM, Cohen B, Keshari K, Vogel H, Steinberg G, Dillon W.

Case report: glioblastoma multiforme complicating familial cavernous malformations.

Clin Neuroradiol. 2014;24:293-6.

10.1007/s00062-013-0249-3

Original Article

Xing Z, You RX, Li J, Liu Y, Cao DR.

Differentiation of primary central nervous system lymphomas from high-grade gliomas by rCBV and percentage of signal intensity recovery derived from dynamic susceptibility-weighted contrast-enhanced perfusion MR imaging.

Clin Neuroradiol. 2014;24:329-36.

10.1007/s00062-013-0255-5

PURPOSE: Primary central nervous system lymphoma (PCNSL) and high-grade glioma (HGG) may have similar enhancement patterns on magnetic resonance imaging (MRI), making the differential diagnosis difficult or even impractical. Relative cerebral blood volume (rCBV) and percentage of signal intensity recovery derived from dynamic susceptibility-weighted contrast-enhanced (DSC) perfusion MR imaging may help distinguish PCNSL from HGG. The purpose of this study was to evaluate the sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and accuracy of these two imaging parameters used alone or in combination for differentiating PCNSL from HGG.

METHODS: A total of 12 patients with PCNSL and 26 patients with HGG were examined using a 3T scanner. rCBV and percentage of signal intensity recovery were obtained and receiver operating characteristic (ROC) analysis was performed to determine optimum

thresholds for tumor differentiation. Sensitivity, specificity, PPV, NPV, and accuracy for identifying the tumor types were also calculated.

RESULTS: The optimum threshold of 2.56 for rCBV provided sensitivity, specificity, PPV, NPV, and accuracy of 96.2, 90, 92.6, 94.7, and 93.5%, respectively, for determining PCNSL. A threshold value of 0.89 for percentage of signal intensity recovery optimized differentiation of PCNSL and HGG with a sensitivity, specificity, PPV, NPV, and accuracy of 100, 88.5, 87, 100, and 93.5%, respectively. Combining rCBV with the percentage of signal intensity recovery further improved the differentiation of PCNSL and HGG with a specificity of 98.5% and an accuracy of 95.7%.

CONCLUSIONS: The combination of rCBV measurement with percentage of signal intensity recovery can help in more accurate differentiation of PCNSL from HGG.

Primary central nervous system lymphomas – High-grade gliomas – Relative cerebral blood volume – Percentage of signal intensity recovery – Dynamic susceptibility-weighted contrast enhanced perfusion MR imaging

Correspondence

Ya-Suo D, Yu-Chang L.

Tungsten coil disappearance and SAH recurrence 12 years after endovascular embolisation.

Clin Neuroradiol. 2014;24:189-91.

10.1007/s00062-013-0220-3

Correspondence

Yamgoue Tchameni YT, Messerer M, Zerlauth JB, Levivier M, Daniel RT.

Isolated developmental venous anomaly of the pons with transpontine drainage: case report.

Clin Neuroradiol. 2014;24:77-81.

10.1007/s00062-013-0206-1