Neuroradiology
DOI 10.1007/s00234-013-1170-9

ABSTRACTS

XLI Annual Meeting of the Spanish Society of Neuroradiology, 18–20 October 2012, Alicante, Spain

Scientific posters and papers

C0014
MRI AND 18F-FDG PET/CT IN THE INITIAL STAGE OF MALIGNANT HEAD AND NECK TUMORS

Laura Frascheri Verzelli[1], Sahyly Siurana Montilva[1], Carles Lorenzo Bosquet[2], Silvana Sarria Estrada[2], Cristina Auger Acosta[1], Alex Rovira Cañellas[1]

[1] Resonancia Magnetica, Resonancia Magnetica, Barcelona, Spain
[2] Hospital Vall d´Hebron, Medicina Nuclear, Barcelona,Spain

Introduction/Objectives
To compare the findings of MRI and PET-CT using the radiotracer 18-fluorodeoxyglucose (FDG) in the initial staging of patients diagnosed with malignant head and neck tumors.
Materials and Methods
Patients diagnosed histologically of primary malignant head and neck tumors in whom both MRI and PET-CT were performed for staging, prior to receiving any treatment.
Results
We included 19 patients (13 men and 6 women, median age of 54 [29-76] years), five with nasopharyngeal carcinoma, 13 with squamous cell carcinoma of the oral cavity and oropharynx, and one with mandibular sarcoma. Nine patients were staged T4, one T3, seven T2 and one T1. Both techniques had a sensitivity of 100 % in the diagnosis of tumoral lesions. PET-CT scan was superior to MRI in the detection of metastatic adenopathies with a sensitivity of 100 % versus 83 % with MRI. In two patients (10 %) FDG PET/CT identified distant metastasis, one staged T1N2C, and another T4N2C. MRI detected perineural dissemination in three patients (16 %) not identified with PET-CT.
Conclusion
FDG PET/CT is more sensitive than MRI in the detection of distant and lymph node metastasis. On the other hand, it has not been shown to be superior to MRI in local staging and is not sensitive for detecting perineural dissemination. Both MRI and PET-CT can be considered complementary examinations for staging malignant head and neck tumors.

C0015
VALUE OF MRI AND 18F-FDG PET/CT IN THE FOLLOW-UP OF TREATED MALIGNANT HEAD AND NECK TUMOR LESIONS

Laura Frascheri Verzelli[1], Sahyly Siurana Montilva[1], Carles Lorenzo Bosquet[2], Silvana Sarria Estrada[2], Cristina Auger Acosta[1], Alex Rovira Cañellas[1]

[1] Resonancia Magnetica, Resonancia Magnetica, Barcelona, Spain
[2] Hospital Vall d´Hebron, Medicina Nuclear, Barcelona, Spain

Introduction/Objectives
To compare MRI and 18F-FDG PET/CT findings in the post-treatment phase of malignant head and neck tumors.
Materials and Methods
We included 40 patients, median age 58[35-86] years, (28 men-12 women) treated for malignant head and neck tumors from January 2010 until August 2011. Initially 52.5 % were staged T4 (6:T4N0; 3: T4N1; 11:T4N2a-b-c and 1:T4N3); 12.5 % staged T3 (2:T3N0 and 3: T3N1-2) and 35 % staged T2 (6:T2N0; 3:T2N1 and 5:T2N2a-b-c). Both techniques were performed three months after treatment end. Imaging results were confirmed histologically.
Results
90 % of the patients had oral cavity and oropharynx squamous cell carcinoma, 5 % parotid gland tumors and 5 % a primary tumor of the maxillae. MRI was negative for residual or recurrent disease in 19 patients (47.5 %) and PET/CT in 12 (30 %). For the detection of disease (Tumors, adenopathies and metastasis) MRI had sensitivity, specificity, PPV and NPV of 80 %, 93 %, 93 % and 74 % respectively and the FDG PET/CT of 100 %, 86 %, 89 % and 100 %. For the detection of persistent/recurrent tumors, MRI had sensitivity, specificity, PPV and NPV of 93 %, 100 %, 100 % and 96 % respectively and the FDG PET/CT of 100 %, 87 %, 84 % and 100 %. For the detection of adenopathies MRI had sensitivity, specificity, PPV and NPV of 66 %, 95 %, 92 % and 77 % and the FDG PET/CT was 100 % for all values. PET/CT diagnosed disseminating metastasis and/or second distant primary tumors in 5 patients. MRI diagnosed perineural dissemination in 2 cases, not detected with PET-CT.
Conclusions
Both MRI and PET-CT are useful imaging modalities in the evaluation of treated malignant head and neck tumors. PET/CT is superior to MRI in the detection of distant metastasis, synchronic tumors and lymph node metastasis, and has a superior sensitivity in the detection of residual disease; whereas MRI is more sensitive in identifying perineural dissemination. Both techniques can be considered complementary and not exclusive.

C0016
MR IMAGING IN ADULT SPINAL CORD INJURY WITHOUT RADIOGRAPHIC ABNORMALITIES

Laura Frascheri Verzelli[1], Lluisa Montesinos[2], Sahyly Siurana Montilva[1], Silvana Sarria Estrada[2], Cristina Auger Acosta[1], Alex Rovira Cañellas[1]

[1] Resonancia Magnetica, Resonancia Magnetica, Barcelona, Spain , Spain
[2] Hospital Vall d´Hebron, Traumatologia y rehabilitación, Barcelona, Spain

Published online: 10 March 2013

Introduction/Objectives
Spinal cord injury without radiographic abnormalities (SCIWORA) has been mainly described in children. The purpose of the present study is to describe the incidence, MR imaging features and clinical outcome of SCIWORA in adult population and to assess the prognostic value of MR imaging in this condition.
Materials and Methods
Between January 2010 to December 2011, 134 patients with spinal traumatic injury were admitted in our hospital. In 19 (14 %) of these patients (17 men, mean-age 52 years, age range 20-83) a diagnostic of SCIWORA was established
Results
The causes of spinal injuries were a fall from height in 53 %, road traffic accidents in 26 %; sport accidents in 16 % and work accidents in 5 %. According to ASIA scale, 53 % of patients were grade D; 32 % were grade C; and 15 % were grade A, B or E. MR imaging was obtained within the first 72 hours in 17 patients (89 %). MRI showed significant abnormalities in 89 % of patients, including spinal cord changes (either cord edema or haemorrhage in 16 patients (84 %) and degenerative spinal abnormalities: 13 patients (68 %) cervical spine stenosis; 15 patients (79 %) degenerative disk disease; and 2 patients (10 %) posterior ligament ossification. Surgical intervention was required in 10 patients (53 %). At the time of discharge only 4 patients (21 %) had improved the ASIA grade scale.
Conclusions
SCIWORA contributes to 14 % of cases of spinal cord injury in adults. MRI is crucial for diagnosis and prognostic outcome and helps in detecting surgically treatable abnormalities.

C0019

CAROTID CAVERNOUS FISTULAS: A DIAGNOSTIC AND THERAPEUTIC CHALLENGE

Mª Luz Parra Gordo[1], Vicente Navarro Aguilar[2], Fernando Aparici Robles[2], Esperanza Mainar Tello[2], Víctor Vázquez Añón[2], Pilar Estellès Lerga[2], Sara Brugger Frigols[2], Emilio Sifre Martínez[2]

[1] Hospital Universitario La Princesa, Madrid, Spain
[2] Hospital Universitario y Politécnico La Fe, Valencia, Spain

Introduction/Objectives
CCF is an abnormal communication between the carotid arterial system and the cavernous sinus. They are usually unilateral, although occasionally may be a bilateral disease. Objetive: to know clinical and radiologic manifestations of Carotid-Cavernous Fistula (CCF), with emphasis in diagnosis by Computed Tomography (CT), Magnetic Resonance Imaging (MRI) and cerebral angiography (CA).
Materials and Methods
In this review we include patients with CCF diagnosed by AC in Polytechnic University Hospital La Fe (Valencia-Spain), from March 2002 to May 2012.
Results
There are eight patients, three women and five men, mean age 52.9 years (range 25-77 years). The most common cause is trauma (five cases), three spontaneous, an one iatrogenic. 75 % are unilateral (2 right, 4 left) and bilateral in two patients. All patients had exophthalmos, diplopia and chemosis in 62 %, 25 % headache or ocular bruits. One patient had choroidal detachment. Only 3 patients had CT and MRI prior to arteriography. Three patients had autotrombosis. The initial treatment of 3 patients was balloon occlusion, needing two of them closure with coils in a second time, due to persistent low-flow CCF. Initial treatment with coils was used in two patients. There were no immediate complications during diagnostic or therapeutic procedures. Late complications: there is a patient with persistent CCF after coil embolization, with decreased flow and improvement in ocular symptoms. There was a pseudoaneurysm after balloon embolization, that decreased in size in later AC.
Conclusions
The diagnosis of CCF requires a high degree of clinical suspicion. CT and MRI may suggest the diagnosis and assess the unilateral or bilateral ocular involvement (engorgement of the superior ophthalmic vein, extraocular muscle enlargement and dilation of the cavernous sinus affected). Cerebral arteriography is still the gold standard for evaluating patients with CCF, allowing endovascular treatment and control CCF if not accessible to percutaneous treatment.

C0022

GOING AROUND INNER-EAR MRI PROTOCOLS: ARE THEY WORTHY AND SAFE? OUR EXPERIENCE

Marta Martínez Schmickrath, Susana Serrano González-Gallarza, Carmen Campos, Ramón Delgado, Paula Sánchez López, Ana Villán, Rafael Blanco, Belén Susín

Hospital San Agustín, Radiología Avilés, Asturias, Spain

Introduction/Objectives
1. To analyze the data obtained from reviewing more than 270 inner-ear MRI studies from our institution.
2. To provide and to discuss the strengths and limitations of a proposed inner-ear MRI protocol, emphasizing on the need or not of contrast media administration in selected patients.
Materials and Methods
We retrospectively reviewed more than 270 inner-ear MRI studies performed at our institution to patients suffering of these specific conditions: dizziness or vertigo, tinnitus, and/or hypoacusia as well as laterality, gender and age.
We analyzed all its sequences, specially the heavily-weighted axial T2 sequence and correlated to the post-gadolinium T1 sequence performed afterwards, as well as other relevant imaging findings. We studied the cost of the contrast employed on them.
Results
After statistically analyzing 273 inner-ear MRI studies obtained in a 1,5T unit MRI (7 patients were excluded for associating facial nerve paralysis, and controls of known neurinomas and oncologic patients were not included), no obvious advantage of adding contrast-enhanced T1 sequence to the proposed protocol was observed; 9 significant findings were determined by non-enhanced sequences (schwannomas, meningiomas, inner-ear malformations), and none only with T1 post-gadolinium sequence. The economic cost, not including consumables, was elevated (10.000€). After contrast administration, complications were reported (adverse reaction, faintness during puncture).
Conclusions
At the right clinical setting, an inner-ear MRI protocol without gadolinium-contrast administration can be a right alternative to more fixed approaches, sparing the patient of its use and risks, less costs, and enabling with a degree of certainty, an accurate management.

C0023

COMPUTED TOMOGRAPHY IN COALESCENT MASTOIDITIS AND ITS COMPLICATIONS

Raquel Escusdero Esteban. Isabel Pérez Piñas, Luis Jimeno García

Sevilla, Spain

Introduction/Objectives
To highlight the importance of Computed Tomography (CT) in the diagnosis of coalescent mastoiditis and its complications.
Materials and Methods
We conducted a retrospective study of patients diagnosed with coalescent mastoiditis in our Department for five years. The study group corresponds to 11 patients, 4 females and 7 males. In terms of age, 9 of them are children from 20 months to 12 years old and two adults of 24 years and 83 years respectively. This diagnosis was obtained following the CT findings in patients with clinical suspicion of acute mastoiditis.
Results
- 11 patients were diagnosed with coalescent mastoiditis:
  - 2 patients showed signs of coalescent mastoiditis without complications.
  - 9 patients had complications:
    - Local complications:
      - Subperiosteal abscesses 5
    - Neurological complications:
      - Venous sinus thrombosis 3
      - Epidural abscess 2
      - Subdural abscess 1
      - Brain abscess 1

Two patients with subperiosteal abscess showed simultaneous ipsilateral sigmoid sinus thrombosis.
One of our patients had both epidural and brain abscess.
Conclusions
-CT is the preferred technique for the study of the mastoid. Its advantages include high resolution, availability and speed.
-It is urgently indicated in the diagnosis of symptomatic acute mastoiditis, performing cranial and temporal bone CT without intravenous contrast. If signs of coalescent mastoiditis are shown, cranial and temporal bone CT with intravenous contrast is performed.
-CT-Classification: with periostitis/coalescing.
-The process stage determines the treatment.
-Urgent Magnetic Resonance is performed when neurological complications not clear on CT are suspected.

C0026
BRAIN MEDULLARY VEINS VISIBILITY WITH SUSCEPTIBILITY-WEIGHTED MR IMAGING IN CLINICALLY ISOLATED SYNDROMES AND RELAPSING REMITTING MULTIPLE SCLEROSIS

Alex Rovira Cañellas, Francesc X Aymerich, Cristina Auger Acosta, Elena Huerga, Raquel Mitjana, Mar Tintore, Juli Alonso, Xavier Montalban

Hospital Universitari Vall d'Hebrón, Barcelona,Spain

Introduction/Objectives
Susceptibility-weighted imaging (SWI) is a novel MR technique that allows visualizing veins in the brain due to an inverse BOLD effect. Previous studies have described that relapsing-remitting multiple sclerosis (RRMS) patients show in SWI images a significantly reduced visibility of periventricular white matter veins compared to healthy controls (HC), with a negative correlation with T2 lesion load. In this work we propose to extend these studies to patients presenting with clinically isolated syndrome(CIS), who represent the earliest stage of possible multiple sclerosis (MS).
Materials and Methods
101 subjects (17 HC; 48 CIS; 36 RRMS) were examined with 3T MRI (T2 and SWI). SWI images were acquired using a 3 mm-slice thickness transverse GE sequence (TR/TE=32 ms/24.6 ms). A home-developed algorithm was used to detect vein pixels in eight rectangular supraventricular white matter ROIs.
Results
Twenty-eight (58 %) CIS patients had subclinical brain lesions (pCIS), whereas twenty (42 %) had not (nPCIS). There were significant differences in the number of vein pixels among HC, RRMS and CIS groups ($p=0.047$). Dunnett´ s test only showed significant difference comparing RRMS vs. HC ($p=0.033$). However, pCIS showed a significant lower number of vein pixels than nPCIS ($p=0.028$).
Conclusions
CIS and RRMS patients showed in supraventricular white matter regions a decrease in the number of vein pixels, which is associated with the presence of T2 lesions. This finding likely reflects a decrease in the inverse BOLD effect (decrease in deoxihemoglobin) and supports the concept of a widespread hypometabolic process in MS.

C0029
CREATION OF A SPANISH PEDIATRIC BRAIN ATLAS FOR NEUROIMAGING RESEARCH

Mª Rosa Cambra Martí[1], Christian Stephan-Otto Attolini[2], Ana María Sánchez Laforga[1]

[1]Parc Sanitari Sant Joan de Déu, Diagnòstic per la Imatge, Barcelona, Spain
[2] Parc Sanitari Sant Joan de Déu, Unidad de Investigación, Barcelona, Spain

Introduction/Objectives
Creation of standard brain atlases that accurately represent a certain population is a desirable approach that has only recently been embraced in neuroimaging studies (see for example [1]). The widely used Montreal Neurological Institute (MNI) template brain is made up of all right handed Caucasian subjects, 78 % males, age 23.4 +/- 4.1 [2]; nevertheless, it is used as a standard localization space for example in women-only studies or for significantly younger or older groups. With this research we aim to provide a sample-specific template, representative of the healthy brain for the Spanish pediatric population.
Materials and Methods
After a retrospective analysis of 3D T1 brain images in our center's Imaging Unit database, we select 12 brain scans of healthy individuals aged 13 +/- 1 and anonymize the data. Then, we apply the normalization tool ANTS [3].This method is capable of creating a representative template brain with only 10 brain scans, as long as they are randomly selected out of the population. Due to its retrospective character, the study implies no harm for the participants, nor modification of the diagnostic procedures. The study is pending of approval by the Ethics Committee of our Institution.
Results
A sample-specific template was generated and made available for its use in Spanish neuroimaging studies involving pediatric population.
Conclusions
The template created for this sample is more representative of the pediatric population than the standard MNI Caucasian adult template. Such template will potentially enhance the statistical power of within-institution studies as well as other Spanish projects based on a similar population [4].

1. Sanchez, C. *et al* . Developmental Psychobiology, Vol 54-1, p77, Jan 2012
2. Evans A.C. *et al.* Proc. IEEE Conference, Vol 3, p1813, Oct 1993
3. ***http://www.picsl.upenn.edu/ANTS/***
4. Huang C.M. et al. J Neuroscience Methods, Vol 189-2, p257, Jun 2010

C0035
EMPTY MECKEL´S CAVE

Antonio Mas Bonet[1], Diana Quiñones Tapia[2], Maria José Picado Vallés[1], Apolonia Moll Servera[1], Salvador Miralbés Celma[1], Santiago Rossatti Dario[1], Javier Ibáñez[1]

[1] Hospital Son Espases, Radiologia, Islas Baleares, Spain
[2] Hospital del Rosario, Neuroradiologia, Islas Baleares, Spain

Introduction/Objectives
Small ectasias of Meckel's cave are not uncommon on brain MRI. Greater expansions can produce erosions of the petrous apex and are described as "petrous apex cephaloceles". We suggest the term "Empty Meckel's Cave" (EMC) similar to "empty sella" to describe this condition. We have noticed other abnormalities of the dura and ectasias of internal auditory canals (IAC) and empty sella in some cases.
Materials and Methods
We retrospectively reviewed 65 cases of enlarged Meckel's cave associated with bony erosion of the petrous apex (MRI in all 65 patients, and CT in 45 cases). We considered " Empty Meckel's Cave" when the size on T2 was >7 mm transverse diameter (either axial or coronal) and >15 mm cranio-caudal or AP. 56 patients fulfilled these size criteria.
Results
We encountered 5 patterns of EMC, most associated to other dural anomalies: 1) Isolated EMC with mild erosions of the petrous apex, sphenoid or clivus (17). 2) EMC with multiple meningoceles, or displacement of the petrous internal carotid artery (7). 3) EMC with empty sella and optic nerve dural ectasia (24), mostly related to Benign Intracranial Hypertension. 4) EMC with ectatic internal auditory canals (IAC) (5). 5) EMC with distal thecal sac dural ectasia (increased AP diameter, vertebral scalloping and perineural cysts) (3).
Conclusions
Enlargement of Meckel's cave may not only be an anatomic variant and is more frequent than previously reported. We suggest the term "Empty Meckel's Cave" (EMC) to describe this anatomic condition. The increased incidence of other associated dural anomalies (arachnoid cysts, enlarged IAC, empty sella, dilated optic nerve sheaths, or other cranial nerve foramina…) should be observed on MRI studies. The pattern described in intracranial hypertension is associated with compressed Meckel's cave, but we have documented intracranial hypertension in cases with enlarged Meckel's cave. Empty Meckel's cave may be a sign of dural pathology (congenital or acquired), or reflect altered CSF dynamics.

C0038
GLIOSARCOMA: WHAT CAN WE TELL ABOUT IT?

Luisa Sampaio[1], Luis Augusto[1], Rita Figueiredo[1], Paulo Linhares[2], Irene Bernardes[1], Jose Fonseca[1]

[1] Centro Hospitalar Sao Joao, Neuroradiology, Porto, Portugal
[2] Centro Hospitalar Sao Joao, Oporto University, Neurosurgery, Porto, Portugal

Introduction/Objectives
Gliosarcoma is a rare entity characterized by a biphasic tissue pattern with glial and mesenchymal differentition. Although clinical findings and treatment are similar to glioblastoma multiforme (GBM), there is growing evidence that gliosarcoma is a distinct entity. Imaging findings may be similar to GBM, but depends on the amounts of the sarcomatous component. We aim to describe that some imaging findings can favor the gliosarcomas diagnosis.
Materials and Methods
All patients with a histological diagnosis of gliosarcoma treated at our institution(2005-2012) were retrospectively reviewed concerning their imaging findings.
Results
We have identified 21 patients; 7 were excluded (unavailable presurgery imaging). The median age was 60,5 years (27-74 years-old); 8 patients were male. Headache, motor deficit and behavioral changes were the most frequent (42,0 %) of the variable symptoms that the patients presented. One patient has only a CT because of a metallic component. All the others were evaluated with MRI. The most common lesion's topography was the temporal lobe (42,9 %; n=6) followed by the frontal lobe (21,4 %; n=3), parietal lobe (14,3 %, n=2) and parieto-occipital location ((14,3 %, n=2). In 13 patients a peripheral location was observed with a portion close to duramater. Two of them associated with dural enhancement after contrast. The enhancement was globally heterogeneous, 64,3 % with thick rim. The lesions were always well defined, not infiltrative, with marked surrounding edema. Diffusion-weighted imaging was made in 6 patients with 4 showed restriction. Perfusion was made in 5 patients with hyperperfusion in all. They were all submitted to surgical resection; 13 performed adjuvant treatment with chemotherapy/radiotherapy. The mortality rate was 78,6 %, being 3 patients still on follow-up (3, 12 and 24 months).
Conclusions
The demography, clinical manifestations and treatment proposed were the expected. Regarding imaging findings we consistently found a peripheral location, associated with another features GBM-like, suggesting that this could be a distinguishing feature associated with gliosarcoma.

C0040
MODELS OF CLASSIFICATION OF LUMBAR DISK DISEASE. NOMENCLATURE AND CONCEPTS DEFINITION

Rosa Maria Fernandez Quintero, Maria Eugenia Banegas Illescas, M Librada Rozas Rodriguez, Carlos Pastor Sanchez, Arlene Perez Duran, Rosa M Quintana de la Cruz

Hospital General Universitario de Ciudad Real, Servicio de Radiodiagnóstico, Ciudad Real, Spain

Introduction/Objectives
To present the different models of classification of the lumbar disk disease showing which of them has a great degree of acceptation in the present day. To review the nomenclature more frequently used and present examples. To encourage the agreement between different specialities.
Materials and Methods
We have reviewed the existing different models of classification, their use and degree of acceptation in recent papers in main radiological journals. We have reviewed the nomenclature more frequently used and we have look for practical examples between the MRI studies performed at our institution.
Results
The North American Spine Society (NASS), the American Society of Spinal Radiology (ASSR) and the American Society of Neuroradiology (ASNR) worked together in a common document in which they pretended to integrate the two previous models of classification

(pathological and morphological), and to define each of the concepts of the most frequent lumbar disk diseases. Actually many medical societies follow this recommendations and this exceedingly helps in the mutual understanding between the different implied societies. However, the lumbar disk disease terminology is still sundry and is today an object of debate. In this work we present, in a brief and illustrated way, nomenclature, concepts definition and different subtypes of the different implied diseases.

Conclusions

To know the different models of classification and particularly the American classification of lumbar disk disease according to the Task Force, and the nomenclature with application to our reports, to help in a better understanding inside our radiological community and of this with the rest of specialities that are implied in the diagnosis and treatment of disk disease.

C0042
HYPERPERFUSION SYNDROME AFTER ANGIOPLASTY IS THERE A GREATER RISK IN INTRCRANIAL ANGIOPLASTIES?

Alejandro González García, Francisco Moniche, Isabel Gutierrez, Antonio Mayol, Jose Ramón González-Marcos

Hospital Universitario Virgen del Rocío, Neurorradiologia Intervencionista. Servicio Radiología, Sevilla, Spain

Introduction/Objectives

Hyperperfusion syndrome (HPS) is a rare complication, but it is associated with high morbimortality after carotid revascularization and intracranial circulation procedures. The aim of the study is to identify whether intracranial angioplasty carries a higher risk of developing HPS.

Materials and Methods

Our database of patients treated using angioplasty between 1999 and February 2012 was analyzed retrospectively and the characteristics of patients showing HPS were studied. For the analysis by sub-groups we differentiated between HPS in intracranial arterial treatments and HPS in angioplasty patients with extracranial circulation.

Results

Results: Sixteen patients (1.11 %) showed HPS out of the 1,439 that were treated. Absence of the anterior communicating artery and exhausted vasoreactivity were associated to the appearance of HPS in extracranial angioplasties ($p<0.001$ and $p=0.04$, respectively) but not in intracranial angioplasties. Mortality in HPS was 31.3 % (vs. 0.8 % in non-HPS, $p<0.001$). Out of 40 intracranial angioplasties, three patients developed HPS compared with thirteen patients out of a total of 1,376 extracranial angioplasties (7.1 % vs. 0.9 %, $p<0.001$; OR=8.19 [2.2-29.9]. The performance of intracranial angioplasty in the anterior region was associated to an even higher risk of HPS (OR=11.78 [3.2-43.9].

Conclusions

HPS is an infrequent complication, but it has a high rate of mortality in patients submitted to both intra- and extracranial revascularization. The performance of intracranial angioplasty carries a significant increase in the risk of HPS, similar to the findings of the SAMMPRIS study, which still currently forces these patients to be submitted to aggressive medical treatment.

C0043
LANGUAGE FMMRI:A NEW SYMBOL PARADIGM TO EVIDENCE CRITICAL AREAS FOR READING

Maria del Mar Jiménez de la Peña, Santiago Gil Robles, Roberto García Alvárez, Juan Bachiller, Vicente Martínez de Vega

HOSPITAL UNIVERSITARIO QUIRON. MADRID (Spain)

Introduction/Objectives

DTI and FMRI is being increasingly used to aid surgical decisions of critical language related brain areas.The usage of standard language paradigms is very challenging especially in patients with language comprehension difficulties. This work demonstrates the incorporation of a new symbol fMRI paradigm, together with DTI data during the intraoperative electrical stimulation. Cortical and subcortical regions, specially the Visual Word Form Area and the occipitotemporal segment of the inferior longitudinal fascicle are studied with this new in-house developed fMRI paradigm

Materials and Methods

Functional and structural data from two patients with a diagnosed cortical dysplasia in the left fusiform gyrus were analysed prior intraoperative cortical stimulation. All data was acquired on a 3.0T GE. The FMRI paradigms consisted of two standard listening and reading task followed by in-house developed symbols-identification block task. During the *on* period the patients performed a known symbols identification task (such as division, euro and multiplication characters) while in the off periods the patients was instructed to perform a self-paced forward count. After registration of FMRI and DTI data onto high-resolution anatomical images, patients underwent intraoperative stimulation

Results

fMRI statistical maps, reconstructed DTI tracts and intraoperative images were obtained for the two patients. The activated areas were the left middle and superior temporal gyrus together with the posterobasal occipitotemporal cortex, specially left fusiform gyrus, fot the listening and reading paradigms, while for the symbols task only the left fusiform gyrus was identified. Essential language-tracts such as left arcuate, left inferior frontooccipitaland the left inferior longitudinal fascicles, were identified during the DTI study. Results from intraoperative stimulation were well correlated with functional and DTI identified areas.

Conclusions

The results reveal a good correlation between intraoperative stimulated areas and those depicted by DTI and fMRI. This new symbols-identification task could become a good substitute for the standard reading paradigms for patients with language difficulties.

C0045
DIFFUSION TENSOR IMAGING IN THE WORK-UP OF BRAIN CAVERNOMAS

Margarita Beltran Marin, Niloufar Sadeghi, Ana Azagra de Miguel

Hospital Erasme, Bruselas, Belgium

Introduction/Objectives

Cavernomas represents between 5 to 13 % of all vascular malformations of the CNS.

Histologically, they are composed of two parts: a central zone without interposition of neuroglial parenchyma wich has the hemorrhagic risk, and a peripheral zone consistant of nervous tissue with gliosis and hemosiderin deposits. If surgical resection is considered only because of the risk of bleeding, and no symptoms like seizures are present, resection should be limited to the potencially hemorragic part of the cavernome; but what are the exact boundaries?

The objectives of this study are based on the histology of the lesion and the properties of the anisotropic diffusion:

- May the lack of tracts within the cavernomatous lesion be detected by diffusion tensor imaging?
- Can we detect intact white matter tracts in the areas of hemosiderin deposits surrounding cavernoma by DTI and tractography?

Materials and Methods

MR studies including morphologic (T1, T2, FLAIR, T2GE) and DTI sequences of 10 patients with brain cavernomas have been reviewed retrospectively.

Fiber tracking using a single ROI method based on T2* signal abnormality was done manually.
2D cross sectional and 3D fiber tracking with anatomic T2 GE correlation were obtained and analyzed

Results

- 10 patients (4 females; 6 males) with age range between 11-66 (mean 37) and 11 cavernomas were analysed.
- In all cases we found a lack of tracts within the cavernomatous lesion using diffusion tensor imaging.
- In 9 of 11 cavernomas analyzed by DTI we could detect intact white matter tracts in the area of hemosiderin deposits surrounding the cavernoma.

Conclusions

Diffusion Tensor Imaging can be used to better delineate cavernomatous lesions and may be used to detect intact white matter tracts around such lesions.
This technique may be useful in the preoperative work up of this pathology, mainly if surgical resection is considered only because of the risk of bleeding, and the resection of surrounding hemosiderin deposits is not necessary.

C0048
BRAIN MR IN EPISODIC HEPATIC ENCEPHALOPATHY

Alex Rovira Cañellas, Laia Chavarria, Juli Alonso, Juli Alonso, M Simon-Talero, M Ventura, Rita García-Martínez, M Torrens, Joan Cordoba

Hospital Universitari Vall d'Hebrón. Barcelona, Spain

Introduction/Objectives

Brain MR has shown a series of metabolic and water distribution abnormalities that could be useful for the diagnosis of hepatic encephalopathy (HE). However, most MR studies have been performed in patients with minimal HE, while only few have assessed patients during and after an HE episode. The purpose of this study is to investigate the disturbances of brain water and metabolites in cirrhotic patients with episodic HE and relate them to the severity of HE.

Materials and Methods

Cirrhotic patients with overt signs of HE (n=18) (grade I-II: n=6, grade III-IV: n=12) and a control group (n=8) underwent 3T brain MR examination (^{1}H-MRS and DWI). In 14 patients the MR exam was repeated after resolution of HE.

Results

Brain glutamine was higher at baseline in patients compare to controls (Gln/Cr: 2.40±0.78 vs. 0.22±0.08, p, decreased during follow-up (1.55± 0.55, p=0.028), and showed a positive correlation with the severity of HE (r=0.62; p=0.006) and with plasma ammonia concentration (r=0.513, p=0.006). During HE patients exhibited an increase in the ADC, which decreased when patients recovered from HE (corticospinal tract: from 780±44 $\mu m^2/s$ to 758±44 $\mu m^2/s$, p=0.025; parietal white matter: from 884±54 $\mu m^2/s$ to 842±38 $\mu m^2/s$, p=0.016). However, ADC values at baseline did not correlate with the severity of HE.

Conclusions

Brain glutamine assessed by ^{1}H-MRS could be a good biomarker for the assessment of HE. However, the increase of brain ADC in HE, likely reflecting a mild degree of vasogenic edema, does not seem to correlate with the degree of HE.

C0059
MRI KNOWLEDGE EXTRACTION

Ricardo de Abajo Llamero, Domingo López Rodríguez, Antonio García Linares

Brain Dynamics, Neuroscience Knowledge Manager. Málaga, Spain

Introduction/Objectives

The aim of the present work is to present a tool to optimize the knowledge extraction from a MRI, beginning with an objective analysis of brain structures followed by an analysis of the most significant parameters on the model of evidence-based neuroscience.

Materials and Methods

The first step was the optimization and develops new neuroimaging processing algorithms to calculate the volume, cortical thickness, neuronal density and fractal dimension of the gray matter of 116 anatomical structures (IBASPM-MNI152) of both hemispheres, with an error less than 6 % (SPM has a 15 % error) and a time processing less than 50 minutes (FreeSurfer process time is around 24 horus). For knowledge management and inference system, we created a portal that includes about 300,000 scientific publications and dozens of databases related to the human brain, sorted by level of evidence.

Results

The development of processing algorithms faster and more reliable than commonly used (Freesurfer, FSL, …) allows the use of such tools in clinical practice, thanks to the possibility of automation. Using these algorithms, and a system based on scientific evidence to infer information from initial data, it is possible to obtain much more information from the MRI of a patient, providing data with which the clinician can make a better diagnosis or research.

Conclusions

This system allows get more than 450 objective criteria of a MRI study, and the results can be compared with population data of the same sex and age. The results are displayed in an interactive visualization and data processing, and through a system of inference supported by the evidence, produces what features they have in common a group of related anatomical structures by an increase or decrease in a parameter.

C0062
SINGLE CENTER EXPERIENCE IN STROKE ENDOVASCULAR TREATMENT AND PROPOSALS FOR IMPROVEMENT

Elvira Jimenez, Saray Valenzuela Alvarado, Rafael Oteros Fernandez, Fernando Delgado Acosta

Hospital Universitario Reina Sofia, Servicio de Neurologia. Cordoba, Spain

Introduction/Objectives

Stroke endovascular treatment has improved significantly because of new techniques and devices. The aim of this study is to show our experience in this area before and after the establishment of the stroke endovascular treatment protocol (SETP) and propose new ways of improvement.

Materials and Methods

This retrospective and observational study analyzed data from patients admitted to our hospital, between January 2000 and July 2012, with acute cerebral ischemia that was treated endovascularly.

Results

Between January 1st 2000 and July 1st 2012; 76 patients (mean age: 60,9), 18 women and 58 men, were admitted at our institution with acute cerebral ischemia, endovascularly treatable. 35 (46,05 %) were treated before the establishment of the SETP and 41 (53,9 %) were treated later. Before this moment, 34,3 % of all strokes were anterior brain circulation and 62,9 % were posterior. After the establishment of the SETP these rates were reversed. The outcome was favorable in 35 (46,1 %) patients and unfavorable in 35 (46,1 %). 6 (7,9 %) patients

were lost during the follow up. Of all patients treated before SETP, in which most were posterior circulation strokes, 22 (28,9 %) had unfavorable outcome and 9 (11,8 %) had a favorable outcome. On the other hand, patients treated after SETP, in which most were anterior circulation strokes, 13 (17,1 %) had an unfavorable outcome and 26 (34,2 %) had a favorable one. 28 (36,8 %) deaths were registered.

Conclusions

Patients with posterior brain circulation strokes have a wider therapeutic window, so they were most of the patients we treated before the SETP. After SETP establishment there are more patients with anterior circulation strokes that are cadidates for endovascular treatment. After treatment technical improvement, is important to impact on the education of population and staff for the patient to be diagnosed and treated as soon as possible in a specialized institution.

C0063
PILOT STUDY OF THE ANTIPLATELET EFFECT OF ADJUSTING THE DOSE OF CLOPIDOGREL (75 MG / DAY VS. 150 MG / DAY) IN PATIENTS WITH HIGH ON-TREATMENT REACTIVITY AFTER CAROTID STENTING

Alejandro González García, Isabel Gutierrez, Francisco Moniche, Antonio Mayol, Jose Ramón González-Marcos

Hospital Universitario Virgen del Rocío, Neurorradiologia Intervencionista. Servicio Radiología.Sevilla, Spain

Introduction/Objectives

The role of dual antiplatelet therapy in carotid interventional procedures is based on cardiology interventions, but not specifically tested. The present research study was to evaluate the antiplatelet effect of different doses of clopidogrel (75 mg vs150 mg/day) in patients with high on-treatment reactivity (OTR).

Materials and Methods

Patients with high OTR were identified with the VerifyNow P2Y12 assay (Accumetrics, San Diego, CA) with P2Y12 reactivity unit (PRU) values of at least 230. Patients were randomly placed in Group 1 (75 mg/day) or in Group 2 (150 mg/day) for a median of 30 days, after which platelet reactivity was reassessed.

Results

A total of 72 subjects were enrolled. Patients with high OTR receiving a standard clopidogrel dose (group 1, n=35, 65 % men, mean age : 67.9) reduced the mean level of platelet reactivity from 288±47 PRU at baseline to 226±78 PRU at follow-up (p<.0001) with a mean decrement of 61±65 PRU. The percentage platelet inhibition increased from 10.9 %±10.6 at baseline to 30.3 %±23 (p<.0001). In patients with high doses (group 2, n=37, 92.1 % men, mean age; 65.7) the OTR was significantly reduced from 296±51 PRU to 207±80 PRU (p<.0001) with a mean decrement of 89±67 PRU. The percentage platelet inhibition increased from 5.9 %±5.4 at baseline to 32.1 %±24.9 (p<.0001). There were no significant differences between groups 1 and 2 (p=.308).

Conclusions

In patients with high OTR, both doses of clopidogrel result in a significant reduction in platelet reactivity. Compared with standard-dose therapy, high-dose clopidogrel achieved a modest pharmacodynamic effect.

C0074
DIFFUSE GLIOMAS: DO PERFUSION AND DIFFUSION MRI CORRELATE WITH SURVIVAL?

Amaya Hilario Barrio, Angel Perez Nuñez, Elena Salvador Alvarez, Jose María Millán Juncos, Juan Manuel Sepulveda Sanchez, Aurelio Hernandez Lain, Alfonso Lagares Gomez-Abascal, Ana Ramos Gonzalez

Hospital Doce de Octubre, Departamento de Radiología. Sección Neurorradiología, Madrid, Spain

Introduction/Objectives

The prognosis of brain tumors varies on the basis of the type of neoplasm, and is poor for the most malignant types. The aim of this study was to evaluate the relationship between rCBV and ADC values with survival in patients with diffuse gliomas, the most common primary neoplasms of the brain in adults.

Materials and Methods

We have retrospectively reviewed data obtained during a 6-year-period from 162 patients with histopathologically proved diagnosis of diffuse glioma. The relationship of survival to histologic grade (II, III or IV), rCBV and ADC was analyzed by using Kaplan-Meier curves. To simplify the analysis, rCBV and ADC values were classified as low or high based on a cut-off value obtained from the ROC curves. This cut-off value was ≥1.74 for rCBV and $\leq 1.185.10^{-3} mm^2/s$ for ADC.

Results

Survival time was 50 months for low perfusion gliomas and 12 months (9.2-14.81) for high perfusion (rCBV≥1.74) gliomas (p=0.001). According to ADC values, tumors with ADC$\leq 1.185 \times 10^{-3} mm^2/s$ had a mean survival time of 12 months (9.22-14.78) (p<0.001).

When we classified tumors on the basis of the cell type (astrocyte versus oligodendroglial), we found that survival time of astrocytomas differ significantly depending on the ADC and rCBV values. In astrocytomas, high rCBV and low ADC values correlated to a worse prognosis.

In oligodendrogliomas, ADC and rCBV values did not have a significant relationship to survival.

Conclusions

While histological diagnosis is the main prognostic information about the survival of a diffuse glioma, decision-making on a preoperative setting is based mainly in clinical and radiological information.

In our series, perfusion and diffusion MRI correlated to patient survival. Tumors with ADC$\leq 1.185.10^{-3} mm^2/s$ and rCBV≥1.74 had a worse prognosis.

Concerning cell type, diffusion and perfusion MRI had a good correlation to survival for astrocytomas, but not for oligodendrogliomas.

C0075
RISK FACTORS FOR DEVELOPING VERTEBRAL FRACTURES AFTER VERTEBROPLASTY

Antonio López Rueda, Jordi Blasco Andaluz, Angeles Martínez-Ferrer, Luis San Román, Daniel Campodonico, Juan Miguel Macho Fernández, Pilar Peris

Hospital Clínic de Barcelona. Barcelona, Spain

Introduction/Objectives

We recently observed an increased risk(2.78-fold) for further vertebral fractures(VF) in a randomized controlled trial comparing the analgesic effect of VP versus conservative treatment(CT) in symptomatic VF. Therefore,the aim of the present study was to evaluate the risk factors related to the development of VF after VP in these patients.

Materials and Methods

Of the initial 125 patients randomized: 95(47/64 in the VP arm and 48/61 in the CT arm) completed the 12-month follow-up. We evaluated the risk factors for developing VF in the 64 patients treated with VP analyzing: age, gender, baseline lumbar and femoral BMD, number, type(wedge, biconcave or crush VF) and severity(mild, moderate or severe) of vertebral deformities at

baseline,number of VP procedures,presence and location of disk cement leakage during the procedure, bone remodeling(evaluated by determining serum PINP and urinary NTx) and vitamin D serum levels at baseline.

Results

29 radiologically new VF were observed in 17/64 patients treated with VP. Increased risk of VF after VP was associated with age(> 80 yr) (RR,4.76; 95 % CI,1.27-17.8, p=0.035), vitamin D serum levels <20 ng/ml(RR,4.02; 95 % CI,1.28-12.63, p=0.0083) and increased PINP values (> 55 ng/ml)(RR,4.4; 95 % CI,1.5-16.8, p=0.016). Number,type and severity of vertebral deformities (>2 wedge VF and/or grade II and III)were also associated with increased risk as was cement leakage into the inferior disk (RR,6.68; 95 % CI,1.81-24.6, p=0.03). Procedure number >1 also tended to be associated with a higher risk of fractures(RR,4;95 % CI,0.7-20.7, p=0.053).

Conclusions

Nearly 27 % of patients with osteoporotic VF treated with VP had a new VF after the procedure. Age,especially over 80 years,low vitamin D serum levels and increased bone resorption were factors related to the development of new VF in these patients,as were the number,type and severity of VF at baseline and the presence of inferior disk cement leakage after the procedure.

C0079
UTILITIES OF DIFFUSION-WEIGHTED MR IMAGING IN THE EVALUATION OF TREATED PITUITARY ADENOMAS

Sebastián Capurro Ferrer, Maria Olondo Zulueta, EDUARDO COSCI, NICOLAE SARBU, MARIANA BENEGAS, Núria Bargallo Alabart

Hospital Clinic Barcelona, Radiodiagnostico. Barcelona, Spain

Introduction/Objectives

To evaluate the utility of Diffusion weighted imaging (DWI) techniques in treated pituitary adenomas.

Materials and Methods

We carried out a retrospective review of 54 patients with diagnosed pituitary adenomas who received surgical or medical treatment in our centre.

All the studies were performed with standard sequences T1WI, T2WI andT1WI with gadolinium. HASTE DWI in coronal plane with a thickness of 3 mm and a b value of 1000 was also performed.

We made a blind evaluation of the DWI and then compared with the standard sequences focusing on T2WI and T1WI with gadolinium images. We separated patients with remnant tumour and those whit out.

Results

The average age of the patients was 53.8 years (range between 19 -88 years). Thirty two were women (59,3 %) and 22 men (40,7 %). We found 3 micro adenomas (5,3 %) and 51 macro adenomas (94,4 %). Eleven patients had medical treatment (20,4 %) and 43 had surgical treatment (79,6 %). All the micro adenomas had medical treatment.

Of the total patients we discovered DWI signal abnormality in 30 (55,6 %), and signal was normal in 24 patients (44,4). Interpretation of the ADC found normal signals in 39 cases (72,2 %), hipointense signal intensity in 5 (9,3 %) and hiperintense signal intensity in 10 patients (18,5 %).

Using recurrent tumour pattern with standard sequences as reference standard, the sensibility of DWI to find recurrent tumour was 80 % and specificity was 100 %. False negative was found in 10 patients (18.5 %).

Conclusions

The DWI has a great value in the analysis of remnant tumour of treated pituitary adenomas, probing to be a useful tool in the follow up of this patients.

C0080
COMMUNICATING IMPORTANT AND URGENT NEURORADIOLOGICAL FINDINGS IN TELERADIOLOGY

Marta Serrallonga, Albert Sellarès, Albert Mateu, Núria Serra

Institut de Diagnòstic per la Imatge. Barcelona, Spain

Introduction/Objectives

Inpatients reports are usually read without delay. Unfortunately, this is not always the case for outpatients, where urgent, unexpected or significant findings may be overlooked and thus not acted on.

Our aim is maintaining active communication with clinicians so as to ensure that those responsible for clinical patient care act promptly, with the ultimate goal of optimum patient care.

Materials and Methods

We have developed Guidelines for the communication of urgent and important relevant processes.

The considered findings are:

a) **Clinically important** : refers to a lesion that does not present any immediate clinical risk but would benefit from a prompt review.

b) **Clinically urgent** : refers to a lesion that is life-threatening or presents a significant clinical risk.

c) **Other recommendations** : not only radiological but also in general terms, unexpected or for follow up that are considered significant for the patient.

The protocol steps are: communication of the guidelines to the referring clinicians; an IT application for flagging alerts; stating type of codification flagged on the report by the radiologist; final information of the result to the referring physician.

We include adult and paediatric outpatient Neuroradiological studies performed at two Teaching Hospitals and reported by Teleradiology from January 2011 to August 2012.

Results

215 referring clinicians from 103 origin units signed the referrals. At the time of preparation of this abstract some of the exams have not yet been reported. By September 2012 the final figures and results can be sent.

Conclusions

Clear and appropriate communication of important findings is crucial, not only for the content of reports, but also to avoid failure of communication of results.

Specific guidelines on that purpose can guarantee communication and improve the quality of our Radiology Units, as well guaranteeing proper patient care.

C0081
INTRACRANIAL ANEURYSMS: CLIPS VSs COILS. EVOLUTION AFTER TREATMENT IN AN UNSELECTED GROUP OF PATIENTS

Ana Maria Fernandez Martinez, Jose Daniel Samper Wamba, Luis Vaquero Ayala, Iria Alvarez Silva, Jorge Valdivia Ruiz, Oscar Balboa Arregui, Ana Dominguez-Berrot

Complejo Asistencial Universitario De Leon, Radiodiagnóstico. León, Spain

Introduction/Objectives

The rupture of an intracranial aneurysm is a vital emergency. Both surgical and endovascular approach are valid therapeutic options in this situation. Our purpose is to evaluate the results and complications of endovascular and surgical approach for treatment of ruptured and unruptured intracranial aneurysms.

Materials and Methods
We review all intracranial aneurysm treated in our hospital from 2005 to 2011 and study the type of treatment , the number of days in the Intensive Care Unit (ICU), immediate complications , mortality and the degree of disability 6 months after the intervention (Modified Rankin Scale).
Results
We included 203 patients (age 56±13.6), 60 % female. Endovasculartreatment was performedin 63 % and surgical treatment on the rest of patients. 67 % debuted with subarachnoid hemorrhage (SAH). The number of days in ICU was less in patients with endovascular treatment (6.9 vs. 10 days, $p=0.01$).10.4%of patientswith SAHtreated byembolizationand 7 % of those treatedwith surgerydied, without obtaining a statistically significant result. The rate of bleeding after treatment was similar in both groups. Ischemic diseases (27 % vs15.5 %, $p<0.05$) and cerebral edema (13.5 % vs 8 %, $p<0.001$) were more frequent in patients treated with surgery. However, vasospasm and hydrocephalus were more frequent in those who underwent endovascular treatment, without finding any statistical relation. 52 % of the subjects showed a complete recovery without disability consequences after endovascular treatment as opposed to a 39 % after surgery, according to the Modified RankinScale.
Conclusions
Embolized patients may present earlier recovery with fewer complications and long-term aftermath. The mortality rate is similar in both groups, despite the worse clinical condition on admission of patients undergoing endovascular treatment.

C0082
ANALYSIS OF IMAGING SPECTRUM OF CENTRAL NERVOUS SYSTEM MANIFESTATIONS IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS

Nicolae Sarbu, Diego Gutierrez Romero, Enric Ripoll Fuster, Maria Olondo Zulueta, Sebastián Capurro Ferrer, Ricard Cervera, Núria Bargallo Alabart

Hospital Clinic Barcelona, Radiodiagnóstico. Barcelona, Spain

Introduction/Objectives
To study the frequency and vascular cerebral pattern of central nervous system involvement in patients with systemic lupus erythematosus (SLE).
Materials and Methods
Retrospective descriptive study. We carried out a review of 40 SLE patients with neurological symptoms, studied by MRI in our center during the last 7 years. All the MRI studies were performed in T1, T2 and FLAIR sequences and in 10 patients there were performed diffusion sequences (DWI). The lesions were classified according to the distribution, anatomical location, number and size. We used the Fazekas scale to determine the degree of white matter involvement.
Results
The average age was 43 years (range 18 to 83). Thirty-seven (92,5 %) were women and 3 (7,5 %) men. We found cerebral anomalies in 14 patients (35 %). In this group the mean age was 43,7 years (range 27 to 66).
Of the 14 patients who had MRI findings, 9 (64,3 %) presented with only supratentorial involvement, 4 (28,6 %) had both supra and infratentorial lesions and 1 only infratentorial. The lesions were located in the deep white matter in 11 (78,5 %), the periventricular area in 7 (50 %), the corpus callosum in 2 (14,2 %). Of the 5 patientes with infratentorial involvement, the location was: cerebellar in 3, brainstem in 3, medullary in 2.
Related to Fazekas scale, 12 (85,7 %) were graded as 1 and 2 (14,3 %) were graded as 2. There were no grade 3 patients. Twelve patients (85,7 %) presented multiple lesions and 2 (14,3 %) had a single lesion. In 10 patients (71,4 %) the lesion size was less than 1 cm and in 4 (28,6 %) was between 1 and 5 cm. Two (14,3 %) patients had extensive lesions located in the posterior fossa.
Conclusions
A non depreciative number of SLE patients with neurological symptoms have MRI findings, the most frequent pattern being small supratentorial white matter lesions, representing small vessel disease.

C0083
FLOW-DIVERTER STENT: OUR EXPERIENCE IN 50 COMPLEX INTRACRANEAL ANEURYSMS TREATED WITH ENDOVASCULAR FLOW-DIVERTER STENT

Edurne Pardo Zudaire[1], Javier Ignacio Massó Romero[2], Jose Ángel Larrea Peña[2], Alex Lüttich Uroz[2], Amaia Massó Romero[2], Jorge Villanúa Bernués[3]

[1]Hospital Donostia, NEURORRADIOLOGÍA. Guipuzcoa, Spain
[2] Hospital Donostia, Radiodiagnóstico. Guipuzcoa, Spain
[3] OSATEK DONOSTIA. Guipuzcoa, Spain

Introduction/Objectives
Show the most significant aspects about our expererience in the endovascular treatment of 50 complex intracranial aneurysms with flow diverter stents.
Materials and Methods
The flow diverter stent alters the aneurysmal inflow, inducing a progressive thrombosis and exclusion of the aneurysm from the circulation. The recruitment period starts in December 2008 and finishes in April 2012.
The clinical presentation was previous SAH in 14 patients, headache or mass effect in 12 and incidental in 20. The location of the aneurysms was 40 in anterior circulation (36 ICA, 2 MCA, 2 ACA) and 10 in posterior circulation (5 in basilar artery and 5 in PCA). 13 cases were retreatments of aneurysms previously treated with coils and 37 were new cases. Its mandatory a double antiplatelet therapy 3 days before. As well as emphasize the need for a CT inmediately before the stent deployment to exclude an hemorraghe.
Results
There were 24 patients with progressive or incomplete occlusion in the 12 month follow up and 16 patients with complete occlusion, 4 patients had no change. (3 patients were no treated and 3 died periprocedural). We had a 15 % of intraprocedural complications and an additional 9 % in the first 6 months. In the complications we include 3 deaths (2 due to the procedure), 4 minor sequela and other transient episodes. In a 85 % we can say that it exists a new, safer positive situation for the treated patient.
Conclusions
The flow diverter stent allowed us to treat complex aneurysms that could not be treated endovascular nor surgically. Produces a remodelling of the parent artery with patency preservation of the arterial branch on aneurysmal wall. Further studies, more homogeneous, are needed.

C0087
CREUTZFELDT-JAKOB DISEASE. ISOLATED CORTICAL INVOLVEMENT AS THE INITIAL MR IMAGING PATTERN

Elisenda Grivé Isern[1], Laura Frascheri Verzelli[2], Federico Xavier Zarco Contreras[1], Silvia Llaverías Borrell[1], Anna Gallart Ortuño[1], Cecilia Targa Benet[3], Lidón Millá Rallo[1]

[1] CRC-Hospital Sagrat Cor, Neuroradiología. Barcelona, Spain
[2] Resonancia Magnetica, Resonancia Magnetica. Barcelona, Spain
[3] Servicio Neurología, Hospital Sagrat Cor. Barcelona, Spain

Introduction/Objectives
Creutzfeldt - Jakob disease (CJD) is a rapidly progressive dementia clinically difficult to distinguish from other forms of dementia in early stages. MRI, particularly diffusion-weighted imaging (DWI), is useful in early diagnosis. Increased signal intensity in the basal ganglia and/or the cerebral cortex are the characteristic MRI findings. We describe the pattern of cortical involvement in CJD in order to suspect the diagnosis when basal ganglia involvement is not observed, clinical signs are discreet and characteristic changes of EEG or CSF may be absent.
Materials and Methods
The first MRI studies of 2 patients diagnosed of CJD with isolated cortical involvement were reviewed. We evaluated the characteristics in different sequences and the location and extent of cortical lesions. We compared our findings with those described in recent literature.
Results
DWI is more sensitive than FLAIR for the detection of cortical CJD-related lesions. Abnormal cortical pattern is ribbon-like, discontinuous, unilateral or bilateral, with no important cortical thickening, frequent midline involvement and without enhancement after contrast. One of our cases has presented the characteristic progression of MRI signal change from early to late disease: rapid progression of unilateral/asymmetrical cortical lesions to greater contralateral/symmetrical involvement and progression to basal ganglia. The second case has remained stable in extension, with only cortical involvement.
Conclusions
CJD may occur with only cortical involvement particularly in early stages. Knowing the characteristics of this involvement allows us to an early diagnosis.

C0088
REVIEW OF SPINAL VASCULAR MALFORMATIONS

Rosa M Quintana de la Cruz, Maria Eugenia Banegas Illescas, Manuel Calvo García, María Librada Rozas Rodríguez, Carlos López Menéndez, Carlos Pastor Sánchez, Antonio Pinardo Zabala, Rosa Maria Fernandez Quintero, Arlene Pérez Durán

Hospital General Universitario de Ciudad Real, Servicio de Radiodiagnóstico. Ciudad Real, Spain

Introduction/Objectives
To present the classification of spinal vascular malformations and to describe the MRI findings. To show cases that allow us to review the image findings and the therapeutic approach of the different types of malformations.
Materials and Methods
We reviewed the literature about the different spinal vascular malformations and their classification that includes anatomical features, angio-structural, hemodynamic and pathological, differentiating between

- Cavernous angiomas
- Capillary hemangiomas
- Arteriovenous lesions thar are divided in
  Type I dural AVF
  Type II intramedullary AVM
  Type III juvenile AVM
  Type IV perimedullary intradural AVF

We perfomed a retrospective study from 2007 to 2011 and we have compiled 7 cases that were diagnosed by MRI +/- digital subtraction angiography (DSA).

Results
The term spinal vascular malformation includes a group of infrequent entities, usually low diagnosed, with a variable clinical beginning, sometimes subacute that delay their diagnosis. The more frequent one is spiral dural arteriovenous fistula (SDAVF).he MRI allows us to identify the lesion and to make a differential diagnosis with other pathologies (medualr ischemia or compression, tumours, degenerative disease of the vertebral spine, myelitis) and the angiography is useful to define the type of malformation and to plan the treatment. Our case review reflects a concordance in frequency with what is published in the literature, with 4 SVADF (57 %), 2 medullary cavernous angiomas (30 %), and 1 medullar capillary hemangioma (14 %).
Conclusions
Spinal vascular malformation is an infrequent group of potentially treatable and reversible causes that are mainly diagnosed by MRI. Because of its rarity a unspecific symptoms and a wide differential diagnosis are a goal for the neuroradiogist, so that is why we present their findings and main features in MRI.

C0091
SURGICAL APPLICATION OF FUNCTIONAL MAGNETIC RESONANCE IMAGING WITH AN EASY PARADIGM OF LANGUAGE IN DRUG-RESISTANT EPILEPSY PATIENTS

Sara Castanyer Llanes[1], Angels Camins Simon[2], Carles Majos Torro[1], Pablo Ripolles Vidal[3], Merce Falip Centellas[4], Monica Cos Domingo[5], Juan Jose Sanchez Fernandez[2], Carles Aguilera Grijalvo[2], Montserrat Juncadella Puig[6]

[1] Hospital Universitari Bellvitge, Institut de diagnostic per la imatge. Ressonancia magnetica. Barcelona, Spain
[2] Centre Bellvitge-HUB, Unitat Ressonancia Magnetica. Barcelona, Spain
[3] Cognition and Brain Plasticity Unit, IDIBELL [Bellvitge Biomedical Research Institute] . Barcelona, Spain
[4] Hospital Universitario de Bellvitge, Departamento de Neurologia. Barcelona, Spain
[5] CENTRE BELLVITGE-HUB, Institut de Diagnostic per la Imatge. Barcelona, Spain
[6] HospitalUniversitari de Bellvitge, Neuropsicologia. Barcelona, Spain

Introduction/Objectives
Evaluate the results obtained with functional magnetic resonance imaging (fMRI) of language in drug-resistant epilepsy patients who are surgery candidates, principally with factor of risk in atypical distribution of language. Describe the technique used, emphasizing the easy applicability of the paradigm employed. Observe the hemispheric distribution of language and its implications. Suggest the possibility that in right-handed epileptic patients the epileptogenic focus can modify the hemispheric language dominance
Materials and Methods
Analyze retrospectively the fMRI studies conducted for two years. The explorations by prospective will be included as well. Every study was done by MR equipment, Philips Intera 1,5T. Sense antenna has been used preferably. Paradigms with phonetic and semantic instructions were used. The bold images were obtained by using single-shot technique T2*, dynamic gradient-echo sequence. Post-processing was performed using "I View Bold", Philips. The results were validated with long-term video-EEG monitoring, PET, SPECT and neuropsychological study.
Results
10 right-handed epileptic patients with frontal or temporal lobe epilepsy. 3 with a right hemisphere focus and 7 with left. In 3/3 (100 %) with right focus the hemispheric language dominance was typical while in patients with left focus just 3/7 (43 %) the hemispheric language dominance was typical. 2 left-handed epileptic patients with temporal and frontal epilepsy. 1with a right hemisphere focus and 1 with left. The typical hemispheric language dominance was in 50 %.

Conclusions
An easy paradigm of language allows establishing the hemispheric dominance of language in drug-resistant epilepsy patients. The fMRI corroborates, easy and risk-free, the typical and atypical distribution of language, adding possible information in the laterality of epileptogenic focus in right-handed patients. The multidisciplinary assessment showed satisfactory correlation with the results obtained.

C0095
CNS CAVERNOMAS REVIEW

Rosa Mª Quintana de la Cruz; Carlos Pastor Sánchez; Mª Librada Rozas Rodríguez; Maria Eugenia Banegas Illescas; Manuel Calvo García; Arlene Pérez Duran; Rosa Mª Fernández Quintero; Luis Caminero Pardo

Hospital General Universitario de Ciudad Real, Servicio de Radioldiagnóstico (Ciudad Real)

Introduction/Objectives
To present a review of the main features of cavernomas in the central nervous system (CNS) to direct their diagnosis and management. To show different cases that allow us a review their radiological features.
Materials and Methods
After reviewing the literature about brain cavernomas, we performed a retrospective study from 01-01-2007 to 31-12-2011, collecting 21 cases, diagnosed by MRI.
Results
Cavernomas belong to angio-negative vascular malformations of the CNS, Actually considered as benign lesions (but with a potential life threat depending on their location and evolution), and dynamic (in size, number and radiological features) with a genetic origin (linked to autosomal dominant inheritance), and variable penetrance) or sporadic. Though they can be asymptomatic with an incidental diagnosis, the clinical features will fundamentally depend on their location (supratentorial, brain stem, intraventricular, dural, spinal and extracranial) There are unalterable factors, that rise their risk of bleeding causing a more aggressive symptomatology.
They are diagnosed with MRI (high sensibility, a difference with CT), with echo gradient sequences, and with the new sequences weighted in magnetic susceptibility (SWI) and high field MR (3T) (for a better morphologic characterization). In MRI, they show a characteristic appearance in "popcorn" in T2 sequences (heterogenous reticulated central area because of previous bleeding or calcifications, with an hypointense peripheral rim, by the deposition of hemosiderin). Depending on the phase of the hemorrhage, Zambraski classification differentiates 4 types of cavernomas. It is important to know the atypical radiological features (according to situation, number and behaviour) to perform a correct differential diagnosis. In our case experience, it reflects a concordance with the published literature regarding the typical and atypical radiological features of cavernomas.
Conclusions
It is important to know the radiological features to perform a correct diagnosis and follow up of cavernomas with MRI, so we can take adequate therapeutic decisions.

C0097
FUNCTIONAL MAGNETIC RESONANCE IMAGING: INSTRUCTIONS, TECHNIQUE AND RESULTS. EXPERIENCE FOR TWO YEARS

Angels Camins Simon[1], Sara Castanyer Llanes[2], Carles Majos Torro[3], Pablo Ripolles Vidal[4], Andreu Gabarros Canals[2], Monica Cos Domingo[5], Juan Jose Sanchez fernandez[2], Carles Aguilera Grijalvo[1], Montserrat Juncadella Puig[6]

[1] Centre Bellvitge-HUB, Unitat Ressonancia Magnetica. Barcelona, Spain
[2] Hospital Universitari Bellvitge, Institut de diagnostic per la imatge. Ressonancia magnetica. Barcelona, Spain
[3] Centre Bellvitge-Hospital Universitari de Bellvitge, RESONANCIA MAGNETICA. Institu de Diagnostic per la Imatge. Barcelona, Spain
[4] IDI-BELL (bellvitge biomedial research institute, Cognition and Brain plasticity Unit. Barcelona, Spain
[5] CENTRE BELLVITGE-HUB, Institut de Diagnostic per la Imatge. Barcelona, Spain
[6] HospitalUniversitari de Bellvitge, Neuropsicologia. Barcelona, Spain

Introduction/Objectives
Share the experience in functional magnetic resonance (fMRI) for two years. Revise the instructions; describe the technique used, and the post-processing for obtaining the results. Explain the repercussion of preoperative fMRI on therapeutic decision making in patients with potentially resectable brain lesions.
Materials and Methods
Analyze retrospectively the studies done during the last two last years in our centre. The explorations by prospective will be included as well. Every study was done by MR equipment, Philips Intera 1,5T. Two types of antennas were used, both quadrature and sense. The paradigms used were aimed to asses language and motor functions. The bold images were obtained by using single-shot technique T2*, dynamic gradient-echo sequence. Post-processing was performed using `I View Bold´, Philips. The results were validated with intraoperative procedures or neuropsychological studies.
Results
The main results aided at completing the pre-surgery study by defining somatosensory area, lateralization of language, and detecting possible neuroplasticity. Standardization of paradigms systematically in the studies done facilitates reduction of possible mistakes, obtaining a good morpho-functional correlation, intraoperative procedures or neuropsychological studies. Patient movement has been the main cause of non-optimal study until now. The fMRI has a significant effect on therapeutic planning in patients with potentially resectable brain lesions.
Conclusions
The FMRI plays a significant and complementary role in those patients with damage close to eloquent areas and surgery candidates, contributing additional information which is useful for a better surgical application. It corroborates its use, easy and risk-free, in establishing hemispheric dominance of language, replacing invasive methods.

C0099
TYPICAL AND ATYPICAL RADIOLOGICAL FINDINGS IN POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME

Nicolae Sarbu, Oscar Sabino Chirife Chaparro, Sebastián Capurro Ferrer, Antonio López Rueda, Maria Olondo Zulueta, Luis San Roman Manzanera, Laura Oleaga Zufiria

Hospital Clinic Barcelona, radiodiagnostico. Barcelona, Spain

Introduction/Objectives
To describe the typical and atypical imaging findings of posterior reversible encephalopathy syndrome (PRES) and to offer an accurate diagnostic orientation.
Materials and Methods
PRES is a multietiologic entity, most commonly being a consequence of acute hypertension, eclampsia and cytotoxic drugs. It was typically described as symmetrically distributed edema of parieto-occipital subcortical regions. We report a series of patients with various features of brain involvement and a large spectrum of radiological manifestations.

Results
This syndrome can affect the other regions of the brain besides parieto-occipital ones, like the frontal, temporal, thalamus, cerebellum, brainstem, and basal ganglia in a descendent order of frequency. Also sometimes it is not restricted to the white matter and it can be irreversible. PRES has many imaging characteristics depending on the evolution phase. We considered very important to evaluate the extension of involvement, the mass effect, the subcortical enhancement if present and the ischemic changes on DWI/ADC in MRI.
Conclusions
Recognizing the imaging findings of PRES is essential in order to help the clinician to establish the diagnosis and a prompt subsequent treatment, which is crucial for impeding the potential impairment which can arise from this classically reversible syndrome.

C0101
MANIFESTATIONS OF GARDNER'S SYNDROME IN CRANIOCERVICAL REGION:A REPORT OF 2 CASOS Y REVIEW OF LITERATURE

Mojdeh Moeinvaziri[1], Beatriz Brea Alvarez[1], Rosa maria Ruiz Peralbo[1], Mercedes Tuñon Gomez[1], Maria Isabel Zamora García[2], Maria del Prado Reyero Lafuente[1]

[1] Hospital Universitario Puerta de Hierro de Majadahonda, Radiodiagnostico. Madrid, Spain
[2] Hospital General de Segovia, Neurología. Castilla y Leon, Spain

Introduction/Objectives
Gardner´ s syndrome is an autosomal dominant disease and is a subtype of familial adenomatous polyposis.It is characterized by intestinal adenomatosis,osteomas,skin cysts,desmoid tumors and congenital hypertrophy of the retinal pigmented epithelium.Extraclonic features of this entity can appear many years before the intestinal polyposis.Intestinal polyps if not treated,have 100 % chance of malignancy.Therefore early diagnosis of this syndrome can avoid malignant evolution of intestinal lesions.The aim of this paper is to summarize and discuss the head and neck manifestations of this raredisorder and to underscore the important role of neuroradiologists in its early diagnosis.
Materials and Methods
The existing literature is reviewed and two significant clinical cases are described and discussed.
Results
Our radiological findings in craniocervical region in the first patient who is a 43-year old man, include:multiple osteomas (especially in frontal and ethmoidal sinus) and numerous craniofacial epidermoid cysts. Our second patient is a 53 year- old woman who initially presented with a huge cervical mass which was a desmoid tumor.
Conclusions
Our radiological findings in craniocervical region in the first patient who is a 43-year old man, include:multiple osteomas (especially in frontal and ethmoidal sinus) and numerous craniofacial epidermoid cysts. Our second patient is a 53 year- old woman who initially presented with a huge cervical mass which was a desmoid tumor.
Acknowledge, conflicts of interest
The authors would like to thank the neurosurgery and pathology service of our clinic for their contribution to this manuscript.

C0104
PARAOPHTHALMIC ANEURYSMS: EVOLUTION OF ENDOVASCULAR TREATMENT TECHNIQUES AND OUTCOMES

Amaia Massó Odriozol, Javier Ignacio Massó Romero, Alex Lüttich Uroz, Jonathan Augusto Rodrigo Apolinar, Jose Ángel Larrea Peña, Edurne Pardo Zudaire

Hospital Donostia, Radiodiagnóstico. Gipuzkoa, Spain

Introduction/Objectives
A review is made of the evolution of endovascular treatment of paraopthalmic aneurysms, based on our experience.
Materials and Methods
A description is made of our clinical experience over the last 15 years with endovascular procedures involving different devices applied to 84 paraophthalmic aneurysms in 100 patients.
• **Group 1** (July 1993 - December 1999): 12 patients. Treatment with platinum coils.
• **Group 2** (January 2000 - December 2007): 34 patients. Introduction of balloon-assisted coiling and stents, and biological stents.
• **Group 3** (January 2008 - June 2012): 33 patients. Introduction of flow-diverter stents.
Results
A statistical analysis was made of the following parameters:
Demographic data : Patient age and gender, and clinical presentation of the aneurysms, fundamentally subarachnoid bleeding, and compressive or incidental manifestations.
Characteristics of the aneurysms : Size, neck, neck-sac ratio, Willis circle anomalies, and the presence or absence of multiple aneurysms. Of note is the fact that the percentage of small aneurysms treated was significantly greater in group 2 versus group 1, and in group 3 versus the other two groups ($p=0.03$).
Outcome, behavior and complications : Statistically significant differences in outcome were recorded depending on the device employed (platinum coils, biological coils, remodeling balloons, conventional stents with coils and flow diverter stents with or without coils).
Two groups were considered for assessment of the results based on the angiographic control findings after 12±6 months: complete occlusion and recanalization of the aneurysmal sac, though incomplete closure was also evaluated in the case of the flow-diverter stents.
Conclusions
Our experience confirms that paraophthalmic aneurysms show an increased tendency towards recanalization and regrowth.
The aneurysmal occlusion rates improved after introduction of the conventional stents, with persistence over time. However, the greatest increase in occlusion rate was recorded after the introduction of the flow-diverter stents.

C0108
ENDOVASCULAR RECONSTRUCTION USING FLOW DIVERTER FOR THE TREATMENT OF INTRACRANIAL COMPLEX ANEURYSMS.

Claudio Rodriguez Fernandez[1], Pedro Ruiz Garcia[1], Aurelio Vega Astudillo[1], Jose Carlos Méndez Cendón[2], Luis Nombela Cano[1]

[1] Hospital Universitario Puerta de Hierro Majadahonda, NEURORRADIOLOGÍA.Madrid, SPAIN
[2] Hospital Ramon Y Cajal. Madrid , Spain

Introduction/Objectives
Report our experience in the treatment of complex intracranial aneurysms using endovascular reconstruction with flow diverter device.
Materials and Methods
This study included thirty patients with a total of thirty-eight complex intracranial aneurysms with little chance of success with standard endovascular treatment or with higher risk of complications. All patients received dual antiplatelet therapy at least 48 hours before the procedure. Clinical follow up visits were scheduled at 30 days,

3 months, 6 months and 12 months. Protocol follow up angiography was planned at 6 and 12 months using MRI or CT scan.

Results

Thirty-eight intracranial aneurysms were treated whith endovascular reconstruction. Total occlusion was observed in 68 % of patients at 6 months after treatment and in 93 % of patients at 12 months after treatment. Neurological complications consisted of one ipsilateral major stroke and one ipsilateral minor stroke.

Conclusions

The use of flow diverteris an alternative technique that is safe and effective in the treatment of complex intracranial aneurysm without significant complications at 12 months follow-up, although long term studies are needed to assess durability of occlusion and stent tolerance.

C0120
EARDRUM COLOR IS JUST THE START:OTOSCOPIC-RADIOLOGIC CORRELATION OF RETROTYMPANIC LESIONS

Mario Prenafeta Moreno, Juan Carlos Tortajada, Antonio Carvajal, Martin Zauner, Sandra Perez, Anton Aguila, Antoni Rovira

UDIAT-CD. Barcelona, Spain

Introduction/Objectives

The main objective of this communication is to establish a correlation between the clinical and radiological findings for different diseases of the middle ear in which the tympanic membrane remains intact, especially for retrotympanic lesions that are associated with abnormal coloring of the eardrum on otoscopy.

Materials and Methods

We review the neuroradiological CT and MRI studies of the temporal bone done for clinical and otoscopic suspicion of retrotympanic lesions and/or masses in the period from 2007 to 2012.

Results

Retrotympanic lesions are usually discovered during otoscopic examination for hearing loss, otalgia, or tinnitus. Most of these lesions are associated with abnormal whitish, reddish, or bluish coloring of the eardrum, and the coloring helps limit the differential diagnosis. A whitish eardrum usually suggests congenital cholesteatoma; other diagnoses like primary tumors of the middle ear are less common. In cases with a reddish eardrum the paragangliomas are most likely, though vascular malformations are also possible. A bluish eardrum suggests different diagnoses like a dehiscent jugular bulb, a cholesterol granuloma, or meningoencephalocele. High resolution CT and MRI of the temporal bone are mandatory when a retrotympanic mass is seen at otoscopy. CT and MRI are complementary: which technique is most useful depends on the disease suspected in the clinical evaluation. In this communication, we illustrate the imaging findings in the different lesions of the middle ear and establish a diagnostic algorithm for the management of retrotympanic masses based on the otologic presentation, the otoscopic images, and the radiological studies.

Conclusions

Analyzing the clinical and otoscopic findings, especially the color of the eardrum, together with the radiological findings is fundamental in the diagnosis of retrotympanic lesions of the middle ear.

C0123
CALCIFIED SINONASAL LESIONS IN COMPUTED TOMOGRAPHY: KEY FINDINGS IN DIFFERENTIAL DIAGNOSIS

Elena García Garrigós, Juan Jose Arenas Jimenez, Irene Monjas Canovas, Javier De La Hoz Rosa, Maria Dolores Guirau Rubio, Yanne Aviles Vistorte, Paloma Tallon Guerola

HGUA Sección TC. Alicante

Introduction/Objectives

Calcified sinonasal lesion is not an uncommon CT finding seen in a wide variety of pathologies including neoplasms and inflammatory processes, and arising primarily within sinonasal cavities, from sinonasal cavities bony walls or having an extrasinonasal origin.

The aim of this study is to analyze paathologies showing sinonasal calcifications making emphasis on diagnostic keys to differentiate them in order to determine the optimal treatment.

Materials and Methods

CT images of patients with calcified sinonasal lesions seen in our hospital during the past 15 years were reviewed.

We evaluated lesions according to their origin and CT features such as location, number, shape and margin of calcifications and correlated with patient history, epidemiology and etiology.

Results

According to their origin calcified sinonasal lesions were divided in:

1.- Calcifications located within sinonasal seen in chronic inflammatory pathology (fungal or nonfungal rhinosinusitis, polyps), inverted papilloma, rhinolith or neoplasms (adenocarcinoma, esthesioneuroblastoma).

2.- Most common calcified sinonasal lesions arising from sinonasal bony walls were fibro-osseus lesions (osteoma, ossifying fibroma, fibrous dysplasia).

3.- Extrasinonasal pathologies which can produce sinonasal calcifications include dentigerous cyst, non emerged tooth, pituitary macroadenoma or skull base meningiomas.

Characteristics of the calcifications can help to make the differential diagnosis.

Most common cause of solitary intrasinonasal calcifications was inflammatory. Fungal calcifications were usually centrally located and fine punctate while on nonfungal sinusitis were found at the periphery with round-shape. Multiple and discrete calcifications were present in both.

Diffuse involvement of sinonasal cavities with well-defined margin most probably were benign fibro-ossseus lesions while with an ill-defined margin were malignancies.

Conclusions

Knowledge of the origin and appearance of calcifications in sinonasal region increases the degree of confidence of a radiological report by narrowing the differential diagnosis and even leading to a final confident diagnosis.

C0132
DOPPLER COLOR ULTRASOUND AND COMPUTED TOMOGRAPHY ANGIOGRAPHY OF SUPPRAORTIC TRUNKS IN THE EVALUATION OF CAROTID ARTERY STENOSIS

Luis Martín Casado Moragon[1], Mª Dolores Casado Mansilla[2], Francisco Mansilla Legorburo[1], Mª Dolores Mansilla Legorburo[3], Tomás Cros Ruiz de Galarreta[1]

[1]Hospital G. Universitario Albacete, Radiodiagnóstico. Albacete, Spain
[2] Hospital Morales Meseguer, Medicina Intensiva. Murcia , Spain
[3] Mansilla Diagnóstico por imagen, Radiodiagnóstico, Albacete, Spain

Introduction/Objectives

To show through Doppler Color Ultrasound images and the study of Computed tomography angiography (CTA) with 2D and 3D reconstructions and vascular analysis the contribution of those image techniques to the management of the patients with sings of cerebrovascular accident (CVA) and suspected hemodynamically significant carotid artery stenosis.

Materials and Methods

We revise 30 studies of Doppler Color Ultrasound that we complete with Computed tomography angiography (CTA) to confirm significant

stenosis, occlusion or pseudo vascular occlusion. With Doppler Color Ultrasound we evaluate the CIMT (carotid intima-media thickness), the existence and location of atheromatous plaques and their characteristics, spectral analysis in arterial carotid and vertebral tree. The CTA study was done with multiple slice CT scanning from the a ortic arch until the circle of Willis. The measurement was done following the NASCET and ECST methods.

Results

30 patients were evaluated, 24 men and 6 women aged between 52 and 88, being 69 on average. 20 cases of significant stenosis with Doppler Color Ultrasound which were confirmed with a Computed Tomography Angiography (CTA) study. In 6 of the cases the CTA study confirmed the suspected date of vascular occlusion and in four of the cases subclavian steal syndrome data were obtained. The existence of calcified atheromatous plaques was confirmed in all the cases.

Conclusions

With patients with signs of ictus and possible carotid artery stenosis, the Doppler Color Ultrasound is the initial technique; the Digital subtraction angiography (DSA) was de gold standard technique, however, nowadays the Computed Tomography Angiography (CTA) shows a high temporal and spatial resolution being a minimally invasive surgery, fast to accomplish. Therefore, it constitutes an elective surgery to complete the hemodynamically significant carotid artery stenosis, differentiate the occlusion or pseudo vascular occlusion cases and those of non-conclusive ultrasound scan.

C0135
PERFUSION AND DYNAMIC CONTRAST-ENHANCED MAGNETIC RESONANCE IMAGING IN ACUTE TUMEFACTIVE DEMYELINATING LESIONS

Paula Alcaide León, Sofia Cavalletto, Cristina Auger Acosta, Jaume Sastre-Garriga, Elena Huerga, Xavier Montalban, Álex Rovira

Hospital General Vall d'Hebron-, Unidad de RM (ID). Barcelona , Spain

Introduction/Objectives

Acute tumefactive demyelinating lesions (TDLs) may present as single or multiple lesions that may mimic high grade gliomas (HGG). Although the presence of some imaging findings may suggest, the diagnosis of TDLs, not infrequently, a biopsy is needed. However, even the biopsy specimen may resemble a brain tumor.

Although multiple functional imaging methods may provide useful information for the characterization of brain mass lesions, none of them has been validated for routine clinical use. The purpose of this study is to compare differences in perfusion and vascular permeability between TDLs and HGG.

Materials and Methods

We retrospectively reviewed 4 patients with acute TDLs and 5 patients with biopsy proven HGG in whom perfusion studies with arterial spin labelling (ASL), dynamic contrast-enhanced T2*-weighted MR Imaging (DSC-MRI) and dynamic contrast enhanced T1 MR imaging (DCE-MRI) sequences were obtained on a 3 T magnet. From these sequences, the relative cerebral blood flow (rCBF), relative cerebral blood volume (rCBV) and initial slope of the contrast enhancement curve (IS) were calculated from the contrast-enhancing areas of lesions, using the contralateral normal appearing white matter as a reference.

Results

A non-parametric test (Mann-Whitney) showed significant differences in all three measures between the two groups, being the mean rCBF, rCBV and IS lower in TDLs compared to HGG (rCBF 0.32; rCBV 0.83; IS 1.05 in TDLs vs. rCBF 9.08; rCBV 6.25; IS 7.33 in HGG) ($p<0.001$)

Conclusions

Perfusion and DCE-MR imaging can be used to discriminate between active TDLs from HGG based on the important biological dissimilarities between these two entities, with HGG characterized by presence of neoangiogenesis and vascular endothelial proliferation and TDLs characterized by intrinsically normal or inflamed vessels with mild inflammatory angiogenesis.

C0136
OSSIFICATION OF VASCULAR PEDICLE IN FIBULA FREE FLAP AS A RADIOLOGICAL FINDING IN MANDIBULAR RECONSTRUCTION

Jonathan Rodrigo Apolinar, Luis Alfonso Díaz Galvis, Pedro Martínez Seijas, Edurne Pardo Zudaire, Alex Lüttich Uroz, Jose Ángel Larrea Peña

Hospital Donostia. Guipuzcoa.

Introduction/Objectives

Free vascularized bone flaps has been used for bone reconstruction since the 1980's and particularly the free fibula flaps has gained maximun popularity in mandibular reconstruction in recent years. One of the late complications that could take place after surgery is the abnormal ossificaction along the vascular pedicle. Our goals are:

1.-Raising awareness of this rare complication often misdiagnosed and so,

2.-To provide information to surgeons to avoid further unnecessary procedures

Materials and Methods

We present six cases with a Radio-pathological correlation in mandibular reconstruction with fibula free flaps. On harvesting the fibular flaps, we have employed Dr. Urken and Dr. Wolf technique.

Results

On harvesting a fibular flap with the technique described above, the proximal osteotomy is performed a few centimetres from the knee joint. The excess of bone is removed using subperiostal dissection, preserving the integrity of the vessels which run along the lenght of the bone. Consequently, a vascular pedicle is obtained surrounded by a muscle layer on a strip of periostium. The periostium preserves osteogenic capability after transposition, which is ideal in order to restore major bone defects. This characteristic allows the possibility of new bone formation along the pedicle.

Conclusions

Free fibula flaps has gained popularity in the last years and the ossification of its free pedicle is quite uncommon and has been reported very few times in medical literature. It is important for radiologists to know this late complication in order to let the surgeons know about it and so to avoid unnecesaries biopsies and mutilating surgeries suspecting a relapse.

C0141
USE OF ECHO-PLANAR DIFFUSION-WEIGHTED MRI COMPARED TO HIGH-RESOLUTION CT IN THE STUDY OF PEDIATRIC CHOLESTEATOMA

Juan Salazar Gutierrez, **Angel Sánchez-Montañez**, Ignacio Delgado Alvarez, Félix Pumarola, Marc pellicer, Elida Vazquez

Hospital Vall D'Hebron, Barcelona, Spain

Introduction/Objectives

Cholesteatoma is a locally destructive lesion that mainly affects the middle ear. It is more aggressive in children, having worse prognosis and high recurrence rate. The diagnosis is clinical and otoscopic. Imaging

techniques have an important role in the longitudinal evaluation. Bone filter high-resolution CT is an optimal technique for the study of cholesteatoma, however it implies high radiation doses. Recently, difussion-weighted MRI (DWI) sequence have shown utility in their evaluation.
The purpose of this study is to evaluate the use of DWI in the diagnosis of pediatric cholesteatoma, comparing its results with high-resolution CT.
Materials and Methods
A retrospective review of pediatric cases studied with DWI (1.5 and 3T) for cholesteatoma evaluation or recurrence, from January 2011 to June 2012 in the Vall D´ Hebron University Hospital, Barcelona, has been done.
Results
22 cases were identified in 21 patients between 4 and 18 years. DWI depicted a positive result for cholesteatoma in 12 of these cases, while 10 were negative. Out of these 12 children with cholesteatoma by DWI, 6 were positive according to the pathology report. The other 6 patients are awaiting surgery after discussing at the ENT committee.
14 cases had been evaluated with both high-resolution CT and DWI. Out of th 7 patients considered as having cholesteatoma according to DWI, in 3 (42,9 %) were concordant with CT while in the other 4 CT had been negative. Also, out of the 7 cases considered as negative for cholesteatoma, 4 (57.1 %) were concordant with the CT.
Conclusions
DWI is very useful for cholesteatoma evaluation in pediatric population. Nowadays high-resolution CT is considered the first imaging procedure in cholesteatoma evaluation. DWI-MRI is ordered as a complementary tool. However, as we have demonstrated in this review, it could be used for the initial diagnosis and follow-up of cholesteatoma, reducing radiation exposure.

C0155
LIMBIC ENCEPHALITIS: PARANEOPLASIC SYNDROMES, AUTOINMUNE DISEASES AND INFECTIONS

Diana Plata Ariza[1], Amaya Hilario Barrio[2], Elena Salvador Álvarez[1], Beatriz Muñoz Fraile[1], Laura Koren Fernández[1], Ana Ramos González[1]

[1] Hospital Universitario 12 de Octubre, Departamento de Radiología. Madrid, Spain
[2] Hospital Doce de Octubre, Departamento de Radiología. Sección Neurorradiología. Madrid, Spain

Introduction/Objectives
1. To classify limbic encephalitis according to etiology and pathophysiology.
2. To describe the MRI findings of the different subtypes of limbic encephalits.
3. To review the differential diagnosis with other causes of temporal lobe involvement (tumor, trauma …)
Materials and Methods
In this poster we review the MRI findings of limbic encephalitis and illustrate other possible causes of temporal lobe involvement.
Results
Limbic encephalitis is an uncommon entity with a subacute clinical presentation characterized by impaired short-term memory, confusion, seizures and psychiatric disorders. The most common causes are infectious and autoimmune diseases. In infectious limbic encephalitis, the herpes simplex virus type I (HSV-1) is the most commonly implicated agent. In limbic encephalitis with autoimmune origin, the immune system creates antibodies against neuronal antigens located in the central nervous system. This encephalitis can be classified in turn as paraneoplasic and non-paraneoplasic. Antibodies in paraneoplasic encephalitis are developed predominantly against intracellular antigens (anti-Hu, anti-Ma2, anti-CV2/CRMP-5), but not exclusively. Tumors most commonly associated with temporal lobe involvement are those of lung, breast and testicular origin, non-Hodgkin lymphoma, teratoma and thymoma. In the case of autoimmune encephalitis of non-paraneoplasic source, the antibodies are mainly produced against the cell membrane antigens, including some involved in paraneoplasic encephalitis such as NMDA receptors, AMPA receptors, $GABA_B$ receptors, anti-GAD and the classic voltage-gated potassium channels (VGKC), which are currently under investigation and known as the VGKC-complex antigens (LGI1, CASPR2 and contactin-2).
Conclusions
Advances in clinical knowledge, pathophysiology and immunology of limbic encephalitis have allowed a better characterization of the disease with a higher chance of treatment. To be familiar with imaging findings is of great importance in the timely diagnosis, appropriate treatment and patient's clinical course.

C0156
ROLE OF CT PERFUSION (CTP) IN THE DETECTION AND CHARACTERIZATION OF PERFUSION CHANGES IN STROKE MIMICS

Oscar Sabino Chirife Chaparro, Nicolae Sarbu, Federico Zarco Contreras, Antonio López Rueda, Daniel Campodonico, Sebastián Capurro Ferrer, Luis San Román Manzanera, Jordi Blasco Andaluz, Juan Miguel Macho Fernández, Laura Oleaga Zufiria

Hospital Clinic de Barcelona, Radiodiagnostico. Barcelona, Spain

Introduction/Objectives
Several conditions can present with focal neurologic deficits, mimicking a stroke. The differentiation between stroke and other conditions can be a clinically arduous task and can often represent a diagnostic challenge when presenting atypically. Cerebral CT perfusion (CTP) can be used as the first line in acute stroke imaging to measure cerebral blood flow dynamics in ischemic strokes. CTP could also be seen altered in stroke mimics such as seizures, hypoglycemia, tumors, migraines and posterior reversible encephalopathy syndrome. We analyzed the utility of CTP in the diagnosis of stroke mimics and describe the most common patterns seen in the perfusion parametric maps.
Materials and Methods
We reviewed the patients who came to the emergency department of our hospital with a diagnosis of acute stroke in the period from January to May 2012 and described the percentage of patients with stroke mimics and CTP and patterns that were observed in the perfusion parametric maps.
Results
In 23/143 cases (16 %) the diagnosis of stroke was ruled out by performing CTP. There was no predominant pattern of perfusion parametric maps. Seizures was the most frequent alternative diagnosis. In stroke mimics the mean transit time (MTT) and time to drain (TTD) maps are more sensible that time to peak (TTP) map in order to detect and characterize perfusion changes.
Conclusions
CTP could play a transcendental role in the diagnosis and initiation of appropriate management in patients with stroke and stroke mimics. MTT and TTD maps are more sensitive than TTP map in order to diagnose perfusion changes.

C0159
DIFFERENTS MANIFESTATIONS OF IDIOPATHIC ORBITAL PSEUDOTUMOR:FROM TOLOSA HUNT TO TROCHLEITIS

Rosa Maria Ruiz Peralbo, Beatriz Brea Alvarez, Mojdeh Moeinvaziri, Marta Alfajeme Zubillaga, Mercedes Tuñon Gomez

Hospital Universitario Puerta de Hierro de Majadahonda, Radiodiagnostico. Madrid, Spain

Introduction/Objectives
Orbital Pseudotumor is an idiopathic condition of the orbit. It is the most common painful orbital inflammatory disease in the adult population that it is diagnossed by its characteristic response to steroids, and by clinical- radiological manifestations. However, sometimes you can find atypical clinical and radiological forms and you must know to achieve a proper diagnostica and stablish a good treatment.
Materials and Methods
We analized cases of adult patients with clinical and radiological " atypical" behavior of orbital pseudotumor which were performed CT and MR. Data obtained were compared with others publications.
Results
The most frequent radiological manifestation of idiopathic orbital pseudotumor refers to diffuse enhancing soft tissue involving the fat of the orbit. Clinical presentation includes acute proptosis and painful ophthalmoplegia (Tolosa- Hunt Syndrome).
However there are uncommon differents radiological and clinical presentations. We have found one patient with radiological isolated involvement of a single muscle (myositis) and two more patients with affected pulley for the superior oblique muscle (trochleitis). Although the most patients have orbital swelling painful and diplopia, our patients had diplopia without pain, fluctuating aching over the trochlear region and pain with eye movement (trochlear headache).
Furthermore although all of them share the response to steroids in trochleitis local injection of steroids in peritrochlear region was the treatment instead of systemic administration of the other cases.
Conclusions
Idiopathic orbital pseudotumor can have several manifestations. Radiologists should consider this broad spectrum of radiological expressions with different clinical manifestations and therapeutics approuches.
Both CT and MR provide valuable information for orbital differential diagnosis.

C0163
FUNCTIONAL MR IMAGING OF SALIVARY GLAND TUMORS: ROLE OF MR DIFFUSION(DWI)AND T1-WEIGHTED MR PERFUSION

Elena Salvador Alvarez, Amaya Hilario Barrio, Jose María Millán Juncos, Diana Plata, Gregorio Sanchez, Ana Ramos

Hospital Doce de Octubre, Departamento de Radiología. Sección Neurorradiología. Madrid, Spain

Introduction/Objectives
Prediction of malignancy in salivary gland tumors is very important, because this information strongly influences the surgical plan. We evaluate the preoperative apparent diffusion coefficient (ADC) maps obtained in diffusion sequence and curves obtained in T1-weighted perfusion of salivary gland tumors and correlate the MR imaging and histopathologic findings.
Materials and Methods
Functional MR imaging was performed on 13 patients with different types of salivary gland tumors; ADC maps and T1-weighted perfusion curves of the tumors were obtained and analyzed. Time of peak enhancement (Tpeak) and washout ratio (WR) were determined from time-signal intensity curves (TICs) and cellularity-stromal grade were evaluated with ADC maps. We have compared the results with histologic features of the excised tumors.
Results
DWI and T1-weighted perfusion have the potential to differentiate among various types of primary gland tumors, not only within the group of benign and malignant lesions, but also between different types of malignant and benign lesions. Cellularity of tumors affects ADC levels so that tumors like lymphoma with high cellularity and malignant lesions present low ADC levels, however, Warthin tumors exhibit areas with extremely low ADCs even lower than those of malignant tumors. T1-weighted perfusion sequence lead four TIC types that are classified on the basis of a Tpeak of 120 seconds and a WR of 30 %, they are useful in predicting whether salivary gland tumors are benign or malignant, however Whartin tumors and lymphoma show the same type of curve (type 4) with short Tpeak and high WR for Warthin tumors. In curves type 2 with long Tpeak and low WR, which are typical of pleomorphic adenomas, can also be observed in some malignant tumors.
Conclusions
Studies combining functional MR DWI and T1-weighted perfusion provide preoperative tissue characterization of the salivary gland tumors with a good histological prediction.

C0164
IMAGING DINFINGS OF BILATERAL LESIONS OF THE BASAL GANGLIA AND THALAMUS

Diana García Casado[1], Esther Gálvez González[2], Juan Carlos Paniagua Escudero[2], Aurora Garrote Pascual[2], Andrés Framiñán de Miguel[2], Christian Bermúdez López[2]

[1] Hospital Universitario de Salamanca. Salamanca, Spain
[2] Complejo Asistencial de Salamanca. Salamanca, Spain

Introduction/Objectives
Basal ganglia and thalamus lesions are a common finding in CT and MR images. Whether these findings must be taken into account depends on the clinical history of the patient. Knowledge of the pathologies that may bilaterally affect them is mandatory to provide an appropriate diagnosis and follow-up.
Materials and Methods
We collected 17 cases of bilateral basal ganglia and thalamus damage that were diagnosed in our Radiology Service between 2009 and 2012. MDCT and MR images were analyzed in order to describe the main findings, which were correlated with clinical history of the patients. By reviewing the current literature, we tried to focus on a simplified approach for the diagnosis of these lesions.
Results
Either vascular and metabolic/toxic causes were the most frequent ones, with 5 cases (29,4 %) of each found in our study. Bilateral basal ganglia calcifications were found in 4 cases (23,5 %), which were incidentally found and considered to be physiologic and with no clinical importance. Tumor lesions, genetic and infectious diseases were found in the 17,6 % of the patients. These disorders manifested as either focal hypodensities or hyperdensities on CT images. Those who underwent MR examination mainly showed bilateral basal ganglia hyperintensities on T2 weighted images. Diffusion-weighted images and use of intravenous gadolinium were useful techniques. However, correlation with clinical history was the best parameter to provide a correct diagnosis.
Conclusions
Bilateral involvement of basal ganglia and thalamus is a possible finding on CT and MR images. Knowledge the spectrum of findings and correlating them with the clinical background and laboratory tests is important to focus on a correct management and follow up of these patients.

C0166
INTRADURAL METASTATIC INFILTRATION OF THE SPINAL CORD: MRI FINDINGS AND LITERATURE REVIEW

Arlene Pérez Durán, Maria Eugenia Banegas Illescas, Librada Rozas Rodriguez, Carlos López Menéndez, Manuel Calvo García, Rosa Quintana De la Cruz, Rosa Maria Fernandez Quintero, Luis Caminero Pardo, Vanessa Ortiz Goic, Mercedes Camarero Camacho

Hospital General Universitario de Ciudad Real, Servicio de Radiodiagnóstico. Ciudad Real, Spain

Introduction/Objectives
The purpose of this study is to describe the MRI findings and enhancing patterns of intradural metastatic infiltration secondary to non-neurogenic primary tumors and present our casuistry and review of the literature.
Materials and Methods
We performed a retrospective analysis of all patients with tumor affectation of the spinal cord from 2006 to 2011, 7 of which had metastatic involvement, and evaluated the MRI findings.
Results
The secondary metastatic affection of the spinal cord is an uncommon complication, unlike other locations of the central nervous system, in which the intradural invasion is very rare, appearing only in 0.9-2.1 % of patients with cancer. In our series, breast carcinoma was the most frequent primary tumor (57.14 %), followed by the broncogenic carcinoma (42.86 %). Of the 7 cases reported, 85.71 % presented intradural extramedullary spinal metastases and 14.29 % intramedullary. The lesions more often involved the dorso-lumbar level. In all cases, MRI images demostrated abnormal enhancing lesions with nodular appearance.
Conclusions
The intradural tumor dissemination is a rare entity with different semiology and variable imaging appearance, so it is important to recognize their radiological manifestation in order to make a correct diagnosis and proper management.

C0167
DIAGNOSTIC ACCURACY OF DUAL-CT AFTER ENDOVASCULAR TREATMENT IN ACUTE ISCHEMIC STROKE TO DIFFERENTIATE INTRACEREBRAL HEMORRHAGE FROM IODINATED CONTRAST

Camilo Pineda[1], Federico Zarco[2], Arturo Renú[1], Antonio López Rueda[1], Sergio Amaro[1], Sebastián Capurro Ferrer[1], Jordi Blasco Andaluz[1], Luis San Román[1], Juan Miguel Macho Fernández[1], Laura Oleaga Zufiria[1]

[1] Hospital Clínic de Barcelona. Barcelona, Spain
[2] Hospital Universitari Sagrat Cor. Barcelona, Spain

Introduction/Objectives
To evaluate the sensitivity and specificity of Dual-CT to detect and differentiate between blood and contrast extravasation in patients with acute ischemic stroke after endovascular treatment.
Materials and Methods
Retrospective analysis of Dual-CT Studies performed in a group of 53 patients with MCA and/or ICA stroke after endovascular treatment. All patients underwent a Dual-CT study 24 hours after endovascular treatment to rule out bleeding for treatment decision (antiplatelet therapy, thrombolytic therapy with heparin or a combination of both). A second generation Dual-CT scanner (Siemens) was userd for imaging at 100 kVp and 140 kVp. Virtual unenhanced images and iodine overlay images were obtained by a three-material decomposition algorithm. Follow-up MRI or CT images were used as the standard of reference.
Results
Dual-CT results are compared with follow-up imatges (MRi, Dual-CT, NECT) 2-3 days before the endovascular treatment in order to determine the difference between blood and contrast extravasation. Dual-CT sensibility in diagnosing blood existence in relation to follow-up studies: 22/29 (76 %). Dual-CT specificity in diagnosing blood absence in relation to follow-up studies: 24/24 (100 %). Dual-CT accuracy after endovascular treatment in relation to follow-up studies: 46/53 (87 %).
Conclusions
Dual-energy CT can differentiate intracranial hemorrhage from iodinated contrast material with high sensitivity and specificity in patients with acute ischemic stroke after the thrombolytic therapy. It is a useful tool to decide subsequent treatment in this group of patients, depending on the existence or absence of blood.

C0169
CEREBRAL HYPERPERFUSION PHENOMENA IN ACUTE ISCHEMIC STROKE

Sebastián Capurro Ferrer, Clara Ruiz, Juan Mejía, Jose Guitart, **Antonio López Rueda**, Luis San Román, Laura Oleaga Zufiria

Hospital Clinic Barcelona, Radiodiagnostico. Barcelona, Spain

Introduction/Objectives
Identification and characterization of the hyperperfusion phenomena in different clinical settings in patients with acute ischemic stroke.
Materials and Methods
Were retrospectively reviewed patients with acute ischemic stroke assessed in the last three years with multimodal CT performed prior to endovascular treatment . Patients with less than six hours from symptom onset were included in order to decide endovascular treatment. In CT-PW we performed the cerebral blood volume maps (CBV), cerebral blood flow maps (CBF) and time to peak maps (TTP). The angiographic study includes intra and extracranial angiography from the aortic arch. Some patients were controled 72 hours after the treatment.
Results
The hyperperfusion phenomena have different meaning and value depending on the clinical scenario in which we are. On one hand it represents a compensatory mechanism to vascular occlusion , either via the circle of Willis or leptomeningeal connections, that means in most cases greater viability of the tissue at risk. On the other hand it can represents the luxury reperfusion phenomena after treatment, that means non-viable tissue despite vascular recanalization.
Conclusions
Knowledge and identification of this phenomena is important because the meaning of the increment of perfusion can be transcendent in the management and good outcome of the patients.

C0173
ANALYSIS OF THE VASODILATOR RESPONSE TO PAPAVERINE IN ENDOVASCULAR TREATMENT OF ANEURYSMS IN PATIENTS WITH SAH AS A PREDICTOR OF DELAYED CEREBRAL ISCHEMIA

Federico Zarco[1], Antonio López Rueda[2], Daniel Campodonico[2], Luis San Román[2], Jordi Blasco Andaluz[2], Isabel Gracia[2], Enrique Carrero[2], Javier Tercero[2], Ricard Valero[2], Juan Miguel Macho Fernández[2]

[1] Hospital Universitari Sagrat Cor. Barcelona, Spain
[2]Hospital Clínic de Barcelona. Barcelona, Spain

Introduction/Objectives
Vasospasm is manifested clinically by a decline in neurologic status including the onset of focal neurologic abnormalities. It is the leading cause of death and disability after subarachnoid hemorrhage(SAH).

Materials and Methods
Retrospective analysis was performed on SAH patients due to aneurysm rupture which underwent endovascular treatment at our hospital from Jan 2010 to Aug 2011. We analyzed the cerebral transit time (CTT) in the initial and final angiographies using Siemens's IFLOW after continuos flushing of papaverine. We follow-up the patients looking for symptomatic vasospasm (SV) and we examined the subsequent imaging studies looking for suggest neurological complications of delayed cerebral ischemia (DCI).
Results
We observed three groups of patients, according to the CTT on the initial angiographic serie and according to the vascular response after endovascular treatment with papaverine flushing. A group of ten patients with normal CTT in initial angiographic series didn't present symptomatic vasospasm or DCI.
Another group of twelve patients had decreased CCT in the initial angiography and adequate vasodilator response after infusion of papaverine, this group showed better clinical prognosis, only two patients had SV or DCI at follow-up imaging. Finally, two patients showed decrease in CBF, poor vasodilator response to papaverine infusion and presented SV and/or DCI.
Conclusions
Patients showing poor vasodilator response after endovascular procedure are more likely to develop DCI or SV compared with those who had adequate vasodilatation response. Studies should be conducted with a larger sample try to understand the precise mechanism that produces a different vascular response in patients with SAH to determine which patients should have a more aggressive attitude to prevent DCI or SV.

C0174
INTELLIGENT SYSTEM FOR EARLY DETECTION OF ALZHEIMER'S DISEASE USING NEUROIMAGE

Domingo López Rodríguez, Ricardo de Abajo Llamero, Antonio García Linares

Brain Dynamics, Neuroscience Knowledge Manager. Malaga, Spain

Introduction/Objectives
The diagnosis of Alzheimer's disease (AD) due to its evolution, occurs when neurological damage is present and is irreversible. The goal is to develop and implement an automated system for early detection of AD, by processing neuroimaging, and construction of automated and objective tools based in Artificial Intelligence and Data Mining.
Materials and Methods
2100 magnetic resonance images were used, of which 1097 were men and 1003 women. 1187 of the subjects were healthy, 782 had mild cognitive impairment, and 131 AD in other states. Morphometric processing of these images was carried out using standard methodologies and packages such as SPM or FSL, besides our own developments. The results of this processing fed Computational Intelligence systems such as decision trees, support vector machines and genetic algorithms, apart from artificial neural networks, to develop a system to classify the state of the EA by neuroimaging.
Results
Computational Intelligence system was validated using the technique of 10-fold cross validation. After analyzing the results, the correct classification rate was 91.48 % of the cases with a sensitivity of 90.8 % and a specificity of 92.3 %. It is therefore a system with a very low error rate (less than 9 %), achieving high specificity and sensitivity, being able to clearly distinguish normal subjects of the pathological ones.
Conclusions
We have developed a computer system that is able to classify, based on structural neuroimaging studies, and with great accuracy, if the subject is in a normal state or have any chance of developing AD. It_a tool with great potential for application in early diagnosis of AD.

C0177
ANALYSIS OF THE REMODELING TECHNIQUE IN AN UNSELECTED SERIES OF RUPTURED INTRACRANIAL ANEURYSMS

Edison Santos Morales Deza[1], Eduardo Murias Quintana[1], PEDRO VEGA VALDÉS[1], Alberto Gil Garcia[2], Ángela Meilán Martínez[1], ANTONIO SAIZ AYALA[1]

[1] Hospital Universitario Central de Asturias. Asturias, Spain
[2] Neuroradiología Intervencionista. Hospital Clínico de Madrid. Madrid, Spain

Introduction/Objectives
Aneurysmal subarachnoid hemorrhage is a significant cause of morbidity and mortality throughout the World. The 2012 Guidelines for the management of this pathology, recognize the endovascular treatment as the first line treatment when is amenable technically. The balloon remodeling technique was initially described in 1994 and is now used in many hospitals but the efficacy and safety are controversial. The purpose of this study is to compare these two aspects of remodeling technique with conventional coil embolization.
Materials and Methods
We reviewed retrospectively 251 cases of patients with ruptured intracranial aneurysms which were treated with either the remodeling technique (57 %) or conventional coil embolization (43 %) in a period of time from 2005 to 2009 at the " Hospital Universitario Central de Asturias" . Then was performed a statistical analysis and comparison between the groups.
Results
The mean age of the population was 57.8 years. 90 % of aneurysms were located in the anterior cerebral circulation. The only one difference between the groups was the aneurysm dome-to-neck ratio ($P=0.040$). The difference in the rates of treatment-related complications (technical/clinical thromboembolic events, intraoperative rupture, and rebleeding), the global recanalization rate of aneurysms and the clinical outcome (measured by the modified Rankin Scale) between the treatment groups was not statistically significant ($P>0.05$, $P=0.839$ and $P=0.273$ respectively). The degree of aneurysm occlusion was significantly higher in the remodeling group ($P=0.012$).
Conclusions
In our case series the balloon remodeling was used in a higher proportion than other published series, and allowed to generalize the endovascular treatment to almost any aneurysm, obtaining a higher degree of packing than conventional coil embolization with a similar safety. These findings agree with the published scientific literature and suggest that the remodeling technique can be routinely used in the treatment of ruptured aneurysms.
Acknowledge, conflicts of interest
Thanks to Edu Murias, great master and friend.

C0191
NEUROLOGIC COMPLICATIONS AFTER HEMATOPOIETIC STEM CELL TRANSPLANTATION: ROLE OF DIAGNOSTIC NEUROIMAGING

Ana Filipa Geraldo da Silva Couceiro, Ana Alho, Joana Tavares, Sofia Ferrito, J. Alves do Carmo, Jorge Guedes Campos

CHLN-HSM, Hematology and Bone Marrow transplantation department. ESTREMADURA, PORTUGAL

Introduction/Objectives
With the increasein the use of hematopoietic stem cell transplantation (HSCT), diagnostic imaging of HSCT-related neurological complications assumes special significance and requires high level of knowledge for radiologists. The aim of this study was to describe incidence, characteristics and causes of post-HSCT neurological complications in a single unit during a 3-year-period.
Materials and Methods
Retrospective analysis of all the post-transplantation brain/head and neck studies of consecutive patients admitted to the CHLN?HSM and given HSCT (109 allogenic and 135 autologous) between June 2009 and July 2012.
Results
During the 3-year study period, 244 HSCT were given (109 allogenic and 135 autologous) to 229 patients. Within a median follow-up of 427 days, brain imaging was performed in a total of 41 patients (17,9 % of cases). CT and/or MRI showed acute abnormalities in 11 patients (4,8 %): n=5 with acute leukemia, n=2 with aplastic anemia, n=2 with multiple myeloma and n=2 with chronic myeloid leukemia. Complications were more common in post allogenic HSCT patients (10/11). The most frequent imaging findings were related to neurotoxicity (PRES, n=2; acute toxic leucoencephalopaty, n=2) and intracranial hemorrhage (n=3). Four of the 11 patients with neuroradiologic abnormalities had additionally systemic host-versus-graft disease and six of them (54,5 %) have died.
Conclusions
In our series the risk of neurologic complications was lower than in the majority of previous reports but the data confirm an association with high number of fatal events. Drug-related complications assume a higher prevalence and neuroradiologists should be confident with the different patterns of toxic encephalopathy.
Acknowledge, conflicts of interest
Rita Sousa, Lia Neto, Sofia Reimão, Carlos Morgado, Carolina Santos e Graça Sá

C0199
EFFECTS OF CYP2C19 POLYMORPHISM ON CLOPIDOGREL TREATMENT IN PATIENTS WITH CAROTID STENOSIS TREATED WITH STENT

Alejandro González García[1], Jose Raul García Lozano[2], Fuensanta Torrecillas[2], Francisco Moniche[1], Isabel Gutierrez1, Antonio Mayol[1], Jose Ramón González-Marcos[1]

[1] Hospital Universitario Virgen del Rocío, Neurorradiologia Intervencionista. Servicio Radiología.Sevilla, Spain
[2] Hospital U Virgen del Rocío, Sevicio Inmunología. Sevilla, Spain

Introduction/Objectives
Clopidogrel is a prodrug that requires conversion into an active metabolite via cytochrome P450 (CYP) in the liver, in order to irreversibly inhibit the P2Y12 adenosine diphosphate platelet receptor. CYP2C19 polymorphism has been reported to correlate with reduced antiplatelet activity of clopidogrel in coronary artery disease. We assessed the association between CYP2C19 polymorphism and clopidogrel resistance in patients with carotid stenosis treated with stent
Materials and Methods
Patients were identified with the VerifyNow P2Y12 assay (Accumetrics, San Diego, CA) with P2Y12 reactivity unit (PRU) values. Genomic DNA was extracted from blood leukocytes using QIAmp DNA Mini Kit (Qiagen, Barcelona, Spain). Genotyping was performed using TaqMan® SNP Genotyping Assays (Applied Biosystems, Barcelona, Spain) in a LightCycler 480 (Roche, Barcelona, Spain). Patients were genotyped for three single-nucleotide polymorphisms (*2, *3, *17) that define the major CYP2C19 alleles. Patients were classified into categories of metaboliser phenotypes with the use of established common-consensus star allele nomenclature (?ultrarapid metabolisers?, ?extensive metabolisers?, ?intermediate metabolisers? and ?poor metabolisers?). Patients who were carriers of a single *17 allele and *17 homozygotes were classified as ?ultrarapid metabolisers?, those without a *2, *3, or *17 allele were classified as ?extensive metabolisers?, those with one *2 or *3 allele and one *17 allele and one loss-of-function allele were classified as ?intermediate metabolisers?, and those with two *2 or *3 alleles were classified as ?poor metabolisers.
Results
Based on their genetic makeup, 141 patients were enrolled (mean age;69,1, 79.9 % men, 31.8 asymtomatic). 29.8 % of patients were considered ultrarapid, 44.7 % extensive and 25.5 % were intermediate or poor metabolisers. The PRU values of ultrarapid metabolisers (208±63) were lower than those of extensive (PRU 220±85) and intermediate and poor metabolisers (PRU 251±87) (p=.05).
Conclusions
Intermediate and poor metabolisers CYP2C19 is associated with reduced clopidogrel antiplatelet activity in patients with carotid stenosis. The clinical implications of this finding require further investigation.

C0200
MORPHOMETRIC STUDY AND ANATOMY OF THE TEMPORAL BONE WITH CT

Ignacio Martín García[1], **Aurora Garrote Pascual[2]**, Cristina Hernández Rodríguez[1], Rodrigo Blanco Hernández[1], Rosario Vidal Tocino[3], Juan Antonio Juanes Méndez[4]

[1]Virgen de la Concha Hospital. Zamora, Spain
[2] Complejo Asistencial de Salamanca. Salamanca, Spain
[3] Clinical University Hospital of Salamanca (Salamanca) Spain
[4] University of Salamanca, Department of Human Anatomy and Histology. Faculty of Medicine. Salamanca, Spain

Introduction/Objectives
-To carry out a review of the radiological anatomy of the temporal bone that shows the anatomical relation between the different structures of the middle ear and the inner ear.
-To provide morphometric data from the different structures related with the middle ear and the inner ear.
Materials and Methods
Retrospective study on a population of 193 patients who were admitted in our hospital between January 2011 and December 2011 and who underwent a CT of the petrous part of the temporal bone carried out by the Department of ENT in order to rule out different pathologies, mainly infectious and inflammatory processes.
Results
We present the main structures of the petrous portion, with an analysis of the relations between the different parts of the middle ear and the internal ears in different spatial planes and with three-dimensional reconstructions. Afterwards, we carry out a measurement of the diameter of different structures of the middle ear and the inner ear: internal auditory meatus (5.3±1.8 mm), labyrinthine segment of the cranial nerve VII (1.1±0.3 mm), tympanic segment of the cranial nerve VII (1.3±0.1 mm), mastoid segment of the cranial nerve VII (1.5±0.1 mm), superior semicircular canal (0.9±0.2 mm), posterior semicircular canal (0.8±0.1 mm), horizontal semicircular canal (1.1±0.2 mm).
Conclusions
New imaging techniques provide us with a detailed knowledge of the anatomy of the petrous portion of the temporal bone and the relations between its components. This work shows the importance of a detailed knowledge of the structures that make up the petrous part. This knowledge, together with the clinical record of the patient, allows for an easier diagnosis of the pathologies of the middle ear and the inner ear.

C0201
ADVANCED VISUALIZATION OF TRIGEMINUS NUCLEUS BY 7-TESLAS MAGNETIC RESONANCE

Juan Antonio Juanes Méndez[1], Ignacio Martín García[2], **Aurora Garrote Pascual**[3], Alberto Prats Galino[4]

[1] University of Salamanca, Department of Human Anatomy and Histology. Faculty of Medicine. Salamanca, Spain
[2] Hospital Virgen Concha. Zamora, Spain
[3] Complejo Asistencial de Salamanca. Salamanca, Spain
[4] Universidad de Barcelona., Dpto. de Anatomia Humana. Facultad de Medicina. Barcelona, Spain

Introduction/Objectives
Magnetic resonance equipments using magnets able to produce high magnetic fields are increasingly becoming a relevant source for a detailed analysis of encephalic structures, entailing us to visualize nucleus of nerves that not be seen using other techniques of anatomic dissection. Our objective is to show trigeminus nucleus, by means of its three dimensional reconstruction integrated in axial sections of 7 Teslas Magnetic Resonance
Materials and Methods
To develop this anatomical-radiological estudy, we carry out 3D reconstructions of the nucleus of trigeminus muscle on a postmortem encephalic trunk, using a Magnetic Resonance equipment of 7 Teslas, that brought us very high scanning capacities for the morphological study ans adecuate identification of the nucleus. Compleentarily, we used Amira 5.3 three-dimensional reconstruction software.
Results
By using this technique, we show the localization and 3D vision of trigeminus nucleus: the main sensorial, located on the lateral part of the protuberance, and prior and lateral in respect to the 4th ventricle; the mesencephalic nucleus, extended until the lower part of the tectal screen; and the motor nucleus, smaller and located at the exit of the trigeminus nerve origin.
Conclusions
The use of a Magnetic Resonance equipment 7 T, considering that is a very high spatial resolution, allowed us to visualize high quality images of the encephalic trunk. No doubt, in a ear future and thanks to technological advances, we will visualize and identify all segments of this cranial nerve, included those part distant from its origin, but, for the moment being, the role use of high Teslas equipments will allow us to visualize with a high precision the anatomy of nerve structures, not observable using Magnetic Resonance techniques habitually used nowadays in clinical practice (1,5 to 3 Teslas)

C0202
APPARENT ORIGIN OF THE TRIGEMINAL NERVE WITH MAGNETIC RESONANCE IMAGING AND THREE-DIMENSIONAL RECONSTRUCTIONS

Aurora Garrote Pascual[1], Ignacio Martín García[2], Juan Antonio Juanes Méndez[3], Alberto Prats Galino[4], Diana García Casado[5], Christian Bermúdez López[1]

[1] Complejo Asistencial de Salamanca. Salamanca , Spain
[2] Hospital Virgen Concha. Zamora, Spain
[3] University of Salamanca, Department of Human Anatomy and Histology. Faculty of Medicine. Salamanca , Spain
[4] University of Barcelona, Faculty of Medicine. Barcelona, Spain
[5] Hospital Universitario de Salamanca. Salamanca, Spain

Introduction/Objectives
The apparent origin of the trigeminal nerve is located on the lateral side of the pons, at the point in which the preganglionic nerve fibers emerge. It appears as two different branches, a sensory one, which is bigger, and a motor one, which is smaller. These fibers cross the prepontine cistern and advance towards the Meckel´ s cave. Our objective is to assess the visualization of the emergence of the preganglionic nerve fibers of the trigeminal nerve from the pons to the Meckel's cave with MDCT and MRI.
Materials and Methods
In the estudy, we have used 1.5 T MR images of patients from the Hospital of Salamanca, with T2-weighed FSE and 3D FIESTA sequences. We obtained three-dimensional reconstructions of the MDCT scans from seriated sections with segmentation with AMIRA software.
Results
With the study of the 1.5T MRI in T2-weighted FSE and 3D FIESTA sequences, we can observe the preganglionic fibers that emerge from the lateral side of the pons and advance towards the Meckel´ s cave. In the identification of preganglionic fibers, T2 3D FIESTA sequences have shown much better results.
The three-dimensional reconstructions of MDCT scans carried out with AMIRA software have shown a more defined images of the relations between the Gasserian ganglion and its subsequent ramification with the cavernous sinus.
Conclusions
The 3D FIESTA sequences, thanks to the T2 weighting and the fine sections allow for a higher contrast between the preganglionic nerve fibers of the trigeminal nerve and the cerebrospinal fluid (CSF), compared with T2 FSE sequences. The three-dimensional reconstructions of MDCT scans performed with AMIRA software have provided a proper visualization of the preganglionic segment of the trigeminal nerve up to the Gasserian ganglion and its relations with the cavernous sinus, and also show the posterior division of its branches.

C0205
PREOPERATIVE ASSESSMENT OF MR AND BIOLOGICAL PROGNOSTIC FACTORS IN GLIOBLASTOMA MULTIFORME

Victor Rodriguez Laval, Isabel Herrera Herrera, Bárbara Meléndez Asensio, Manuela Mollejo Villanueva, Juan Manuel García Benassi, Rafael González Gutiérrez, Maria Elena Capilla Cabezuelo

Hospital Virgen De La Salud, Servicio de Radiodiagnostico. Toledo, Spain

Introduction/Objectives
There is considerable variability of survival time among patients with glioblastoma multiforme (GBM). Magnetic Resonance Imaging and Magnetic Resonance Spectroscopy (MRS) could help to evaluate individual prognosis of GBM.
The purpose of this study was to investigate radiological and biological parameters that influenced survival in patients with diagnosed GBM prior to surgery.
Materials and Methods
We evaluated 61 patients with GBM. All patients underwent MRI brain examinations at 1.5 T. 39 preoperative MRS were performed at two echo times (30 and 135 ms). Multi-voxel MRS was placed both in the solid tumor and the peritumoral white matter. Levels of choline (Cho), N-Acetylaspartate (NAA), creatine (Cr), lactate (Lac) and myo-inositol (mI) were obtained. We calculated metabolite ratios for Cho / Cr, NAA / Cr, Cho / NAA, Lact / Cr and mI / Cr. We detected p53 expression status and mutational status of IDH1. Survival was analyzed by using the Kaplan-Meier method and the Cox proportional hazards model.

Results
The mean survival time was 9.7 months (1 to 52.8 months). Parameters that have shown potential for predicting longer survival were IDH1 mutations (p=0.02), cortical tumor location (p=0.01), and smaller tumor size (p=0.002). Tumor size results persisted in multivariate analysis. We observed lower survival in patients who had NAA / Cr ratio less than 1.5 (p=0.03) and Cho /NAA ratio greater than 1.5 within peritumoral region.
Conclusions
Tumor size has been found to provide the best prognostic information. Other data such as IDH1 mutation and depth of the lesion can be helpful prognostic parameters. MRS of the peritumoral white matter may be useful in characterizing GBM aggressiveness, and revealed a significant relation between survival and Cho / NAA and NAA / Cr ratios.

C0211
MENINGEAL PATHOLOGY WITH MRI: A PRACTICAL APPROACH

Elena Calabuig Barbero, Patricia Martín Medina, Juan Felipe Rojas Blandón, David Londoño Mejía, Lara Jaques Perez, Lola Pascual Robles, Federico Ballenilla Marco

Hospital General Universitario de Alicante. Alicante, Spain

Introduction/Objectives
To carry out an approach to the diagnose algorithm of meningeal pathology.
To show, with a practical point of view, the affected patterns in MRI.
To check the cases reported in our hospital unit
Results
Meningeal lesions are a frequent finding in imaging studies. MRI plays a very important role in the detection and characterization of these findings. They can be classified in two groups: presence of enhancement or mass. The " enhancing pattern" can be leptomeningeal or paquimeningeal. The first one is usually present in meningitis and tumoral spread. The second one can be diffuse or focal, lineal or nodular, and the etiology of this pattern is very extensive: the first thing to dismiss is the antecedent of recent lumbar puncture. Other causes are the CRL hypotension, postsurgery changes, granulomatosis… " Mass pattern" requires a detailed internal behaviour description and if there is bone or parenchymal involvement, dural tail and multiplicity of lesions. In the tumoral process the most frequent is the meningioma, taking into consideration that in an oncological context, dural metastases could show similar manifestations.
Conclusions
In the differential diagnosis of meningeal pathology in MRI, identification of the pattern of presentation and associated findings, together with the clinical history, can give us the key to establishing the correct diagnosis or determine when biopsy or complementary studies are necessary.

C0212
PEDIATRIC CEREBRAL ARTERIOVENOUS MALFORMATIONS (AVMS): RETROSPECTIVE STUDY

Alvaro Cortés Campos[1], **Angel Sánchez-Montañez García-Carpintero**[2], Xavier Guri Azogue[1], Alejandro Tomasello Weitz[1], Pilar Coscojuela Santaliestra[1], Fuat Arikan Abello[1], Ignacio Delgado Alvarez[3], Elida Vázquez Méndez[2]

[1] Hospital Vall d'Hebron, Radiodiagnóstico. Barcelona, Spain
[2] Hospital Universitario de la Vall d'Hebron, Neurorradiologia Pediátrica. Barcelona, Spain
[3] Hospital Vall D'Hebron, Departamento de Radiología. Barcelona, Spain

Introduction/Objectives
Intracranial arteriovenous malformations (AVMs) are an uncommon and complex pathology, representing 0.1 % in pediatric population. We reviewed the pediatrics AVMs from Vall d`Hebron hospital (HUVH).
Materials and Methods
We performed a retrospective study for a period of six years of all pediatricpatients diagnosed and treated for intracranial AVMs. We analyzed the clinical and neuroradiological findings (CT-angiography, MR-angiography and arteriography (DSA)).
Results
We diagnosed 11 patients (9 males and 2 females). The mean age at diagnosiswas 11 years (range 5-17 years). The most common clinical presentation wasloss of consciousness, followed by seizures and headache. The main locationswere fronto-parietal and thalamic. A single patient showed infratentorialcerebellar involvement. According to the classification of Spetzler, 54.5 % of the patients were classifiedas grade 3. The 36.4 % met criteria for grade 2 and only one patient (9.1 %)corresponded to grade 1. None of our patients was 4 or 5 grade. The venous drainage of the AVMs was superficial in 45,46 %, and only one patient had mixed drainage. The size varied from millimeters to 5 cm. Eloquent areas involvement was present in 6 patients. Diagnosis was made by arteriography in almost all, except in one patient whosediagnosis was histological. The treatment was surgical in 9 cases (81.8 %). One patient was treated byradiosurgery and one was not treated because of spontaneous resolution.
Conclusions
Pediatric AVMs differ from those described in the adult population in theirangioarchitecture, clinical presentation, hemodynamics and prognosis. Itsdiagnostic approach usually starts with CT as their onset is as an emergency,followed by advanced MR. MR allows greater detail of vascular anatomy,perfusion and functionality in complex lesions. However, angiography remainsthe gold standard for the accurate diagnosis and treatment.

C0217
THE OTHER WHITE MATTER LESIONS: LOOK FOR SOMETHING ELSE

Mari Carmen Alcaraz Soto[1], Celine Bard[2], Laura Serrano Velasco[1], Manon Bélair[2]

[1]Hospital General Universitario Santa Lucía, Radiología. Murcia, Spain
[2] CHUM. Hôpital Notre-Dame, Neuroradiology. Quebec, Canada

Introduction/Objectives
The purpose of this exhibit is:
- Review the patterns of white matter lesions.
- Specify white matter disease in the adult patient.
- To emphasize the relevance of inter-professional collaboration.
Materials and Methods
A review of the patterns of white matter lesions will be presented using CT and MRI images.
Several different examples of every pattern of white matter lesions will be illustrated in a quiz case-based format emphasizing the relevance of others associated imaging features and the clinical data for improving the radiologist diagnostic accuracy.
Results
Cases discussed will include: leukoaraiosis, PRES, antiphospholipid syndrome, ADEM, cerebral amyloid angiopathy, neuromyelitis optica, varicella encephalo myelitis, PML, Susac syndrome, Behçet syndrome, neurosyphilis, toxic leukoencephalopathy amphetamine, adrenoleukodystrophie, cerebrotendinous xanthomatosis and others.

Conclusions
The estimate of patients of all ages with matter abnormalities on MRI who presently remain without a specific diagnosis is around 30-40 %. The relevant clinical data can lead us to the correct diagnose. However, even though the MRI pattern does not lead to a specific diagnosis in all cases, it always helps to exclude many diagnoses, precluding undirected laboratory screening.

C0220
SPINAL TRAUMA

Verónica Pazos Silva, Alba Rois Siso, Daniel Fraga Manteiga, Daniel Romeu Vilar

Complejo Hospitalario Universitario de A Coruña (CHUAC). A Coruña, Spain

Introduction/Objectives
Injuries to the spinal column and the spinal cord affect predominantly young and healthy individuals, being a major cause of disability with significant socioeconomic consequences. MR imaging is the imaging modality of choice for assessing soft tissue, spinal cord, intervertebral discs and ligaments, and vascular injuries. The objective of this electronic presentation is to illustrate the types of spinal traumatic lesions.
Materials and Methods
A retrospective review was performed of all patients with acute spinal trauma and neurologic deficits undergoing MR imaging over a one-year period (August 13, 2011 to August 12, 2012). MR imaging was obtained within 24 hours of injury for most patients.
Results
Of 11 patients, 5 had a cervical spine injury, 5 affect the thoracic and lumbar spine and one case both of them. We found different types of spinal cord injury: 6 spinal cord contusion, 2 intradural hematoma intra-and extraspinal, 1 epidural hematoma and no disruption or transaction of the cord. We found a traumatic disc herniation and 6 had vertebral body fractures. About ligamentous injuries, one patient had a lesion of the posterior longitudinal ligament, another one of the ligamenta flava and no one of the anterior longitudinal ligament, the interspinous ligament or the ligamentum nuchae.
Conclusions
MRI is the best imaging modality to evaluate the different types of lesions in a spinal trauma. It is important to detect all the injuries and define them with precision because they could have a prognostic significance and may change the treatment.
Acknowledge, conflicts of interest
We acknowledge the assistance of Sonia Patricia Mosteiro Añón in the preparation of this presentation.

C0224
TRAUMA CRANIO-SPINAL INJURY IN CHILDREN. PICTORIAL REVIEW

Gloria Andrea Lozano Martínez; Esther Granell Moreno; Fidel Nuñez Marin; Manuel De Juan Delago; José Luis Munuera del Cerro; Beatriz Gómez Ansón

Hospital de Sant Pau, Radiodiagnóstico. Barcelona, Spain

Introduction/Objectives
Trauma head injury is one of the leading causes of emergency visits in children, as well as an important cause for death and disability at this age. Neuroimager plays a significant role in this setting. It is necessary to know the different imaging findings in order to provide an accurate diagnosis.

Materials and Methods
We review different pathologies that can be identified in pediatric head trauma categorized as: direct, indirect and non-traumatic.
Results
Traumatic craniocerebral lesions have been classified for study into two groups: direct and indirect lesions.
Direct lesions are skull fractures, scalp hematoma/laceration, extraparenchymal haemorrage, cortical contusion, diffuse axonal injury, kickback injury, spine trauma and vascular lesions. Indirect lesions are those resulting from brain herniations and those caused by mass effect and elevated intracranial pressure.
Non-traumatic injury (shaken baby syndrome) is studied separately as well as other pathologies that can appear in trauma injury such as asphyxia-drowning and anoxia-brain-death.
Conclusions
Given that trauma is a leading cause of morbidity and mortality in children the variety of entities that can arise in emergency should be recognized, providing the most useful information for clinicians.

C0225
TOOL FOR THE PROCESSING AND VISUALISATION OF MULTIMODE NEURORADIOLOGICAL IMAGES

Juan Antonio Juanes Méndez[1], Ignacio Martín García[2], **Aurora Garrote Pascual**[3], Alberto Prats Galino[4], Andrés Framiñán de Miguel[3], Juan Carlos Paniagua Escudero[3]

[1] University of Salamanca, Department of Human Anatomy and Histology. Faculty of Medicine. Salamanca, Spain
[2] Hospital Virgen Concha. Zamora, Spain
[3] Complejo Asistencial de Salamanca. Salamanca, Spain
[4] University of Barcelona, Faculty of Medicine. Barcelona, Spain

Introduction/Objectives
We describe a powerful tool for the processing and visualisation of multimode neuroradiological images.
Materials and Methods
The tool is avaliable for the PC and UNIX environments and PC stations based on Linux, allowing rapid visualization and treatment of radiological images from nearly all image modes, supporting images in DICOM format.
Results
This program includes tools for bicommissural alignment and semiautomatic segmentation for definition and identification of brain structures.
Conclusions
This tool allow us to analize neuroradiological images with generation of volumes, automated segmentation, image fusion, measurements.

C0229
MULTIPLE INTRACRANIAL LOW GRE T2 LESIONS: LOOKING FOR A DIFFERENTIAL DIAGNOSIS

Jesus Julian Cortes Vela, Juan Carlos Garcia Nieto, Maria Arias Ortega, Carmen Madrid Muñiz, Ana Begoña Valentin Martin, Javier Gonzalez-Spinola San Gil, Maria Jesus Adan Martin, Jose Luis Venegas Hernandez, Carlos Ignacio Lopez Lafuente

Hospital General La Mancha Centro, Radiodiagnostico. Ciudad Real, Spain

Introduction/Objectives
To show the differential diagnosis in structural magnetic resonance imaging when we find multiple hypointense lesions in GRE T2

sequence in the central nervous system. Discuss and learn how to guide a correct diagnosis based on clinical and radiological features.

Materials and Methods

GRE T2 sequence has a great sensitivity for detecting haemorrhagic lesions in the central nervous system due to the magnetic susceptibility effect generated by the degradation products of hemoglobin. We reviewed our hospital records looking for those cases that best shown the tipycal radiological findings of the multiple diseases which can manifest as multiple hypointense lesions in GRE T2 sequence.

Results

Our differential diagnosis when we find multiple punctate hypointense hemosiderin deposits in GRE T2 sequence in the central nervous system should include: multiple cavernous angiomas, hypertensive angiopathy , cerebral amyloid angiopathy, hemorrhagic metastasis, central nervous system vasculitis, diffuse axonal injury and radiation-induced telangiectasia. Diagnostic keys are present in each of these pathologies both on computer tomography and MRI with special emphasis on the clinical setting , appearance of the lesions , their location and possible associated findings.

Conclusions

It is appropriate to include GRE T2 sequence in MRI study protocols in the central nervous system. This sequence is not only better showing hemorrhagic lesions that are hardly appreciated (or even undetected) in other sequences , but also the detection of these remains of hemosiderin helps guide and refine our differential diagnosis.

C0230
POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME, NOT ALWAYS TYPICAL, NOT ALWAYS REVERSIBLE

Maria Elena Capilla Cabezuelo, Isabel Herrera Herrera, Juan Manuel García Benassi, Rafael Gonzalez Arjona

Hospital Virgen De La Salud, Servicio de Radiodiagnostico. Toledo, Spain

Introduction/Objectives

The clinical spectrum and underlying pathophysiology of posterior reversible encephalopathy syndrome (PRES) remains poorly defined. Although reversible by definition, secondary complications, such as ischemic infarction or intracranial hemorrhage can cause substantial morbidity and mortality. This and the atypical imaging forms of presentation can make the diagnosis of PRES challenging.

Materials and Methods

We evaluated eleven cases that were prospectively diagnosed as PRES in the last three years. One neuroradiologist reviewed the clinical information (demographics, risk factors, clinical presentation and evolution after treatment) and imaging findings. All patients underwent magnetic resonance imaging, and six also underwent computed tomography.

Results

Nine cases were confirmed as PRES with clinical evolution and/or imaging control.Arterial hypertension was the predominant etiology (including eclampsia, cisplatin neurotoxicity, renal failure and post-lumbar puncture) and one case of multiple organ dysfunction. Two cases, Churg-Strauss disease and Cushing Syndrome, respectively, failed to have a definite explanation for the the atypical encephalic lesions, possibly vasculitis.Presenting symptoms included seizure, headache, encephalopathy and visual disturbances.Three patients presented with focal neural deficits due to ischemic infarction.All of them showed parieto-occipital with or without holohemispheric involvement.All except for one case showed either atypical imaging features,such as basal ganglia or pons involvement, or one or more signs of severity:contrast enhancement, restricted diffusion and hemorrhage.

Conclusions

We observed that the appearance of atypical imaging features and severe forms of PRES is common in our clinical practice. It is difficult to confirm the diagnosis of PRES in severe forms, as these patients have complex clinical scenarios, with more than one possible cause for the imaging presentation. Furthermore, to identify a clear clinical association is not always straightforward even in some typical reversible cases.

C0231
IMAGING FEATURES OF CONGENITAL TEMPORAL BONE MALFORMATIONS

Esther Gálvez González[1], Diana García Casado[2], Karima El Karzazi Tarazona[1], Fernando Benito González[1], Juan Carlos Paniagua Escudero[1], José Federico Ojeda Esparza[1], Carolina Cuellar Márquez[1]

[1] Complejo Asistencial de Salamanca. Salamanca, Spain
[2] Hospital Universitario de Salamanca. Salamanca, Spain

Introduction/Objectives

The 20 % of all the cases of congenital deafness result from temporal bone malformations, and it is important to diagnosis them for make a proper management. The formation of the ear involves fusion of ectoderm, endoderm and mesoderm. Defects in formation may lead to a wide variety of dysfunctional or malformed structures. Our objective is recognition the imaging features of the congenital anomalies of the ear.

Materials and Methods

Review the cases of congenital hearing loss in the last 2 years in our center, characterization of the temporal bone malformations and compare our results with the scientific literature.

Results

The malformations could be classified depending on their location in outer, middle or inner ear, because the temporal bone has two separate precursors. Malformations of the outer ear could be only of the auricle or affect several external structures. Combined congenital malformation of the external and middle ear occur more commonly than isolated middle ear anomalies. The most common malformation of the inner ear includes anomalies of the semicircular canal, followed by malformations of the vestibule ant cochlear anomalies. Our results include an incomplete atresia of the EAC, two combined malformations of the external and middle ear, one enlarged vestibular aqueduct, three malformations of the cochlea (two Mondini and one common cavity) and a complex malformation of the inner ear.

Conclusions

Temporal bone malformations are common and it is important to identify them to perform a correct management.

C0240
MRI OF NON DISCOGENIC SCIATICA

Alberto Cabrera Zubizarreta, Oscar Casado Verdugo, Ibone Saralegui Prieto, Jose María Ontañon Garces, Iñigo Vicente Olabarria, Ricardo Ituarte Uriarte

Hospital Galdakao, OSATEK Unidad RM. Vizcaya, Spain

Introduction/Objectives

Our aim is to review and evaluate the MRI findings in non discogenic sciatica.

Materials and Methods

Pictorial review of cases from our data base, from 2006 to 2012, who complain from sciatica and in whom conventional lumbar MRI is negative.

Results

Sciatica is very common and is one of the most frequently encountered symptoms in neurosurgical practice and in spinal imaging. It manifests as pain extending from lumbar region to the hip and to the lower extremity. It is present in almost 40 % of adults at some point in their lives. It is secondary to a spectrum of pathologies that affect the sciatic nerve both in its intraspinal or extraspinal course. In most ocasions it is caused by lumbar disk herniation and in 20 % of cases, the sciatica is of both discogenic and non-discogenic origin. Many intraspinal or extraspinal pathologic processes along the lumbar nerve roots and the sciatic nerve may also cause sciatica.

We review both intraspinal and proximal extraspinal disorders that may cause sciatica. We present a series of intraspinal cases including processes such as intradural cysts, neural tumors, vascular malformations and radicular vein varix, spinal epidural abscesses and hematomas, facet syndrome, that presented clinically as sciatica. Extraspinal disorders with sciatica as main clinical feature include metastatic lesions, lymphoma, liposarcoma, rabdomyosarcoma, fibromatosis, endometriosis, nerve compression after surgery and muscular diseases such as cuadratus femoralis edema and pyramidal syndrome wich may also compress the sciatic nerve along the sciatic notch and its proximal pelvic course. Emphasis is made on the value of high resolution MR Neurography and diffusion weighted imaging of the sciatic nerve.

Conclusions

Many clinical conditions that can mimic discogenic sciatica can be diagnosed by meansa of MRI.

C0242
WHEN TO SAY NO TO MECHANICAL THROMBECTOMY

Delia Romea, Lucía Aja, Sonia Aixut, Paloma Mora, Roger Barranco, Pere Cardona, Helena Quesada, María Ángeles De Miquel

Hospital Universitari de Bellvitge. Barcelona, Spain

Introduction/Objectives

The aim of this study is to analyze which variables could be of help in anticipating bad clinical evolution while reaching a good technical and anatomical result in mechanical thrombectomy for acute stroke.

Materials and Methods

Out of 98 patients receiving intraarterial treatment for acute stroke, a subset of 20 cases (13 male and 7 female), aged between 53 and 85 years, (mean age 71) has been selected meeting both criteria: good results post mechanical thrombectomy, i.e. TICI 2b or 3, and a mRs at three months equal or higher than four. A comparison between pre- and post-treatment images has been performed to evaluate the adequacy of the management choice.

Results

The distribution of the occlusion site has been as follows: two basilar arteries, five M1, two M2 (both presented bilateral MCA occlusion), six Tandem lesions and five internal carotid bifurcation occlusions. Basal plain CT and angioCT studies have been performed in every patient. Comparing plain CT cuts with angioCT cuts, suggests that the latter also help in predicting the volume of the final infarct. More than half of the patients were older than 75 years. Eleven patients showed haemorrhagic complications, most of them corresponded to Tandem or TICA cases, and low post-treatment ASPECTS. Three cases were estimated retrospectively as showing low ASPECTS in plain basal CT.

Conclusions

Evaluation of acute stroke patients benefits of reviewing acquisition images in angioCT. There are, however, other causes of adverse clinical results, including aged patients, difficult vessel occlusion evaluation due to carotid occlusion or other concomitant vascular occlusions.

C0243
VERY LONG TERM FOLLOW-UP IN CAROTID STENTING. ARE STENTS STILL WORKING AFTER 10 YEARS?

Ana Maria Molinos Urien[1], Elena García Garrigós[2], Federico Ballenilla Marco[3], Jose Ignacio Gallego León[3]

[1]Hospital General Universitario de Alicante. Alicante, Spain
[2] HGUA sección TC (Alicante)
[3] Hospital General Universitario de Alicante, Neurorradiología Intervencionista. Alicante, Spain

Introduction/Objectives

Rate permeability of carotid stents implanted for more than 10 years in our hospital.

Materials and Methods

The number of carotid angioplasty (PTA) made in our hospital before 2000 were 37 stents placed in 36 patients. In 35 patients we practise the PTA for carotid stenosis and in one case for treatment of iatrogenic pseudoaneurysm. Patients were 31 men and 5 women, with a mean age of 69 years. We performed a retrospective clinical monitoring (review of medical history, current history and physical examination) and imaging techniques (angiography, CT angiography or ultrasound) of patients in the short (1-3 years), medium (3-5 years), long (5-9 years) and very long term (> 10 years) valuing especially the emergence of new events and stent patency.

Results

Of the 36 initial patients we had four losses. Only one of them presented a thromboembolic event (3.2 %) in the follow-up. At the end of the study 17 patients were still alive (15 death), 7 of whom refused to conduct the clinical and radiological very long term FU. Of the 10 carotid stents measured after 10 years, 8 were patent (80 %), 1 showed a 50 % asymptomatic stenosis and 1 was occluded (that which was placed as pseudoaneurysm treatment).

Conclusions

PTA with stent for the treatment of carotid stenosis is an effective method in very long term follw-up, constituting a therapeutic option for patients with long life expectancy.