Surgical Decision Making for Carotid Endarterectomy and Contemporary Magnetic Resonance Angiography

Section of Vascular Surgery, Department of Surgery, PO Box 100286, Gainesville, Florida 32610-0286.


Background. Benefit from carotid endarterectomy (CEA) centers on patient selection and percent stenosis as determined by cerebral angiography. However, angiography remains expensive and poses risks. Validated carotid duplex ultrasonography has proven to be an accurate tool for selecting patients for CEA. However, the role of another noninvasive test — magnetic resonance angiography (MRA) — remains uncertain. Because of recent advances in MRA hardware and software, we hypothesized that clinically appropriate patients could be accurately selected for CEA based on MRA alone.

Methods. Fifty-four carotid arteries in 29 patients (with and without symptoms) underwent both three-dimensional time-of-flight MRA (1.5 Tesla) with multiple overlapping thin slab acquisition and biplanar intra-arterial digital subtraction angiography. All patients undergoing both tests over a 24-month period were included. The majority of these patients did not undergo carotid duplex ultrasonography owing to the clinical practice of the hospital’s neurosurgery service. Staff radiologists interpreted each study. The accuracy of patient selection based on MRA was calculated using angiography as the standard (NASCET method). Since operative thresholds vary depending on clinical history, we considered four commonly used ranges of percent stenosis for CEA.

Results. Patient selection accuracy of MRA alone was low, but increased as percent stenosis increased. Out of 10 occluded arteries by angiography, 5 were interpreted as patent with stenosis (70% to 99%) by MRA. One patient artery was misread as occluded on MRA.

Conclusion. Reliance solely on contemporary MRA for surgical decision making cannot be justified in view of low accuracy, which leads to high rates of error in patient selection for CEA.

Magnetic Resonance Imaging of the Coronary Arteries: Techniques and Results

R-J M van Geuns, HG de Bruin, BJWM Rensing

Department of Cardiology, Thoraxcenter, University Hospital Rotterdam, Dr Molewaterplein 40, 3015 GD Rotterdam, Netherlands

Heart 1999; 82: 515-519

Background. Magnetic resonance coronary angiography is challenging because of the motion of the vessels during cardiac contraction and respiration. Additional challenges are the small calibre of the arteries and their complex three-dimensional course. Respiratory gating, turbo-flash acquisition, and volume rendering techniques may meet the necessary requirements for appropriate visualisation.

Objective. To determine the diagnostic accuracy of respiratory gated magnetic resonance imaging (MRI) for the detection of significant coronary artery stenoses evaluated with three-dimensional postprocessing software.

Methods. 32 patients referred for elective coronary angiography were studied with a retrospective respiratory gated three-dimensional gradient echo MRI technique. Resolution was 1.9 × 1.25 × 2mm. After manual segmentation three-dimensional evaluation was performed with a volume rendering technique.

Results. Overall 74% (range 50% to 90%) of the proximal and mid coronary artery segments were visualised with an image quality suitable for further analysis. Sensitivity and specificity for the detection of significant stenoses were 50% and 91% respectively.

Conclusions. Volume rendering of respiratory gated MRI techniques allows adequate visualisation of the coronary arteries in patients with a regular breathing pattern. Significant lesions in the major coronary artery branches can be identified with a moderate sensitivity and a high specificity.

Clinical Evaluation of Contrast-Enhanced Color Doppler Sonography in the Differential Diagnosis of Liver Tumors

Deike Strobel, U Krodel, Peter Martus

Department of Medicine I, Friedrich-Alexander University of Erlangen-Nuremberg, Krankenhausstrasse 12, 91054 Erlangen, Germany.


Purpose. We investigated the value of contrast-enhanced color Doppler sonography in the differential diagnosis of liver tumors.

Methods. We prospectively examined 105 focal liver lesions in 100 patients by real-time gray-scale sonography, color Doppler sonography, and contrast-enhanced color Doppler sonography with galactose-based microbubbles (SH U 508A, Levovist). The final diagnoses of the liver lesions as confirmed by pathology or additional imaging techniques were 31 metastases, 25 hemangiomas, 19 hepatocellular carcinomas, 19 focal nodular hyperplasias, 2 cholangio-cellular carcinomas, and 9 other lesions.

Results. Vascularity could be detected in 43 (41%) of the 105 lesions by conventional color Doppler sonography compared to 67 (64%) by contrast-enhanced color Doppler sonography. Contrast-enhanced color Doppler sonography identified moderate or extensive vascularity in all 19 focal nodular hyperplasias, moderate or extensive vascularity in 16 hepatocellular carcinomas and both cholangio-cellular carcinomas, and no or minor vascularity in all but 3 hemangioma.

The combination of gray-scale, conventional color Doppler, and contrast-enhanced color Doppler sonography led to the correct diagnosis in 81% of cases (85 of 105), compared to 57% (60/105) for gray-scale and conventional color Doppler sonography and 31% (33/105) for gray-scale sonography alone.

Conclusions. Contrast-enhanced color Doppler sonography improves the detection of tumor vascularity and is useful in the differential diagnosis of liver lesions.

Magnetization Transfer Contrast Imaging of Liver Cirrhosis

J-H Chen, J-W Chai, W-C Shen

Department of Radiology China Medical College Hospital No 2, Yu-Her Rd Taichung 404 Taiwan

Hepato-Gastroenterology 1999; 46: 2872-2877

Background/aims. To test the feasibility of magnetization transfer contrast (MTC) imaging in the evaluation of liver cirrhosis.

Methodology. Three normal volunteers and 22 cirrhotic liver patients (13 of them harbored hepatoma) were prospectively studied with on-resonance binomial pulsed MTC imaging using a 1.0 Tesla MR scanner. Both MTC and non-MTC images were acquired. The magnetization transfer (MT) effect (defined as: 1-signal intensity of MTC/signal intensity of non-MTC), was used as an indicator and was correlated with different disease status. Lesion-to-liver contrast of non-MTC versus MTC imaging was also compared.

Results. Chronic hepatitis and early fibrosis had a MT effect similar to that of the normal
The extent of AP shunting was well correlated with the presence of proximal AP shunting in 3 more patients than conventional angiography did. Dynamic helical biphasic CT demonstrated the proximal AP shunting in 23 patients. Effects in these 22 patients were widely variable. There was no significant improvement in lesion contrast of MTC imaging when compared to that of dynamic helical CT due to complex signal attenuation behavior of either the background liver tissue or the tumor itself.

**Conclusions.** The complex pathological change of the cirrhotic liver tissue may account for the wide variation of the MT effect and the compromised lesion contrast in cirrhotic patients. Caution should be taken when cirrhotic tissue has an unusually weak MT effect. Then, the possibility of a mixed disease process such as fatty metamorphosis or diffuse hepa-toma should be highly suspected. Our experience shows that MTC imaging plays a potential role in the evaluation of the multi-facets of cirrhotic tissue change.

**Dynamic Helical Biphasic CT Emerges as a Potential Tool for the Diagnosis of Proximal Arterioportal Shunting**

J-H Chen, C-L Hung, J-I Hwang

Department of Radiology, China Medical College Hospital No. 2, Yuh-Der Road Taichung Taiwan.

Hepato-Gastroenterology 1999; 46: 1791-7

**Background/Aims.** This article reports our preliminary observations regarding the diagnostic ability of dynamic helical biphasic computed tomography (CT) for proximal arterioportal shunting in hepatoma patients as compared with that of conventional angiography. The criteria for diagnosis of proximal arterial (AP) shunting in dynamic helical biphasic CT included early and strong enhancement of main portal vein or its major branches in the arterial phase. The angiographic diagnosis of proximal AP shunting was made if there was early opacification of the main portal vein or its major branches in the arterial phase. Peripheral subsegmental small AP shunting was excluded from our study. The existence and extent of AP shunting were compared in these two imaging modalities.

**Results.** Dynamic helical biphasic CT scan demonstrated proximal AP shunting in 23 patients. All of these patients harbored hepatoma. Conventional angiography showed proximal AP shunting in 20 patients, which were all positive on dynamic helical CT. Dynamic helical biphasic CT demonstrated the presence of proximal AP shunting in 3 more patients than conventional angiography did. The extent of AP shunting was well correlated between these two imaging modalities in 17 patients.

**Conclusions.** From our preliminary experience, the diagnostic accuracy of dynamic helical biphasic CT for proximal AP shunting in patients with hepatoma seemed to be comparable to, or even surpassed that of conventional angiography. It seems that faint AP shunting in patients with large hepatoma might be missed by conventional angiography.

**Staging Laparoscopy and Laraparoscopic Ultrasonography in More Than 400 Patients with Upper Gastrointestinal Carcinoma**

EJ Nieven van Dijkum, LTh de Wit, OM van Delden

Department of Surgery, Reinier de Graaf Gasthuis, Postbus 5011, 2600 GA Delft, The Netherlands.


**Background.** Resection offers the only chance of cure to patients with esophageal, gastrosophageal junction, and hepatopancreatobiliary tumors. Staging is essential to select patients who will benefit from operation because palliation can also be performed nonoperatively. Several studies, including limited numbers of patients, have shown that laparoscopic staging prevents unnecessary laparotomies, but it is doubtful whether general application of this staging method can be advised. The aim of this study was to assess the benefit of diagnostic laparoscopy for staging patients with esophageal, gastroesophageal junction, and hepatopancreatobiliary tumors.

**Study Design.** Between June 1992 and December 1996, 420 patients with a resectable tumor after conventional staging underwent diagnostic laparoscopy combined with laparoscopic ultrasonography. Histologic proof of metastases or ingrowth was used to cancel laparotomy.

**Results.** Laparoscopic staging avoided laparotomy in 20% of patients (sensitivity 0.70); 5% with an esophageal tumor, 40% with a proximal bile duct tumor, 35% with a liver tumor, and 40% with a pancreatic body or tail tumor. Complications and post-laparotomy stays were seen in 4% and 2% of patients, respectively.

**Conclusions.** Laparoscopic staging is a safe procedure with low morbidity and without mortality in this series. It has shown no benefit in esophageal cancer, but seems beneficial for staging tumors located at the gastroesophageal junction, proximal bile duct tumors, liver tumors, and pancreatic body and tail tumors. The value of laparoscopic staging for patients with periampullary tumors is not as great as stated in previous studies and is still the subject of investigation.

**Intraoperative Ultrasonography versus Helical Computed Tomography and Computed Tomography with Arteriography in Diagnosing Colorectal Liver Metastases: Lesion-by-Lesion Analysis**

Johannes Schmidt, Markus Strotzer, Stephan Fraunhofer

Department of Surgery, University Witten-Herdecke, Heusner-Strass 40, D-42883 Wuppertal, Germany.

World J. Surgery 2000; 24

**Abstract.** Helical computed tomography with arteriography (CTAP) and intraoperative sonography (IOUS) are both recognized to be extremely sensitive in the detection of liver metastases measuring <2 cm in diameter. As sensitivity and specificity values for both techniques differ significantly in the literature and in default of sufficient published data regarding this subject, a lesion-by-lesion analysis was considered necessary. Accuracy of IOUS was compared with helical computed tomography (CT) and portal-phase contrast enhancement (CTAP) in the preoperative detection of liver metastases from colorectal carcinoma projected as a prospective blinded study. Cost efficiency should be determined. Liver CTAP and IOUS were evaluated in 33 patients with colorectal carcinoma. Metastases were resected in 10 cases, and the remaining 23 patients were observed for follow-up with CT investigations every 3 months for a period of 1 year. CTAP and IOUS detected all 13 lesions measuring 5-10 mm (13/13). One metastasis measuring >10 mm was missed by IOUS. CTAP presented an ideal sensitivity of 100%, but specificity was as low as 68%, IOUS sensitivity was 98% and specificity was 95%, IOUS and CTAP are of comparable value regarding the detection of liver metastases <10 mm. Both techniques may be used if resections of synchronous or metachronous metastases are planned in order not to miss limiting small lesions and to prevent superficial liver surgery. Helical CT scan with dynamic intravenous contrast enhancement is considered the most cost-effective preoperative staging method, although local staging may not be achieved because of insufficient intraabdominal survey.

**GYNÉCOLOGIE-OBSTÈTRIQUE**

**Endometrial cancer: preoperative evaluation of myometrial infiltration magnetic resonance imaging versus transvaginal ultrasonography**

G Zarbo, G Caruso, S Caruso, U Manganò, R Zarbo

2nd Obstetrics and Gynecology Clinic, Catania University, Catania (Italy).

Eur. J. Gynaec. Oncol. 2000; 21

From January 1996 to December 1998, 33 patients with endometrial carcinoma were preoperatively examined in our department; 30 received endovaginal ultrasonography (TVUS) and magnetic resonance imaging (MRI), and 3 only TVUS. Diagnosis was obtained by histopathological examination of the tissue removed by hysteroscopically controlled biopsy or by curettage of the uterine cavity. TVUS and MRI were performed a few days before surgery. After surgery the uterus was histopathologically examined by a pathologist in order to evaluate the depth of myometrial invasion. The results were compared with TVUS and MRI data to determine sensitivity and specificity, positive predictive value (PPV) and negative predictive value (NPV) of the two methods. According to the results of the present study we conclude that:
TVUS is a low cost, easily performed and reliable method in a high percentage of cases if carried out by a skilled echographist. MRI, is more expensive and has a lower specificity and sensitivity index; it is a valid method if the cervical canal is involved and/or myometrial invasion is >50% (M2) and if lymphatic invasion has to be investigated.

Ovarian cancer identified through screening with serum markers but not by pelvic imaging

RP Woolas, DH Oram, AR Jeyarajah, RC Bast Jr, UJ Jacobs

Department of Gynaecological Oncology, St Mary’s Hospital, Portsmouth, PO3 6AD UK.

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This study evaluated the possible role of 3 additional tumor markers to CA 125 among post-menopausal volunteers participating in a sequential multimodal ovarian cancer screening study. In 82 asymptomatic women the finding of a serum CA 125 level of > 30U/ml precipitated pelvic ultrasound examination. Levels of CA15-3, CA72-4 and CA19-9 were subsequently determined from sera stored from the time of the CA 125 assay. Following ultrasound 29 women underwent surgery for benign conditions. The remaining 53 women underwent 2 years of surveillance. In 5 of these women a diagnosis of ovarian cancer was established between 6 and 10 months after their initial investigation. Elevated levels of at least one of the 3 additional tumor markers were present in the serum, prior to ultrasound abnormalities being detected, in 4 (80%) of the women who developed cancer. At least one of this 3-marker panel was elevated in 29% of the 48 women who have not developed cancer and 14% of the 29 women undergoing surgery for benign conditions. Information complementary to pelvic ultrasound examination for the pre-clinical detection of ovarian cancer could be obtained through multiple marker assay. Coordinated elevated serum levels of tumor markers could increase the sensitivity of this sequential screening protocol.

Magnetic resonance imaging of male and female genitals during coitus and female sexual arousal

W Weijmar Schultz, P van Andel, I Sabelis, E Mooyaart

Department of Gynaecology, University Hospital Groningen, PO Box 30 001, 9700 NB Groningen, Netherlands.

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Objective. To find out whether taking images of the male and female genitals during coitus is feasible and to find out whether former and current ideas about the anatomy during sexual intercourse and during female sexual arousal are based on assumptions or on facts.

Design. Observational study.


Methods. Magnetic resonance imaging was used to study the female sexual response and the male and female genitals during coitus. Thirteen experiments were performed with eight couples and three single women.

Results. The images obtained showed that during intercourse in the “missionary position” the penis has the shape of a boomerang and 1/3 of its length consists of the root of the penis. During female sexual arousal without intercourse the uterus was raised and the anterior vaginal wall lengthened. The size of the uterus did not increase during sexual arousal.

Conclusion. Taking magnetic resonance images of the male and female genitals during coitus is feasible and contributes to understanding of anatomy.

INTERVENTIONNEL

Angiographic Embolization for Arrest of Bleeding after Penetrating Trauma to the Abdomen

GC Velmahos, D Demetriades, S Chawan

Medical Center, 1200 N. State Street, Room 9900, Los Angeles, California 90033-4525.


Background. Angiographic embolization is an effective technique to control bleeding after blunt trauma to the liver or pelvis. Its role in penetrating trauma to the abdomen has not been studied.

Methods. From January 1992 to May 1998, 40 patients underwent angiography for bleeding resulting from intra-abdominal penetrating injuries (33 gunshot wounds, 7 stab wounds). Angiographic embolization of intra-peritoneal or retroperitoneal vessels was performed by standard angiographic techniques with gelatin sponge and/or coils. Data were extracted from medical records, radiology data bank, trauma registry, and morbidity/mortality records, and compared by Student’s t test and chi-square test. The male outcome measures were failure of angiographic embolization to control bleeding and complications of angiographic embolization. Results. Angiography was performed during a course of nonoperative management in 6 patients (group A), because of failure to control bleeding surgically in 23 (group B), and because of late vascular complications after an initially successful operation in 11 more (group C). In 32 patients, angiography revealed active bleeding; 29 (91%) underwent successful angiographic embolization. Of the remaining 3 patients, 2 were successfully managed surgically (1 each from groups A and B) and 1 died despite multiple surgical maneuvers (group B). One patient who developed postoperatively a large, bleeding superior mesenteric artery pseudoaneurysm, suffered extensive bowel necrosis after angiographic embolization. No other significant complication was related to angiographic embolization.

Conclusions. Angiographic embolization after penetrating injuries to the abdomen is safe and effective in a small number of selected patients. It is a valuable tool for bleeding control when surgery has failed. It may be ideal for control of late vascular complications when reoperation is not desirable. It may prove to be a useful adjunct in the nonoperative treatment of selected injuries.

Value of ultrasound-guided fine-needle aspiration biopsy of thyroid nodules in an endemic goitre area.

P Mikosch, HJ Gallowitsch, E Kresnik

Department of Nuclear Medicine and Special Endocrinology, Landeskrankenhaus, Klagenfurt St. Veitstr. 47. A-9020 Klagenfurt. Austria.


The aim of this study was to determine the value, advantages and limitations of ultrasound-guided fine-needle aspiration biopsy (US-FNAB) in an endemic goitre area. US-FNAB was performed on all outpatients who presented with hypoechoic and/or hypofunctional and/or growing nodules. A total of 4518 US-FNABs were performed and 718 patients from this series underwent surgery. Cytological results of the primarily performed with the historical results. US-FNAB results were grouped as non-malignant (n = 303), non-malignant follicular proliferation (n = 177), malignancy cannot be ruled out (n = 133) malignant (n = 61) inadequate (n = 34), and sampling error (n = 10).

Nodules as small as 5mm in diameter could be biopsied, gaining representative material. US-FNAB found a malignant or suspicious cytology in 65 out of 87 cases with malignant histology (74.71%). Diagnosis of early tumour stages was often possible: 12 of 18 thyroid carcinomas biopsied and smaller than 10mm in diameter had malignant or suspicious cytology (groups 3 and 4). US-FNAB was performed incorrectly within non-malignant nodules in ten patients (1.3%) with multinodular goitre (ten papillary carcinomas, nine smaller than 10mm). Regarding the cytology of groups 1 and 2 as benign and those of groups 3 and 4 as malignant. US-FNAB performance was as follows: sensitivity 87.84%, specificity 78.50%, negative predictive values 98.13%, positive predictive values 33.51% and accuracy 79.53%. Biopsies with inadequate material were obtained in 4.73% of all biopsies. No major adverse effects occurred. Re-biopsies in 61 cases did not alter the cytological outcome in those cases where adequate material was obtained. US-FNAB is a valuable method in the pre-operative assessment of thyroid nodules in order to select patients for surgery, as malignancy can often be detected even in early tumour stages. However, even with ultrasonographic guidance, the minimal tumour size detectable by US-FNAB is around 5mm. The cytological interpretation in cases with regression and microfollicular proliferation also sets limits on the method. However, patients with non-malignant cytologies can be followed up safely by sonography due to the high NPV of US-FNAB as long as thyroid nodules do not become larger. Re-biopsies are to be considered if limited value as long as adequate material was obtained by US-FNAB.

Power Doppler Ultrasonographic Assistance in Percutaneous Ethanol Injection of Autonomous Functioning Thyroid Nodules

S Spiezia, G Cerbone, A Pio Assanti

Revue bibliographique

S Spiezia, G Cerbone, A Pio Assanti

Department of Gynecology, University Hospital of the Netherlands.
The purpose of this study was to explore the potential role of power Doppler sonography in guiding percutaneous ethanol injection of autonomously functioning thyroid nodules. Thirty-two patients with toxic adenoma and 15 with toxic adenoma underwent percutaneous ethanol injection under power Doppler sonographic guidance. All patients with toxic adenoma and 13 of 15 patients with toxic adenoma were treated successfully (regression of thyroid hormones and stimulating hormone levels and disappearance of nodular hyperactivity with complete recovery of extranodular tracer uptake at scintigraphy). Power Doppler sonography showed the progressive reduction of the intranodular blood flow until its extinction after 6 to 12 months. Nodular shrinkage was obtained in all patients (from 10.85 ± 1.04 to 2.9 ± 0.3ml in pretoxic adenoma and from 15.4 ± 1.8 to 4.2 ± 0.7ml in toxic adenoma. Power Doppler sonographic guidance seems to improve the outcome of percutaneous ethanol injection, allowing detection of blood flow even in very small vessels, permitting the ethanol to be guided toward the main afferent vessels of the nodules, and making it possible to monitor the diffusion and the effects of ethanol on nodular vascularization.

Ultrasound-guided needle biopsy of primary bone tumours

A Saifuddin, R Mitchell, SJD Burnett, A Sandison, JAS Pringle

The Royal National Orthopaedic Hospital Trust, Brockley Hill, Stanmore, Middlesex HA7 4LP, UK.

J Bone Joint Surg 2000; 82-B: 50-4

Needle biopsy is an established technique for the histodiagnostic study of bone tumours, usually guided by fluoroscopy or CT. Surface lesions and aggressive tumours which have extended through the cortex are also amenable to imaging with ultrasound (US). We have assessed the diagnostic accuracy of US-guided Trucut needle biopsy in a consecutive series of patients referred to a Bone Tumour Unit with suspected primary bone tumours. Of 144 patients (83 men, 61 women; mean age 34.7 years) referred over a period of two years, 63 were considered suitable for US-guided biopsy. This was based on the presence of a relatively large extraosseous component, seen typically in osteosarcoma and malignant round-cell tumours. The results of needle biopsy were compared with those of surgical biopsy. The diagnostic accuracy was 98.4%, with only a single failed biopsy.

Thus, in a selected group of patients, US is a very reliable technique of guidance for percutaneous needle biopsy of bone tumours.

OSTÉO-ARTICULAIRE

Magnetic resonance imaging as a screening procedure to avoid arthroscopy for meniscal tears

J Elvenes, CP Jersey, O Reikeras, O Johansen

Department of Orthopaedics, University Hospital of Tromsø, N-9038 Tromsø, Norway.

Arch Orthop Traumatology 2000; 120:14-16.

The objective of this study was to evaluate the role of magnetic resonance imaging (MRI) as a screening procedure before arthroscopy of meniscal tears. Forty-one knees in 40 patients underwent MRI and arthroscopy. Compared with arthroscopy, the sensitivity, specificity, positive predictive value and negative predictive value for MRI for the medial meniscus were 100%, 77%, 71% and 100%, respectively, while the values for the lateral meniscus were 40%, 89%, 33% and 91%, respectively. The overall accuracy for MRI of the medial and lateral menisci combined was 84%. On the basis of the high predictive value of negative MRI, we conclude that MRI is useful to exclude patients from unnecessary arthroscopy.

The diagnosis of internal derangement of the knee is still controversial. Several authors have compared the findings of MRI with those of arthroscopy and have reported an accuracy of between 25% and 100% [14]. Many false-positive findings have been noted with MRI, especially in the posterior horn of the medial meniscus [8-12, 18, 19]. The present study was undertaken to evaluate the usefulness of MRI as a screening technique to reduce the number of arthroscopic procedures in diagnosing meniscal lesions of the knee.

Substantial Superiority of Semiflexed (MTP) Views in Knee Osteoarthritis: A Comparative Radiographic Study, without Fluoroscopy, of Standing Extended, Semiflexed (MTP), and Schuss Views

JC Buckland-Wright, F Wolfe, RJ Ward, N Flowers, C Hayne

Division of Anatomy, King’s College, GKT Medical and Dental Schools, London Bridge, London SE1 9RT, UK.

J Rheumatol 1999; 26: 2664-74

Objective. To improve the radiographic assessment of cartilage loss, as measured by joint space width (JSW) in patients with osteoarthritis (OA) of the knees required to detect the effect of structure modifying drugs in OA trials. This was achieved by determining which of 3 nonfluoroscopic radiographic views — standing extended, semiflexed, and schuss — produced the most accurate radiostatistical positioning of the joint and greater reproducibility in joint repositioning and JSW measurement.

Methods. Knees from 74 patients with OA of the knees who had medial tibiofemoral compartment JSW ≥ 2mm in all views were studied. For all 3 radiographic views, accuracy in the radiostatistical positioning of the knee was determined for both joint rotation and flexion. Reproducibility in joint repositioning and JSW measurement were determined from the difference between repeat examinations taken within 2h.

Results. About 86% of knees in the 3 views had accurate rotational positioning of the joint at each visit. Radiostatistically, knees in the semiflexed view were significantly more accurately positioned in regard to knee flexion (p < 0.0005) than in the schuss view, which in turn was better (p < 0.014) than in the extended knee view. Joint repositioning was significantly more reproducible in the semiflexed (p < 0.014) than both schuss and extended knee positions, which were not significantly different from each other.

Conclusion. Protocols defining the nonfluoroscopic radiographic procedures for the semiflexed view provide the most accurate radiostatistical joint positioning, and the most reproducible joint repositioning and JSW measurement. Using this method significantly fewer knees would be required to detect significant JSW changes in a structure modifying drug trial compared to the schuss and the extended knee positions.

Ultrasonographic measurement of the thickness of human articular cartilage in situ

JQ Yao, BB Seedhom

Biomechanics Laboratory, Rheumatology and Rehabilitation Research Unit, University of Leeds, 36 Clarendon Road, Leeds LS2 9NZ, UK.

Rheumatology 1999;38:1269-71

Objective. The objective of the present study was to explore the possibility of using the ultrasonic pulse-echo technique for the non-invasive measurement of cartilage thickness in situ during a joint arthroscopic examination. The accuracy of the ultrasonic measurement was assessed in vitro against that of an established needling technique which is destructive.

Methods. The velocity of sound in articular cartilage was measured in an in vitro study of one set of ipsilateral human ankle and hip joints at 69 test sites. Its variability was determined.

Results. The velocity of sound in human articular cartilage measured in situ varied widely (1419-2428m/s; mean: 1892m/s; S.D. 183m/s) and therefore the error in the thickness of cartilage obtained from ultrasonic measurement based upon a constant velocity of sound could be as large as 33.6% (mean 7.38%; S.D. 6.25%).

Conclusions. The ultrasonic pulse-echo technique is not accurate for the measurement of the thickness of cartilage in situ. An alternative (albeit minimally invasive) would be the needling technique. This requires the development of a specialized probe.

Type II Autosomal Dominant Osteopetrosis (Albers-Schönberg Disease): Clinical and Radiological Manifestations in 42 Patients

OD Bénicot-du, JD Laredo, MC Verneuil

INSERM U 349, Centre Viggo Petersen, Hôpital Lariboisière, 2, rue Ambroise Paré, 75010 Paris, France.

Bone 2000; 26: 87-93
We always use MRI to diagnose osteomyelitis. For long-term follow-up of patients with mandibular osteomyelitis, we recommend MRI and bone scintigraphy.

Chondroid Tumors of the Larynx: Computed Tomography Findings

SJ Wang, A Borges, RB Lukfin
Division of Head and Neck Surgery, UCLA Medical Center, CHS 62-132, 10833 Le Conte Ave, Los Angeles, CA 90095-1624.

Am J Otalaryngol 1999; 20: 379-82

Purpose. Chondromas and chondrosarcomas of the larynx are rare cartilaginous tumors making up less than 1% of all laryngeal tumors. Patients typically present with symptoms of hoarseness, dysphagia, or dyspnea. The most common location in the larynx for these tumors is the cricoid cartilage. Radiographically, these lesions are typically hypodense, well-circumscribed masses containing mottled calcifications with smooth walls centered within the cartilage.

Materials and Methods. We present 6 cases of chondroid tumors of the larynx.

Results. One patient had a chondroma, 4 patients had low-grade chondrosarcomas, and 1 patient had an intermediate-grade chondrosarcoma. Two partial laryngeal resections and 4 total laryngectomies were performed.

Conclusions. In most cases of chondroma or chondrosarcoma of the larynx, conservative surgery should be attempted, but total laryngectomy may be required for large or recurrent lesions.

The role of computed tomography in the preoperative assessment and follow-up of oromandibular reconstruction with microvascular osteomyo-cutaneous free flaps

L. Preda, R Dore, M Benazzo, A Occhini
Istituto di Radiologia, Universita di Pavia. IRCSS Policlinico S. Matteo, p. le C. Golgi, 2, 27100 Pavia, Italy.

Dentomaxillofacial Radiology 1999; 28, 338-43

Objective. To investigate the capacity of helical CT in the pre- and post-operative management of oromandibular reconstruction of patients with oropharyngeal carcinoma using microvascular composite free flaps.

Materials/methods. Thirty-four patients with oropharyngeal cancer were examined by helical CT and nine (six men and three women) submitted to oromandibular reconstruction were taken from the iliac crest. CT scans were performed in 16 cases, and from the fibula in three cases. All patients were examined by CT 1-4 days postoperatively and then at 6 monthly intervals. Two double helical scans were performed in all cases, with slices of 3-mm for primary lesion studies and 5-mm for lymph node staging.

Results. Preoperative CT showed massive bone infiltration in six of the nine surgical patients and marginal infiltration in three. These findings were confirmed histologically. There were no false negatives. The immediate postoperative examination showed correct flap positioning in eight of nine cases. The flap underwent ischemic necrosis in two cases; CT showed very early signs of bone ischemia in both. CT detected two cases of recurrence after about 1 year.

Conclusions. Axial CT permitted adequate assessment of the extent of mandibular injury and detected early ischemic complications and distant recurrences. Integration with MPR and 3D reconstructions simplified the choice of flap type and size and enabled the postoperative assessment of correct flap positioning. This helped the surgeon plan subsequent rehabilitation with osseo-integrated implants.

Clinical and radiological evaluation in children with microtia

F Calzolari, G Garani, A Sensi, A Martini
Servizio di Neuroradiologia. Arcispedale S Anna, Corso Giovecca 203, 44100 Ferrara, Italy.

British Journal of Audiology 1999; 33: 303-312

The management of a child with congenital ear malformation, in particular if the external ear is severely involved, is difficult because of the complexity of the therapeutic problem, and that of parental anxiety. It is very important to plan a complete therapeutic/haibilitation programme as soon as possible, even if surgical procedures are delayed. Diagnostic imaging plays an important role in the global assessment of a child with microtia, in order to diagnose possible associated external auditory canal, middle and inner ear malformations. For these reasons our diagnostic protocol for children with microtia includes otological and audiological evaluation, clinical genetics and radiological imaging, from the neonatal period. Here, data are reported on 27 children with microtia who completed the diagnostic protocol. In eight of 27 cases microtia was bilateral; in unilateral cases the right side was affected more frequently. Other congenital malformations were diagnosed in 41% of cases. A high correlation between the degree of microtia and the frequency of external and middle ear dysplasias was found, in accordance with larger studies of the literature. Inner ear malformations were found less frequently, but without apparent correlation with the degree of microtia. The fact that children with microtia may also have severe inner ear malformations is emphasized.

PÉDIATRIE

The use of ultrasound in determining the initiation of treatment in instability of the hip in neonates

KJ Holen, A Tegnander, SH Eik-Nes, T Terjesen
The National Hospital, Centre of Orthopaedics, Trondheimsv. 132, N-0570 Oslo, Norway.


We have evaluated the effect of the use of ultrasound in determining the initiation of treatment in neonatal instability of the hip. A total
defect, and the mass effect of three arachnoid cysts. That information was used to alter patient counseling and at times management.

Conclusion. When a CNS anomaly is detected by sonography or suspected on ultrasound, MRI findings might lead to altered diagnosis and patient counseling.

Neurophysiology and MRI in Late-Infantile Metachromatic Leukodystrophy

DI Zaefiriou, EE Kontopoulos, HM Michelakis
Child Neurologist; Eragnia St. 106; Thessaloniki 54622, Greece.

Pediatr Neurol 1999; 21: 843-6

We present serial clinical, radiologic, and neurophysiologic findings of a patient with late-infantile metachromatic leukodystrophy who was first admitted at 30 months of age because of progressive dementia. The neurologic findings were consistent with mild spastic diplegia (occasionally with toe walking). Magnetic resonance imaging disclosed diffuse high intensity in the cerebral white matter on T1-weighted images and in subcortical white matter on T2-weighted images. Serial MRI and evoked-potential studies were markedly abnormal. Assay of arylsulfatase A activity in leukocyte culture disclosed a marked deficiency of the enzyme, confirming the diagnosis of late-infantile metachromatic leukodystrophy. Serial neurophysiologic studies demonstrated a marked decrease of nerve conduction velocities, both motor and sensory, as well as prolongation or diappearance of brainstem auditory-visual, and somatosensory-evoked potential latencies. Magnetic resonance imaging studies revealed initially diffuse increased signal intensity of periventricular and subcortical white matter, progressing to cortical atrophy with involvement of the arcuate fibers and the cerebellar white matter, correlating with the clinical deterioration (severe spastic tetraplegia with optic atrophy and epilepsy).

Predictive Value of Neonatal MRI as Compared to Ultrasound in Premature Infants with Mild Periventricular White Matter Changes

G van Wezel-Meijer, MS van der Knaap, NJ Oosting
Department of Paediatrics, Subdivision of Neurology, Free University Hospital, Amsterdam, The Netherlands.

Neuropediatrics 1999; 30: 231-8

A follow-up study was performed in 42 premature infants in whom serial neonatal ultrasound and a single neonatal MRI of the brain was normal, or showed mild periventricular white matter changes. The aim of the study was to evaluate the clinical significance of periventricular signal intensity changes on MRI and to compare the predictive value of neonatal MRI with that of ultrasound. The infants underwent repeated standardised motor assessments and developmental tests. MRI was repeated at the corrected age of 12 months. Pronounced periventricular signal intensity changes on neonatal MRI and periventricular echodensities (flaring) on ultrasound were associated with a high incidence of transient motor problems during infancy. The degree of echogenicity carried the highest predictive value, as compared to duration of flaring on ultrasound and degree of periventricular signal intensity change on MRI. It is concluded that signal intensity changes on neonatal MRI represent the same ischaemic change of the periventricular white matter as flaring on ultrasound and that routine neonatal MRI screening is not warranted in premature infants without clinical evidence of neurophysiological problems and with normal or mildly abnormal ultrasound scans. Recording of the degree of echogenicity should become a routine procedure in neonatal cerebral ultrasonography.

RACHIS

Prevalence of Radiological Changes in the Cervical Spine — A Cross Sectional Study After 20 Years from Presentation of Rheumatoid Arthritis

MH Neva, K Kaarela, M Kauppi
Department of Rheumatology, Rheumatism Foundation Hospital, FIN-18120 Heinola, Finland.

J Rheumatol 2000; 27: 90-3

Objective. To evaluate the prevalence of cervical spine changes in patients with rheumatoid factor (RF) positive rheumatoid arthritis (RA) followed prospectively for 20 years.

Methods. An inception cohort of 103 patients with RF positive RA have been followed at the Rheumatism Foundation Hospital, Heinola. A total of 68 patients attended for the 20 year followup. An additional 28 patients died and 7 were not able to attend due to severe disease or old age. The plain cervical spine radiographs of 69 patients (68 and one received from another hospital) taken after 20 years of RA were evaluated.

Results. Anterior atlantoaxial subluxation was found in 16 cases (23%), while 18 patients (26%) had atlantoaxial impaction as judged by the Sakaguchi-Kauppi method. Subaxial subluxations and lateral atlantoaxial subluxations were found in 13 cases (19%) and 3/52 cases (6%), respectively, while 45 patients (65%) had subaxial disc space narrowing.

Conclusion. Cervical spine changes are common in patients with long lasting RA. They should be diagnosed and treated early to avoid complications. In our patient group no cervical spine surgery was performed, but at least 7 patients (10%) required further evaluation for possible surgery.

Quantitative Assessment with SPECT Imaging of Stress Injuries of the Pars Interarticularis and Response to Bracing

K Anderson, JF Sarwark, JJ Conway
Division of Pediatric Orthopaedic Surgery, Children’s Memorial Hospital, 2300 Children’s Plaza #69, Chicago, IL 60614-3394, U.S.A.

Journal of Pediatric Orthopaedics 2000; 20: 28-33

The evaluation and management of acute spondylolysis remains unclear in part be-
cause of outcome data that are primarily subjective. The aim of this study was to evaluate and monitor these patients objectively using quantitative single-photon emission computed tomography (SPECT). Thirty-four patients were so observed clinically between 1987 and 1996 and were studied with an initial and at least one follow-up SPECT scintigram. Initial radiographs and planar bone scans failed to demonstrate the pars lesion in 53% and 19% of the patients, respectively. The average SPECT ratio before brace treatment was 1.45. After treatment, this ratio significantly decreased to 1.27 (p = 0.03). A subset of patients remained symptomatic at follow-up. Their reduction in SPECT ratio averaged 53% and 19% of the patients, respectively. The time from onset of symptoms to diagnosis of spondylitis on SPECT) had more predictable symptomatic stage of the condition (with greater intensity on SPECT) at 9 weeks). Thirty-five patients (26%) had a relapse. There were no deaths for 9 patients (26%) 95% confidence interval, 12%-43%) and 5 (14%; 95% CI, 5%-30%) had a relapse. Patients diagnosed and braced in the early, more active stage of the condition (with greater intensity on SPECT) had more predictable symptomatic relief. An initial SPECT ratio of > 1.5 was associated with complete symptom resolution.

Brucellar Spondylitis: Review of 35 Cases and Literature Survey

J Solera, E Lozano, E Martinez-Alfaro
Clinical Infectious Diseases 1999; 29: 1440-9

Thirty-five patients aged 14-74 years (average, 54 years) who had brucellar spondylodiscitis were treated between January 1991 and December 1997. The time from onset of symptoms to diagnosis of spondylitis ranged from 1 week to 8 months (median, 9 weeks).

Harris or Axis Ring: an Aid in Diagnosing Low (Type 3) Odontoid Fractures

LJM Mortelmanns, EAM Geusens, MB Sabbie, HH Delooz
1Departments of Emergency Medicine 2, and Radiology, University Hospital Gasthuisberg, Leuven, Belgium.

Eur J Surg 1999; 165: 1138-41

Objective. To present our experience of diagnosing fractures of the odontoid process on lateral radiographs of the cervical spine that show the Harris (axis) ring.

Design. Retrospective study.

Setting. Teaching hospital, Belgium.

Subjects. 12 patients with multiple injuries, including cervical spine, 8 of them unconscious or uncooperative. Interventions: Cross table lateral view of the cervical spine.

Main outcome measure. Identification of otherwise hidden type 3 axial fractures.

Results. Diagnosis of low odontoid fractures in all cases.

Conclusion. The Harris ring is disrupted in low odontoid fractures and intact in fractures of the odontoid process. Awareness of this sign will allow diagnosis of otherwise hidden axial fractures.

Magnetic resonance imaging and neurological recovery in acute spinal cord injury: observations from the National Acute Spinal Cord Injury Study 3

MJ Shepard, MB Bracken
Department of Epidemiology and Public Health, Yale University School of Medicine, 3910 New Haven, CT 06520-8034, USA.

Spinal Cord 1999; 37: 833-7

Study design. Data are from a multicenter, randomized, double blind clinical trial of acute spinal cord injury.

Objectives. To evaluate the prognostic value of magnetic resonance imaging (MRI) for randomized patients in the National Acute Spinal Cord Injury Study 3 (NASCIS).

Setting. Sixteen spinal cord injury centers throughout the United States and Canada.

Methods. Of 499 patients randomized in NASCIS 3 between December 1991 and September 1995, MRI was electively done on 191 patients within 72 h of injury. Indications of hemorrhage, edema, and contusion were recorded by standard protocol. Neurological impairment as determined by motor function, response to pin prick and light touch was assessed at admission to the participating center and 6 weeks after injury. Change in neurological function was obtained by subtracting the score of each neurological parameter at admission from that measured at 6 weeks. Spinal cord surgery performed within the 3 days after injury was noted. Data were analyzed by: chi square, analysis of variance, multiple logistic regression and linear regression models.

Results. Patients with hemorrhage were much more likely to have a complete injury (OR = 2.88, 95 CI 1.32, 6.23); however this association was much reduced when the initial neurological examination was taken into account (AOR = 1.43, 95% CI 0.55, 3.73) and was no longer a significant predictor of injury. MRI evidence of cord edema was the strongest predictor of reduced improvement in motor function (P = 0.06) and light touch sensation (P = 0.05) at 6 weeks.

Conclusions. Cord hemorrhage, contusion, and edema on MRI were not associated with diagnosis of a complete cord injury after neurological assessment from the initial clinical examination was taken into account. Prediction of a worse 6 week neurological status was weakly associated with the presence of edema diagnosed by MRI. As MRI technology improves, these diagnostic and predictive capabilities need to be re-assessed.

Sponsorship. NASCIS 3 was funded by the National Institute of Neurological Disorders and Stroke at the National Institutes of Health, Washington, DC, USA. Pharmacia and Upjohn provided study drugs and placebos; they also monitored data quality, and funded additional tests, in accordance with Food and Drug Administration regulatory requirements. Dr Bracken has served as an occasional paid consultant to Pharmacia and Upjohn.

SÉNOLOGIE

Role of Breast Magnetic Resonance Imaging in Determining Breast as a...
Source of Unknown Metastatic Lymphadenopathy
Ronda S, Henry-Tillman, SE Harms, KC Westbrook
Department of Surgery, Division of Surgical Oncology, University of Arkansas for Medical Sciences, Slot 725, Little Rock, Arkansas 72205.

Background. Occult primary breast cancer (OPBC) represents less than 1% of breast cancer. In only a third of cases, mammography identifies a primary tumor. We hypothesized that rotating delivery of excitation off-resonance breast magnetic resonance imaging (MRI) would identify or exclude the breast as a primary site in patients with OPBC.

Methods. In a retrospective review, 10 patients were identified with OPBC in which MRI was performed. Malignant appearing lesions were correlated with histopathologic findings at biopsy or surgery.

Results. MRI identified the primary site in 8 of 10 cases as breast (80%), and excluded it in 2 cases. The extent of disease and location was accurately predicted when compared with histopathologic specimen.

Conclusions. As we continue to focus on a cure of early breast cancer, it is imperative that diagnostic images become more sensitive and specific. MRI accurately predicted OPBC in this subset of patients.

Silicone Breast Implant Rupture: Pitfalls of Magnetic Resonance Imaging and Relative Efficacies of Magnetic Resonance, Mammography, and Ultrasound
I Debra M. Borofsky Harriet B, Herlens Robert J
Stanford University School of Medicine; Department of Radiology; S-068A, Route 1; Stanford, Calif. 94305-5105.
Plast Reconstr Surg 1999; 104: 2054-62

The objective of this study was to evaluate the relative efficacies of magnetic resonance (MR) imaging, ultrasonography, and mammography in implant rupture detection and to illustrate pitfalls in MR image interpretation. Thirty patients referred by plastic surgeons with suspected breast implant rupture were prospectively evaluated using MR, ultrasonography, and mammography. Imaging examinations were interpreted independently and blindly for implant rupture and correlated to operative findings. Surgical correlation in 16 patients (53 percent) with 31 implants showed 13 (42 percent) were intact, 5 (16 percent) had severe gel bleed, and 13 (42 percent) were ruptured. MR sensitivity was 100 percent and specificity was 63 percent. Accuracy for ruptures was 81 percent with MR, higher than with ultrasonography and mammography (77 and 59 percent, respectively). We describe a specific pitfall in MR interpretation, the rat-tail sign, composed of medial linear extension of silicone along the chest wall. Seen in eight cases (four intact, three ruptures, one gel bleed), the rat-tail sign may lead to misdiagnosis of implant rupture if seen in isolation. Magnetic resonance imaging is more accurate and sensitive than ultrasonography and mammography in detecting breast implant rupture. We describe a new sign (rat-tail sign) composed of medial compression of the implant simulating silicone extrusion as a potential false-positive MR finding for rupture. This article presents clinical experience with magnetic resonance, mammography, and ultrasound in the diagnosis of implant rupture and defines and illustrates potential pitfalls of MR interpretation, including the new rat-tail sign.

SYSTÈME NERVEUX

Encephalitis after hepatitis B vaccination
Recurrent disseminated encephalitis or MS?
A Tourbah, O Gout, R Liblau, O Lyon-Caen Fédération de Neurologie, Hôpital de la Salpêtrière, 47, Boulevard de l'Hôpital, 75651, Paris Cedex 13, France.

Objective. To describe clinical and MRI features of patients with a disease suggestive of CNS inflammation after hepatitis B vaccination.

Methods. Eight patients with confirmed CNS inflammation occurring less than 10 weeks after hepatitis B vaccination are described. They received follow-up clinically and on MRI for a mean period of 18 months.

Results. Clinical and MRI findings were compatible with acute disseminated encephalomyelitis. However, clinical follow-up, repeated MRI, or both showed the persistence of inflammatory activity, which makes this encephalitis more suggestive of MS than of acute disseminated encephalomyelitis.

Conclusion. The persistent inflammatory activity observed clinically and on MRI in these patients is compatible with that usually observed in MS. Epidemiologic studies are currently testing the hypothesis of a triggering role of hepatitis B vaccination in CNS demyelination.

WJ Schonewille, S Tuhrim, MB Singer, SW Atlas Sinai School of Medicine, Department of Neurology, Box 1137, One Gustave L. Levy Place, New York, NY 10029.
Stroke 1999; 30: 2066-9

Background and Purpose. Clinical-radiological correlation studies in lacunar syndromes have been handicapped by the low sensitivity of CT and standard MRI for acute small-vessel infarction and their difficulty in differentiating between acute and chronic lesions.

Methods. We prospectively studied 43 patients presenting with a classic lacunar syndrome using diffusion-weighted MRI, a technique with a high sensitivity and specificity for acute small-vessel infarction.

Results. All patients were scanned within 6 days of stroke onset. An acute infarction was identified in all patients. Pure motor stroke was associated with lesions in the posterior limb of the internal capsule (PLIC), corona radiata, and medial medulla, ataxic hemiparesis with lesions in the PLIC, corona radiata, pons, and insular cortex; sensorimotor stroke with lesions in the PLIC and lateral medulla; dysarthria-clumsy hand syndrome with lesions in the PLIC and caudate nucleus; and pure sensory stroke with a lesion in the thalamus. Subcortical lesions extended into neighboring anatomic structures in 48% of the patients.

Conclusions. Lacunar syndromes can be caused by lesions in a variety of locations, and specific locations can cause a variety of lacunar syndromes. Extension of lesions into neighboring structures in patients with lacunar syndromes appears to be more frequent than previously described in studies using CT and standard MRI.

Neurosurgical implications of Carney complex
JC Watson, CA Stratakis, PK Bryant-Greenwood Department of Laboratory Medicine and Pathology, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.
Neurosurg 2000; 92: 413-8

Object. The authors present their neurosurgical experience with Carney complex. Carney complex, characterized by spotty skin pigmentation, cardiac myxomas, primary pigmented nodular adrenocortical disease, pulmonary tumors, and nerve sheath tumors (NSTs), is a recently described, rare, autosomal-dominant familial syndrome that is relatively unknown to neurosurgeons. Neurosurgery is required to treat pituitary adenomas and a rare NST, the psammomatous melanotic schwannoma (PMS), in patients with Carney complex. Cushings syndrome, a common component of the complex, is caused by primary pigmented nodular adrenocortical disease and is not secondary to an adrenocorticotropic hormone-secreting pituitary adenoma.

Methods. The authors reviewed 14 cases of Carney complex, five from the literature and nine from their own experience. Of the 14 pituitary adenomas recognized in association with Carney complex, 12 developed growth hormone (GH) hypersecretion (producing gigantism in two patients and acromegaly in 10), and results of immunohistochemical studies in one of the other two were positive for GH. The association of PMSs with Carney complex was established in 1990. Of the reported tumors, 28% were associated with spinal nerve sheaths. The spinal tumors occurred in adults (mean age 32 years, range 18-49 years) who presented with pain and radiculopathy. These NSTs may be malignant (10%) and, as with the cardiac myxomas, are associated with significant rates of morbidity and mortality.

Conclusions. Because of the surgical comorbidity associated with cardiac myxoma and/or Cushings syndrome, recognition of Carney complex has important implications for perisurgical patient management and family counseling. Study of the genetics of the Carney complex and of the biological abnormalities associated with the tumors may provide insight into the general pathological abnormalities associated with the tumors or provide insight into the general pathological abnormalities associated with the tumors.

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Postoperative MRI Appearance After Transsphenoidal Pituitary Tumor Re-section

V Rajaraman, M Schulder
Division of Neurosurgery, New Jersey Medical School, Newark, New Jersey.

Surg Neurol 1999; 52: 592-9

Background. Knowledge of the magnetic re-sonance imaging (MRI) appearance of the pit-uitary fossa following transsphenoidal resec-tion of a pituitary adenoma, in the early and late postoperative period, is important for de-tecting complications and for assessing ex-tent of tumor excision. Few prospective stu-dies have addressed this issue.

Methods. Fourteen patients with pituitary macroadenomas were prospectively studied with MRI. Maximal tumor resection was accom-plished in each patient, and the postoperative histo-logical diagnoses included non-secreting adenoma in 11 patients, prolactinoma in 2 and necrosis in one. Early postoperative scans were obtained within 14 days after surgery, and late studies between 3 and 4 months, in all pa-tients. Four patients also had delayed scans between 6 months and a year. The maximum coronal dimension (MCTD) of the sellar and suprasellar contents was measured on T1-weighted contrast enhanced scans.

Results. All patients had normal or improved visual examinations and normal or improved hormonal function postoperatively. The pre-operative MCTD ranged from 11 mm to 59 mm in height (mean 30.3 mm). There was little change in MCTD on the early postoperative MRI scans (range 7.49 mm, mean 23.5 mm). However, in all patients the MCTD decreased in height by 4 months (range 2-35 mm, mean 12.7 mm). This change represented a 58% mean reduction in size compared to the preop-erative measurements.

Conclusions. We conclude that the appearance of the sellar contents on early postoperative MRI may appear remarkably similar to that seen before surgery, even after technically accurate resection. The postoperative mass may represent a combination of residual tumor, edema, postoperative hemorrhage and hemos-tatic material. Routine follow-up MRI after transsphenoidal resection of pituitary tumors may be delayed until at least 4 months after surgery in patients who are clinically stable.

Does leukoaraiosis predict morbidity and mortality?

DP Birley, S Haroon, SM Sergent, S Thomas
Department of Neurology (J21), Stoke Mandeville Hospital NHS Trust, Mandeville Road, Ay-lersbury, Bucks HP21 SAL, UK.

Neurology 2000; 54: 90-94

Objective. To determine whether leukoaraiosis predicts morbidity and mortality. Background: Gait disturbance and leukoaraiosis both are common in the elderly. Gait disturbance pre-dicts mortality. Leukoaraiosis may be a unifying factor to both gait disturbance and mortality. Methods. We followed 221 patients prospectively evaluated for severity of neurologic defi-cits by the National Institutes of Health (NIH) stroke scale and for leukoaraiosis in seven brain regions by CT, graded as absent (n = 119,54%), mild (in at least one of seven brain regions; n = 54,24%), or severe (present in all seven brain regions; n = 48.22%). Pneu-monia (n = 27,12%), falls resulting in fracture requiring hospitalization (n = 7,3%), and death (n = 38,17%) were end points.

Results. Severe leukoaraiosis predicted death (Cox hazard ratio [HR] = 2.91; 95% CI = 1.5 – 5.6), pneumonia (HR = 5.1; 95% CI = 2.4 – 10.9), death from pneumonia (HR = 8.3; 95% CI = 1.5 – 46), and falls (HR = 6.8; 95% CI = 1.5 – 30). Severe leukoaraiosis predicted a combined end point of death, pneumonia, and falls (HR = 3.5; 95% CI = 2. – 6.). Others pre-dictors were NIH stroke scale score, age, smoking, diabetes, leukoaraiosis score, and referral dia-gnosis of either dementia or Parkinsonism. Severe leukoaraiosis remained a predictor af-ter adjustment for these other factors (HR = 2.2; 95% CI = 1.2 – 3.9), but was borderline after adjusting for gait (HR = 1.96; 95% CI = 0.97 – 3.94; p = 0.061). The combination of severe leukoaraiosis and gait disturbance had the highest risk (HR = 4.4; 95% CI = 2 – 7.9).

Conclusions. Leukoaraiosis predicts mor-bidity and mortality independently of preexisting neurologic deficits. The combina-tion of leukoaraiosis and gait disturbance car ries a poor prognosis.

Diagnostic accuracy of MRI compared to CCT in patients with brain meta-stases

Peter D Schellingier, Hans M Meinck, A Thron
Department of Neurology, University of Heidel-berg, Germany

Journal of Neuro-Oncology 1991; 44: 275-81

Objectives. In patients with extracranial neo-plasms, the occurrence and number of brain metastases (BM) are critical for further dia-gnostic approaches and therapeutic strate-gies and the patient’s prognosis. Although wi-dely accepted, there is surprisingly little evidence in the literature that MRI is superior to CCT in the detection of smaller lesions. Therefore, we compared the diagnostic accuracy of MRI and CCT in 38 patients with solitary BM on MRI (31%) and 38 had solitary BM in both. Based on a presumed binomial distri-bution of our data, we calculated a rate of at least 19% of patients with solitary BM on CCT, in which MRI should show multiple le-sions (p = 0.05). The two main characteristics for BM missed by CCT were the smaller dia-meter, which averages 2 cm less than in BM identified with both modalities, and a preferen-tial frontotemporal location.

Conclusion. MRI is indeed superior to CCT in the diagnosis of BM the essential reasons besides detection of smaller lesions being a better soft tissue contrast, significantly stron-ger enhancement with paramagnetic contrast agents, the lack of bone artifacts, fewer par-ticular volume effects, and direct imaging in three dimensions. Therefore, MRI is in-dispensable in the diagnostic workup of pa-tients with BM for choosing the optimum the-rapeutic approach, especially with regard to the decision whether to operate or to prima-ry irradiate the patient’s metastases.

Carotid Artery Stenting in Patients at Surgical High Risk: Clinical and Ultrasound Findings

B Griewenga, F Brasselec, U von Smekal, MT Al Ahmarb, Ch Kesslerb
Cerebrovasc Dis 2000; 10: 44-48

Angioplasty and stenting (A/S) provide an alter-native for patients with severe simultaneous severe cardiac and cerebrovascular disease, or with medical illnesses which carry a high peropera-tive risk. We conducted A/S in 20 high-risk pa-tients (15 males, 5 females, mean age = 64.5 years, range = 40 – 81 years) with multiple risk factors. A/S was performed after 24 h and every 3 months following the procedure: the 3 months examination also included cerebral angiography. The mean degree of stenosis was reduced from 85.7± 7.2% to 30.0± 22.0% in particular, of cyst in-ternal hyperplasia within the stent. In conclu-sion, in patients with a high perioperative risk, A/S is a therapeutic alternative to surgery.

MRI Findings and Clinical Manifesta-tions in Rathke’s Cleft Cyst

N Saeki, K Sunami, Y Sugaya, A Yamaura
Department of Neurological Surgery, Chiba University School of Medicine, Inohana, Chuoh-ku, Chiba-shi, Chiba Japan


We retrospectively analysed patients with histologically proven Rathke’s cleft cyst (RCC) in relation to the clinical manifesta-tions and MRI findings in particular, of cyst size and intensity in order to obtain an insight into their growing mechanisms, clinical pre-sentations and their management. Eleven patients with RCC were divided into two groups based on T1 weighted images (WI). The A group consisted of 4 patients with cyst of low intensity in T1 WI. The age averaged 64.5 years. Their initial complaints were visual field defects (VFD). Their complaints were ra ther insidious. The maximum cyst size averaged 27.8± 2.4 mm. The B group consisted of 7 patients with cyst of iso- or high-intensity in T1 WI. Two patients in the B group showed mixture of low and high isointensity and high intensity, suggesting the presence of bleeding at the onset of symptoms or growing mechanism of the cysts. In the B group the age averaged 39.9 years, being lower than that in the A group (P = 0.0140 with Mann-Whitney’s U test). The 5 patients out of 7 showed headache of insidious type or acute onset and the 3 showed a fluctua-tion of the VFD. The average size was 21.7 ± 3.5 mm and smaller than that of the A group (P = 0.0208 with Mann-Whitney’s U test). Our study has shown that the cyst with iso-high intensity on T1 WI may cause clinical symptoms with a smaller size than cysts of the low intensity. In the former cyst pattern the onset and growing mechanism may be related to bleeding. The patients with this pat-
tern are more likely to have acute and/or fluctuation of clinical presentations. Knowing these various clinical manifestations based on MRI pattern will be of help in following and managing patients with RCC.

**THORAX**

**Atteinte pneumologique au cours de la sclérodermie systémique Partie I, Pneumopathie interstitielle chronique fibrosante**

I Marie, H Lévesque, S Dominique, PY Hatron

Département de médecine interne, centre hospitalier universitaire de Rouen-Boisguillaume, 7631 Rouen cedex

Rev Méd Interne 1990; 20: 1004-16

**Introduction.** La pneumopathie interstitielle chronique fibrosante constitue la plus fréquente des manifestations respiratoires de la sclérodermie systémique, et sa prévalence est estimée à 80%. Elle demeure une complication grave de la maladie dont elle représente, à l'heure actuelle, la première cause de mortalité, aboutissant au décès par insuffisance respiratoire chronique dans 20 à 60% des cas. Actualités et points forts. Sa date de survenue varie en fonction de la maladie, mais elle est exceptionnellement révélatrice de la sclérodermie systémique. Ses signes d'appel cliniques sont tardifs et leur évolution traduit une atteinte respiratoire étendue, affectant plus de 50% de l'ensemble du parenchyme pulmonaire. Les explorations complémentaires de choix pour le diagnostic et le traitement de cette affection sont le scanner et l'IRM thoracique. La routine d'exploration de notre service est le scanner à impulsion (16 coupes) qui permet de déceler précocement les lésions tomodensitométriques. L'intérêt pronostique, car il existe une corrélation annuelle de la maladie. De plus, les données de la tomodensitométrie haute résolution ont un intérêt pronostique, car il existe une corrélation entre la nature et la sévérité des lésions tomodensitométriques et histologiques. Les indications des autres examens, en particulier du lavage broncho-alvéolaire, restent à déterminer. Son traitement est plus souvent palliatif que curatif.

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**Lower Pulmonary Function and Cerebral Subclinical Abnormalities Detected by MRI. The Atherosclerosis Risk in Communities Study**

D Liao, M Higgins, NR Bryan

Med. Phys. 1999; 26

Our purpose in this study was to characterize the performance of a recently introduced multi-slice CT scanner (LightSpeed QX/i, Version 1-0. General Electric Medical Systems) in comparison to a single-slice scanner from the same manufacturer (HiSpeed CT/i, Version 4-0). To facilitate this comparison, a refined definition of pitch is introduced which accommodates multi-slice CT systems, yet maintains the existing relationships between pitch, patient dose, and image quality. The following performance parameters were assessed: radiation and slice sensitivity profiles, low-contrast and limiting spatial resolution, image uniformity and noise, CT number and geometric accuracy, and dose. The multi-slice system was tested in axial (1.2, or 4 images per gantry rotation) and HQ (Pitch = 0.75) and HS (Pitch = 1.3) helical modes.

Axial and helical acquisition speed and limiting spatial resolution (0.8-s exposure) were improved on the multi-slice system. Slice sensitivity profiles, image noise, CT number accuracy and uniformity, and low-contrast resolution were similar. In some HQ helical modes, helical artifacts and geometric distortion were more pronounced with a different appearance. Radiation slice profiles and doses were larger on the multi-slice system at all scan widths. For a typical abdomen and pelvis exam, the central and surface body doses for 5-mm helical scans were higher on the multi-slice system by approximately 50%. The increase in surface CTDI values (with respect to the single-slice system) was 50% for the pitch = 1.25, which included the configuration (190% for head, 240% for body) and least for the 4 x 5-mm configuration (190% for head, 76% for body). Preliminary testing of version 1.1 software demonstrated reduced doses on the multi-slice scanner, where the increase in body surface CTDI values (with respect to the single-slice system) was 105% for the 4 x 1.25-mm detector configuration and 10% for the 4 x 5-mm configuration. In summary, the axial and HQ-helical modes of the multi-slice systems, yet maintains the existing relationships between pitch, patient dose, and image quality.

**Patient Satisfaction and Diagnostic Accuracy With Ultrasound by Emergency Physicians**

W Durston, ML Carf

Emergency Department, Kaiser Foundation Hospital, 6600 Bruceville Rd, Sacramento, CA 95823


In recent years, there has been considerable interest and controversy concerning the performance of ultrasound by emergency physicians (ED Sono), but patient satisfaction with ED Sono has not been well studied. The primary purpose of this investigation was to assess the technical and patient satisfaction with the use of ED Sono and to compare satisfaction with ED Sono with ultrasonography provided by the Medical Imaging Department (MI Sono). The secondary objective was to assess the accuracy of ED Sono at our facility. During a 5-month interval, which included the startup phase of a program for ED Sono, emergency physicians prospectively identified patients who were candidates for ultrasound as a part of their workup. Patients were contacted by telephone after their ED visit and asked to rate satisfaction on a 10 scale for various aspects of their care, including the ultrasound if one was done. The accuracy of ED Sono was determined by comparing ED ultrasound interpretations with surgical pathology, repeat imaging studies, or clinical follow-up. Two hundred forty patients were entered into the study, and 186 (78%) responded to the satisfaction survey. Satisfaction ratings were highest for ED Sono (mean, 8.9; 95% CI, 8.6 to 9.2) and lowest for MI Sono (mean, 8.8; 95% CI, 8.2 to 9.4). Eighteen percent of ultrasounds performed by emergency physicians were indeterminate. Excluding indeterminate scans and scans for which confirmation was not possible, the accuracy of ED Sono was 99.1% (95% CI, 99.1% to > 99.9%). We conclude that during the startup phase of our ED Sono program, patient satisfaction was high, and the error rate was very low.