Results: Excellent correlation between virtual endoscopy and laryngoscopy in normal patients (10/10) were found. In the pathologic group virtual endoscopy correctly evaluated 11/12 cases; exact location, morphology and extension in the laryngeal cancer stenosis and in cases with impenetrable stenosis at laryngoscopic examination was demonstrated. 1 False negative was found.

Conclusion: The virtual endoscopy with multislice volumetric spiral CT is ultra fast, non-invasive and well tolerated new technology. Although the major limitation of virtual endoscopy is the inability to depict subtle alterations of the mucosa, it is the method of choice where conventional laryngoscopy has failed (e.g. impenetrable stenosis and/or high-risk patients).

C-0433

Recurrence of a glomus tumour of the carotid body with a rare postoperative complication: Unique jetlike contrast-filling of a false aeurysm

M. Cortes, R. Fischbach, M. Vollrath, C. Müller-Leisse, Mönchengladbach/DE

Introduction: Glomus tumours are rare benign tumours which are derived from paraganglia tissue. They are most often located in the region of the carotid bifurcation. Surgery is recommended because carotid body tumours tend to infiltrate locally and have an 2 % to 6 % malignancy rate. Recurrence rates are reported to be 12 %.

A false aeurysm in complicated surgical management has not been reported before.

Case: We report of a 69-year-old male, who was admitted to the hospital because of a pulsating tumour on the right side of the neck. With ultrasound and MRT a glomus tumour of the carotid body was suspected and confirmed by angiography. Surgical exploration revealed a tumour with extensive local infiltration. The operation was additionally aggravated by rupture of the internal carotid artery, which was successfully managed. Tumour excision was fully completed as demonstrated by histology.

Four months later the patient was readmitted to the hospital because of recurrence of the pulsating tumour. DSA revealed recurrence of the tumour and a 2.5 cm false aeurysm of the internal carotid artery with an impressive blood jet as documented by angiography series.

Conclusion: Glomus tumours of the carotid body are benign tumours with a tendency to local infiltration which may make surgical excision difficult. In such cases recurrence of a pulsating tumour should include the differential diagnosis of a false aeurysm.

C-0434

Does tissue harmonic imaging permit early postoperative thyroid volumetry?

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Purpose: Fundamental ultrasound is known to be useless for thyroid imaging in the early postoperative setting. Thus, we tended to evaluate the feasibility of tissue harmonic imaging (THI) for thyroid volumetry early after thyroid surgery.

Methods and materials: 48 patients underwent thyroidectomy, hemithyroidectomy, near total resection or partial resection. In all patients THI of the neck was performed 4 (mean: range: 2 - 7) days after thyroid surgery using an Elegra sonographic device (Siemens, Erlangen, Germany) with a transmitted frequency of 3.4 MHz and received frequency of 6.8 MHz. The examiner was blind to patients diagnosis and type of surgery. The residual tissue volume measured by means of THI and intraoperative visual volumetry were both compared with sonographic volumetry 12 weeks after surgery, the latter serving as the gold standard. Accuracy of THI and intraoperative volumetry were tested for significant differences using a paired t-test.

Results: Postoperative sonography was possible in all cases. Volumetry by the surgeon was available in 26 patients (54 %). The mean (maximal) error of THI and intraoperative volumetry was 2.4 (17) ml and 1.4 (6) ml respectively (p = 0.85).

Conclusion: THI permits early volumetry after thyroid surgery. Thus, THI can be helpful in guiding the substitution of thyroid hormones when the result of intraoperative volumetry is not available.

C-0435

Multi-detector CT bronchial arteriography (CTBAG): Efficacy of depiction of bronchial arteries for intervention

M. Miyazaki, H. Moriya, N. Hashimoto, F. Shishido; Fukushima/JP

Purpose: To evaluate the efficacy of demonstration of bronchial arteries (BA) using multi-detector CT and intravenous injection of contrast medium. We evaluate usefulness of this information to locate BA for transcatheter drug infusion (BAI) or embolization (BAE).

Materials and methods: CTBAG using AQUILON with V-detector (TOSHIBA) was performed (sliice thickness 3 mm, 0.5 s/rotation, helical pitch 3, reconstruction pitch 1 mm) in 19 patients with lung cancer and/or hemoptysis. In 5 of them bronchial arteriography (DSA) was performed before BAI or BAE. For CTBAG, contrast medium (300 – 370 mgI/ml, 2 – 8 ml/s, 100 ml) was injected into the main or lobar vein and scanning was started 15 – 20 seconds after injection. The depiction of BA was evaluated with axial, multiplanar reconstruction and volume rendering images (zvol9000 workstation, Zio Software Inc.). A comparison was made with DSA in 5 patients.

Results: In 15 patients with CTBAG, we were able to depict both right and left BA clearly, and in 5 patients there was not difference between CTBAG and DSA. In addition, not only BA, but also the intercostal arteries were depicted in all patients and the anterior spinal (Adamkiewicz) artery was recognized in several patients. In 4 patients in whom BA was not depicted, the cause was inappropriate scanning timing, calcifications of aortic wall and/or artifacts.

Conclusions: We are able to depict BA by multi-detector CT angiography and obtain the information prior to selective catheter intervention in BA.

C-0436

Transanal metallic stents for malignant colonic obstruction: Experience in 128 patients

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Purpose: To evaluate the efficacy of transanal stent placement for preoperative and palliative relief of malignant colonic obstruction.

Materials and methods: From January 1994 to June 2000, 137 patients with large bowel obstruction from colonic carcinoma were treated. Symptoms: abdominal distention, pain and constipation. Patients were studied with plain film of the abdomen and contrast enema, that demonstrated lesion location in the sigmoid colon (87 patients), descending colon (33 patients), rectosigmoid junction (11 patients), and transverse colon (6 patients). Selection criteria for transanal stent insertion included malignant colonic obstruction distal to the left of the spine on barium examination.

Results: Stents were placed on 128 patients. Colonic obstruction was relieved in 126 (98 %) patients. Bowel movements occurred within the first 24 hours in 107 (83.5 %) patients and after 24 hrs in 19 (16.5 %) patients. Bowel preparation was followed by colonic resection and primary anastomosis in 98 (76.5 %) patients. Palliative decompression was achieved in 38 (29.6 %) patients who attained a mean survival of 6.8 months (range 1 – 12 months) after stent insertion. Polypo­losy was performed in 11 (8.6 %) in whom colonic obstruction persisted due to inability to place the stent (9 patients) and in 2 patients despite stent placement. Complications occurred in 16 (12.5 %) patients.

Conclusions: Transanal metallic stent placement is an effective method for relief of malignant colonic obstruction. The procedure allows preoperative bowel preparation and a single stage operation. Palliation of large bowel obstruction improves the quality of life of patients in whom resection is not indicated.

C-0437

 Günther Tulip retrievable Inferior vena cava filter: Animal experience

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Purpose: To assess the retrievability of the Günther Tulip temporary inferior vena cava filter from a technical viewpoint and consider the histopathological changes that occur in the anchoring site of the filter prior to the vein endothelium.

Material and methods: Twenty-two Günther Tulip retrievable filters were inserted in 22 pigs between 0 – 56 days. Subjects were divided into two groups. (A) filter was retrieved percutaneously. (B) it was surgically removed. The cava and filter obtained were histopathologically examined.
Results: 11 should have been removed percutaneously but this was impossible in 3 cases. In four cases the device was retrieved without difficulty; in two cases the degree of difficulty was average and in other two it was high and slight respectively. Laparotomy showed neither caval wall penetration by the filter prongs, nor vein rupture, hematoma or retroperitoneal hemorrhage. Histopathology showed growing fibrous cell proliferation as well as evidence of filter prong involvement which was related to filter implantation time.

Conclusions: Although some filters have been retrieved either experimentally or in clinical practice after being in place for more than 16 days, it is advisable not to exceed this time limit in view of the fibrotic changes reported, with trapping of the filter metal filaments in the caval wall. Individual susceptibility and tissue response mechanisms may influence perifilament fibrosis intensity and grade.

**C-0438**

Expandable metallic stent in the treatment of superior vena cava syndrome (SVCS)

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Purpose: The purpose of this study was to evaluate the results of treatment of superior vena cava syndrome (SVCS) in patient with both benign and malignant disease using metallic stent.

Materials and methods: Between January of 1995 and March of 1997 67 expandable stents were implanted in 62 patients for the treatment of SVCS. 54 patients had and underlying malignancy (42 lung carcinoma, 6 Hodgkin's carcino­ma, 2 malignant thymoma, 1 mesothelioma, 3 embryonal carcinoma) 8 cases were due to benign etiology (6 stenosis or thrombosis localized below a haemodynamically fistula and 2 non specific mediastinal fibrosis). All 62 patients were treated with expandable stent. We implanted 61 Wallstent prostheses and 6 Palmaz stent. In 12 patients with a significant thrombus load, patients were commenced on catheter-directed thrombolysis using Urokinase for 24 - 48 hours. After reca­nalization, the stenting was performed in all cases in VCS.

Results: Technical success 100%. Clinical success 96.7% (absence or disappear­ance of symptoms in two or three days). Two patients underwent immediate thrombolysis that required fibrinolitic treatment and one of them another stent fol­low-up. The follow-up for the malignant process was of 6.9 months and the follow-up for the benign was of 19.2 months. 44 (81.4%) of malignant cases died free SVCS symptoms. All patients with benign process are alive.

Conclusion: Endovascular therapy using metallic stent and thrombolysis is a suc­cessful method of treatment for SVCS in both malignant and benign cases.

**C-0439**

Uterine artery embolization for the treatment of uterine leiomyomata

B. Madariaga, M. Gimeno, J. Medrano, R. Alfonso, A. Mainar, R. Tobío, M. De Gregorio, Zaragoza, ES; Sonas, ES, Madrid, ES

Objective: To evaluate the safety and short- and mid-term efficacy of uterine em­bolization (UBE) in patients with symptomatic fibroids.

Material and methods: From April 1998 to July 2000, 21 patients were referred for permanent uterine embolization with polyvinyl alcohol (PVA) foam particles. Mean age was 42.1 years (range 30 - 50). 3 patients were treated by previous myomectomy and 9 with hormonal therapy. Symptoms were bleeding (21), uterine fibroids (9), abdominal pain (6), and sciatric pain (2). The uterine artery was catheterized by a femoral approach. Polyvinyl alcohol particles were used for dis­tal embolization. Proximal arterial embolization was obtained with coils when nec­essary.

Results: Technical success was 100%. Mean procedure duration was 61 min­utes. Hospitalization was 2.8 days (range 2 - 4). Oral analgesics were given for 4.6 days (range 3 - 7). All patients had a reduction of the volume of the uterus and the dominant fibroid. The mean uterine and dominant fibroid volume reduction was 43.2% as assessed by ultrasound during follow-up. Complications: 1 patient presented severe abdominal pain related to epidural anesthesia; 3 patients had nausea and vomiting.

Conclusion: Uterine artery embolization for treatment of uterine fibroids is a mini­mally invasive technique with a low complication rate and good clinical efficacy.

**C-0440**

The role of angiography in the diagnosis and/or treatment of uncommon GI bleeding

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Purpose: The goal of this project is to outline the value of angiography in the localization of an obscure GI bleeding otherwise not identifiable and the ability of the radiological team for immediate treatment or direction of the patient to the operating room.

Furthermore to demonstrate some uncommon causes of GI bleeding.

Material and methods: Diagnostic angiography was performed in 26 patients presenting all symptoms of internal hemorrhage. In all cases the hemorrhagic source was identified. In 19 (73%) patients the bleeding was localized in the super­ior mesenteric artery, in 3 (11%) in the coeliac trunk and in 2 (8%) in the inferior mesenteric artery. In 1 case the bleeding was due to surgical malpractice (rupture of the internal iliac artery), and in 1 case in an aortoenteric fistula.

Results: In 20 (77%) patients the bleeding was treated surgically. In 3 (11%) bleeding was arrested with local pitressin infusion. In 2 (8%) mechanical embolisation of the inferior mesenteric artery stopped the hemorrhage.

Conclusion: Diagnostic angiography is the most valuable method in the exact localization of GI bleeding and in some cases may be curative avoiding surgery.

**C-0441**

Self-expanding metallic stents in the treatment of ureteral obstruction after renal transplantation: Long term follow-up

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Introduction: The purpose of this poster is to determine the long term patency of self expanding metallic stents in patients with ureteral stricture after renal transplanta­tion.

Methods and material: Between August 91 and February 99, 4 patients with ureteral stricture and obstruction, secondary to renal transplantation, were treated in our center. Percutaneous nephrostomy and balloon dilatation were performed, before insertion of a Wallstent (6 mm diameter, 40 mm length). All patients were under immunsuppressive therapy. Clinical (renal function parameters) and radiological (US, excretory urograms) controlled were scheduled. Mean follow up was 50.7 months (range 5 – 90 months).

Results: Clinical and technical success was 100%. No major complications re­lated to the procedure occurred. All patients remained asymptomatic with the stent patent (long term patency 100%) during the study, without need of reintervention.

Conclusion: Percutaneous treatment with self expanding metallic stent, could be considered the first choice treatment, for ureteral stenosis after renal transplanta­tion.

**C-0442**

Interventional radiology of adrenal glands of the arterial hypertension

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Purpose: To evaluate interventional radiology in the adrenal glands as a treat­ment of arterial hypertension.

Materials and methods: An interventional radiological treatment of the adrenal glands was performed in 63 patients (26 male and 38 female, aged 25 to 60 years). An endovascular occlusion of the adrenal vein was performed in 28 patients. In 4 patients, percutaneous ablation of the adrenal glands was performed under CT control.

Results: Correction of arterial hypertension was achieved in 36 (57.1%) cases, 23 (36.5%) patients were improved, and in 4 (6.4%) no effect was noticed.

Conclusion: Interventional radiological techniques of ablation of the adrenal glands is a potential method of treatment of arterial hypertension.

**C-0443**

Rebound hypertension after successful transcatheter therapy of renal artery stenosis: The diagnostic value of detection restenosis in long-term follow-up

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Aim of the study was to analyze in the three-year follow-up period the value of PTA in the treatment of renovascular hypertension.

Methods: In three-year period (1996 – 99) renal arteriography was performed in 63 patients (female 50, male 12; mean age 58 ± 5 years) in whom indication for renal arteriography was established on the history of hypertension and nonvasive
diagnostic procedures indicating renovascular etiology of hypertension. Significant renal stenosis, defined as diameter stenosis > 50% was found in 28 (44%) patients (mean diameter stenosis 74 ± 12%).

Results: PTA was done in all 28 patients, reaching successful result in 26 patients, while in 2 patients procedure was completed with stent implantation. Mean systolic and diastolic blood pressure before intervention was 189 ± 25 mmHg and 119 ± 15 mmHg, respectively. Immediately after the intervention, systolic and diastolic blood pressures were reduced to 136 ± 7 mmHg and 95 ± 5 mmHg, respectively (p < 0.001). In the follow-up period, control arteriography was performed in all patients disclosing restenosis of the renal artery in 9 patients (32%), and all of them had increased blood pressure (defined as higher than 140/90 mmHg). In 9/28 patients with normal blood pressure in the follow-up period, none of the patients had significant renal restenosis (sensitivity 100%). However, increased blood pressure was found in 19/28 patients, of whom in 9 patients elevated blood pressure was not accompanied by renal restenosis (specificity 46%).

Conclusion: Increased blood pressure in the follow-up period after PTA is not associated with renal restenosis, indirectly supporting the concept of reevaluation of the indications for PTA of the renal arteries.

C-0444
Significance of infrapyloric artery in transcatheter arterial embolization for hemorrhagic duodenal ulcer
K. Harai, A. Miyazaki, K. Horikami, I. Sakamoto, K. Hayashi, S. Sassebo; JP

Purpose: The significance of transcatheter arterial embolization of infrapyloric artery, which supplies posterior walls of the first and second duodenal portions and usually originates from right gastroepiploic or gastroduodenal artery, was investigated in treatment of hemorrhagic duodenal ulcers.

Materials and methods: Eight patients with hemorrhagic duodenal ulcers located in the first or second portion that could not be controlled by endoscopic therapy underwent transcatheter arterial embolization using microcoils between November 1996 and June 2000. Hemorrhagic duodenal ulcers were located in posterior wall in six patients, and in anterior wall in two patients. Both right gastroepiploic and gastroduodenal arteries were embolised in five patients with posterior wall ulcer, and gastroduodenal artery only was embolised in the remaining three patients.

Results: Complete hemostasis was achieved in five patients with posterior wall ulcers after embolization of both right gastroepiploic and gastroduodenal arteries, and in one patient with anterior wall ulcer after embolization of only gastroduodenal artery. Rebleeding occurred in one patient with posterior wall ulcer. In that patient, right gastroepiploic artery was not embolised although infrapyloric artery originated from right gastroepiploic artery. Hemorrhage continued after embolization of gastroduodenal artery in one patient with anterior wall ulcer because of multiple organ failure.

Conclusion: Both right gastroepiploic and gastroduodenal arteries should be embolised to obtain complete hemostasis in treatment of hemorrhagic duodenal ulcer, especially located in posterior walls of the first and second portions.

C-0445
Direct stenting of acute thrombotic occlusion of aorto-iliac disease
M. R. Rajp, P. Murphy, P. Davison; Bristol/GB

Background: Direct stenting has become common practice in coronary artery disease although direct stenting of acute thrombotic disease is rare. Direct stenting in peripheral disease has not yet become standard practice whilst treatment of acute thrombotic disease is by mechanical methods or thrombolysis. We present two cases of life threatening acute thrombosis, which were treated by direct stenting.

Methods: Two patients with acute thrombotic disease were treated by direct stenting using the Wallstent. The first patient had acute occlusion of the aorta, the second acute occlusion of the left common iliac artery. Both patients were ill with threatened cardiovascular decompensation. In both cases a heavy duty wire was placed through the lesion and the stent system passed and expanded with further balloon expansion to fully dilate the stent. In the aorta a 12 mm by 75 mm stent was used and in the iliac an 8 mm by 55 mm stent was placed. No embolism was seen in either patient although the patient with the iliac occlusion had a concurrent second embolus to the popliteal artery, which was seen on the initial angiogram. This was treated surgically.

Results: Both patients recovered from the procedure and were ambulant with viable limbs. Both patients were re-imaged 3 months later, the aortic stent by spiral CT and the iliac stent by angiography when a procedure on the other limb was scheduled in both stented patients.

Conclusion: Acute direct stent placement in thrombotic disease is an alternative to mechanical treatment of thrombolysis.

C-0446
Use of contrast-enhanced colour Doppler ultrasound to evaluate response to chemoembolization therapy for hepatocellular carcinoma
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Purpose: This study was undertaken to evaluate the utility of colour Doppler ultrasound (CDU) with intravenous contrast agent in the monitoring of hepatocellular carcinoma after chemoembolization therapy.

Material and methods: Fourteen patients (age range 53–82 years; mean age 62 years) with hepatocellular carcinoma underwent contrast-enhanced CDU, computed tomography and digital angiography one month after chemoembolization therapy and repeated six months later to establish the outcome of treatment. Contrast-enhanced CDU evaluated presence of arterial flow inside and in the periphery of the lesion to determine peripheral necrosis or tumour recurrence.

Results: Before treatment, all patients showed colour signals inside and/or the periphery of the tumour in contrast-enhanced CDU examination. One month after chemoembolization therapy the native CDU examination showed colour signals in 2 patients. In 12 cases, no colour signals were detected. After intravenous administration of ultrasound contrast agent Levovist®, arterial flow in the lesion was present in five cases, which developed tumour recurrence six months after treatment. Thus, the use of ultrasound contrast agent allowed the detection of vascularity in three cases that would have been missed with the only practice of native CDU examination.

Conclusion: Contrast-enhanced CDU examination is a sensitive method for the detection of tumour recurrence. Since this is an inexpensive and noninvasive exam, it may allow a closer follow-up of these patients and limit other expensive and/or invasive radiological examinations.

C-0447
Insights into the mechanism of peripheral angioplasty using intravascular ultrasound
M. R. Rajp, M. Shehab, N.-M. Shastry; Bristol/GB

Background: Intra-vascular Ultrasound imaging has been extensively used in the investigation and treatment of coronary disease. The use of such devices has been less common in peripheral vascular practice. Recently catheters have been developed for aortic and peripheral vascular use. In our centre we have used both phased array and rotating head devices and measured their accuracy as a preliminary to both clinical and experimental use of these devices.

Methods: Both mechanical (Boston Scientific, Dumed) and phased array systems (Endosonics) have been used to assess angioplasty and stent placement in femoral, iliac and aortic disease. This has involved using catheters from 3 French to 9 French in size.

Results: We have observed that larger balloons and stents tend to be more underdilated than smaller balloons. In a series of stents placed for atherosclerotic aortic disease, 14 mm balloons were routinely used, however the resulting stent diameter measured by intravascular ultrasound showed the final diameter to be up to 3 mm less than the predicted diameter. We have observed that the mechanism of angioplasty often differs from coronary disease, in many cases the atheromatous plaque is separated from the internal elastic lamina and remains in the vessels as a ‘core’ of material. This can falsify give an impression of improvement after angioplasty as the contrast tracks around the atheroma.

Conclusions: The use of intravascular ultrasound in peripheral disease shows that angiographic results obtained in many cases do not give a complete picture of the nature of the treatment process.

C-0448
CT guided percutaneous laser disk decompression (PLDD) for cervical disk herniation
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Purpose: PLDD is an effective treatment of bulging or protruding disk. The aim of this study is to evaluate a method of PLDD for cervical disk herniation under CT guidance and to assess safety and accuracy of the procedure.

Methods and materials: Four cases with radiculalgia caused by cervical disk herniation were treated by PLDD using Laser ablation was performed with a 18 G needle and Nd:Yag laser (1064 nm). Power, duration and interval of laser ablation were 10 W, 0.3 s and 1.7 s, respectively. A CT scan was obtained every 60 J at the level of the target disk to visualize the vaporized area during the procedure. Japan Orthopedic Association (JOA) score (full score 15) including improvement ratio and MacNab’s criteria were used to grade treatment response.

Results: Needle puncture of the target disk was safely obtained under CT guidance. Total dosage of laser ablation ranged from 120 to 360 J. CT images were able to demonstrate vaporized gas in the disk space. JOA score was improved

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from 1.75 to 12.5 and improvement ratio was 81.2 % on average. The overall success rate according to MacNab’s criteria was good in all cases. No operative complication was observed.

Conclusions: C-1-guided technique allows to perform safely and accurately laser disk decompression for cervical disk herniation. PLDD shows promising results in the management of radiculalgia.

C-0449
Endovascular treatment of intracranial aneurysms using electrolytically detachable coils
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Purpose: We aimed to describe our technical and clinical experiences in the treatment of intracranial saccular aneurysms by using Guglielmi detachable coils (GDCs).

Materials & methods: Eighteen patients with nineteen intracranial saccular aneurysms underwent embolization by means of the GDC endovascular technique. Eleven patients were males and 7 were females. Ages of the patients ranged from 30 to 71 years. The aneurysm localizations were anterior communicating artery in 8 cases, middle cerebral artery in one case, pericallosal artery in one case. In one case balloon remodeling technique was used because of the wide-necked aneurysm. The length of clinical follow up ranged from 4 to 18 months.

Results: Radiological results were excellent and the aneurysms totally or nearly totally obliterated. Guglielmi detachable coil embolization was attempted unsuccessfully in one case with distal anterior cerebral artery aneurysm. None of the patients died during the interventions. In one case permanent left hemiparesis was encountered because of thrombo-embolic complication. During the follow up period no episode of rebleeding occurred. In one case during the embolization procedure the last coil showed 1 cm in length migration to parent artery. For this reason in this patient left internal carotid artery was also occluded after aneurysm embolization.

Conclusion: Endovascular GDC embolization of intracranial saccular aneurysms in selected cases is an attractive alternative to direct surgical clipping. Long-term follow up is needed to better define the effectiveness of endovascular treatment of cranial aneurysms.

C-0450
In vitro evaluation of efficiency and embolic risk of a new rotational thrombectomy device: Straub-Rotarex®-catheter
K. Zaana, P. Olati, F. Joffre, G. Forran, V. Chabbert, B. Fornel, H. Rousseau, Budapest/HU, Toulouse/FR

Purpose: To evaluate the efficacy of the Straub-Rotarex®-catheter, a new rotational guiding thrombectomy device, and the embolic risk during the interventional procedure.

Methods: The experiment was set in a transparent silicon model which was filled with human blood samples. Stenosis was created by mechanical compression in tubes with an inner diameter of 6, 7 and 8 mm. Distal emboli were detected by a mesh of nylon filters.

Results: No significant residual stenosis were found downstream the stenosis using tubes of 6, 7 and 8 mm in diameter. The number of particles upstream the stenosis was very low, varying from 0 to 4. The mean time of intervention was 1.0 min. The mean volume of collected liquid was 100 ml.

Conclusion: The Rotarex catheter is well adapted to tubes with a diameter of 6 – 8 mm. No residual particles were detected after using the Rotarex system. A few distal emboli were detected related to the investigation technique.

C-0451
Patients with hepatocellular carcinoma (HCC) who survived more than three years by the transcatheter arterial embolization (TAE)
N. Matsumura, T. Iwama, Akita/JP

Purpose: To evaluate the prognostic factors of patients with HCC who survived longer than three years after TAE.

Methods and materials: From April 1984 to June 2000, a total of 265 sessions (mean 2.19) of TAE were performed in 121 patients with HCC (90 men, 31 women), using mitomycin C 26, adriamycin 30, doxorubicin 78, or neocarzinostatin 143 with lipiodol, 260 and/or gelatox particles. 41 Twenty-four patients survived longer than three years (three years survival rate: 29.6 %). The prognostic factors were assessed by Child grade, tumor type, tumor extension, size and percutaneous ethanol injection (PEI).

Results: Significant prognostic factors were Child grade (A: 15, B: 5) and tumor type (solitary nodule: 17/66, multiple nodules: 7/52, diffuse 0/3 and massive 0/4) and PEI (with PEI: 11/33, without PEI: 13/85). Tumor extension and size of nodules were not significant.

Conclusion: When HCC is treated with TAE, liver function has also to be considered besides tumor parameters.

C-0452
Intra-arterial oily chemoembolization for unresectable cancer of the pancreatic head: Preliminary results
P.G. Tarazov, A.V. Pavlovski, D.A. Granov, St. Petersburg/RU

Purpose: To analyze the first clinical experience of new treatment for locally advanced unresectable pancreatic cancer.

Material and methods: We used oily chemoembolization in 10 patients with histologically proven adenocarcinoma of the pancreatic head (T3-4 NO-2 MO). The procedure was performed as follows. The angiographic catheter was placed in the gastroduodenal or dorsal pancreatic artery. Catheterization of arteries supplying the tumor was then performed, and bolus injection of 200 - 400 mg/m² Gemcitabine, emulsified in 3 – 5 ml Lipidol Ultraflum was made. Subcutaneous injections of Octreotide 3 × 0.1 mg per day was used during four days as a prophylactic measure against possible pancreatic complications. Oily chemoembolizations were repeated with 1 – 2 month interval.

Results: 10 patients received 21 courses of oily chemoembolization, one to six per patient. There were no treatment-related complications and side effects. At present, all patients are alive in 2 to 16 months. Of them, three patients showed partial response, six stabilization, and only one tumor progression.

Conclusion: Intra-arterial oily chemoembolization is a well-tolerated procedure and can cause partial tumor response in some patients with locally advanced unresectable pancreatic head carcinoma.

C-0453
Transcatheter therapy of gastric cancer metastatic to the liver
P.G. Tarazov, St. Petersburg/RU

Purpose: There is a little known about effectiveness of transcatheter chemotherapy in liver metastases from gastric cancer. The aim of this study was to evaluate initial results of hepatic artery infusion and oily chemoembolization in these liver secondaries.

Methods: Courses of transcatheter arterial infusion (14 patients) with 5-fluorouracil/doxorubicin and oily chemoembolization (12 patients) with doxorubicin-in-iodized oil and gelatin sponge were performed in 26 randomized patients with histologically proven unresectable gastric cancer liver metastases.

Results: Positive effect of treatment (partial response and stabilization) was seen in 93 % patients after chemoinfusion and 50 % after chemoembolization. The 1- and 2-year actuarial survival rates were 93 % and 53 % for infusion vs 50 % and 17 % for chemoembolization, respectively (log-rank test, P = 0.0099). For patients who had died, the mean survival was 19.2 months vs 9.5 months (Student's t-test, P = 0.05) with median survival of 23 months vs 8 months, respectively. The results of arterial infusion were very close to those published for liver resection.

Conclusions: Transcatheter therapy seems to be useful for palliation of unresectable liver metastases from gastric cancer. If regional chemotherapy was attempted, arterial infusion should be the first treatment versus oily chemoembolization that may be reserved for patients who do not respond to infusion.

C-0454
The antineoplastic effects of DSM in the different dose of amylase activity in blood
R. Moribe, H. Monzen, H. Kobayashi, K. Yamazaki, T. Kawase, T. Hasegawa, Mie/JP; Shiga/JP; Tokyo/JP

Purpose:Degradable Starch Microspheres (DSM, SPHEREX) are cross-linked starch particles that are used as an embolization material to increase the carcinostatic concentration in the target tumor without tumor necrosis, because DSM particles are easily degraded by α-amylase within 30 minutes. Tumor necrosis is caused by embolization. The correlation between tumor necrosis and serum amylase activity is studied.

Materials and methods: Transcatheter arterial embolization (TAE) with DSM was performed in 104 cases. In most of them, amylase in the serum was measured before TAE, in the last 1 year and 8 months, and improvement of the antineoplastic effects of DSM by serum amylase activity (over 100 IU or less) by measurements of the dimensions of the non-enhancing area in CT images after TAE.
Results: There was no correlation of antineoplastic effect of DSM and amylase activity in about 90% of the cases.

Conclusion: The antineoplastic effect of DSM occurs a short time after embolization.

C-0455 PWT 09
Selective pre-operative portal vein embolization for liver tumors
A.A. Polikarpov, P.G. Tarazov, D.A. Granov, St. Petersburg/RU

Aim: To evaluate effectiveness of selective pre-operative portal vein embolization (PVE) for inducing contralateral hepatic hypertrophy and decrease the risk of post-operative liver failure in patients with hepatic tumors.

Methods: Between 1997 – 1999, we performed 10 US-guided PVE (9 embolization of the right lobe, 1 left lobe) in pts with hepatocellular carcinoma (n = 8), colorectal liver metastases (n = 4), and giant hemangima (n = 1). For PVE, a mixture of lipiodol, gelatine sponge and ethanol was used. CT liver volumetric studies were performed before and 4 weeks after PVE. Right lobectomy was made in six pts in 28 – 50 (mean 31) days. Four remaining pts were not operated because of causing of revealing intra- or extralobar metastases.

Results: No complications was observed after PVE. The mean volume of the necrobiolized lobe increased on 38 % after PVE. The mean intraoperative blood loss was 0.7 l. There were no postoperative hepatic insufficiency and mortality.

Conclusion: PVE is a safe and well-tolerated procedure that decreased both intraoperative blood loss and risk of postoperative liver failure.

C-0456
Combined adjuvant arterial and portal vein oily chemotherapy after resection of liver malignancies
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Purpose: The usefulness of adjuvant intrahepatic chemotherapy after curative liver resection is unproved. The aim of this study was to evaluate initial results of hepatic artery and portal vein oily chemotherapy after resection of primary and secondary hepatic malignancies.

Methods: Between 1995 and 1998, courses of transcatheter arterial and portal vein oily chemotherapy were performed in 33 resected patients (Group A), 11 with hepatocellular carcinoma (HCC) and 22 with metastases (2/3 from colorectal cancer). Each course consisted of injection of 40 – 60 mg Doxorubicin-in-Lipiodol in the hepatic artery and with 1-week interval in the portal vein. two to three times in a year beginning from 3 weeks after the resection. The prospective control group B consisted of 22 patients, 8 with HCC and 14 with metastases (2/3 from colorectal carcinoma) who did not received postoperative chemotherapy.

Results: There were no serious complications related to performing of intrahepatic chemotherapy. The periods to recurrence of liver tumor were 14.9 vs 9.6 months in groups A and B, respectively. The median survival of patients who died was 27 months vs 19 months (P < 0.05).

Conclusions: Adjuvant intrahepatic arterial and portal vein oily chemotherapy is safe and allows to increase the period before tumor recurrence. that resulted in significant improvement of survival of patients with liver malignancies.

C-0457
Primary treatment of femoropopliteal occlusive disease by endovascular placement of HEMOBANH™ stent-grafts
T. Jahnel, R. Andressen, G. Voshage, S. Muller-Hulsbeck, J. Grimm, M. Heller, J. Brossmann, Keri/DE, Gustrow/DE, Hannover/DE

Purpose: Prospective multicenter study to evaluate safety and effectiveness of primary stent-graft placement using the HEMOBANH™ self-expanding endoprosthesis in patients with femoro-popliteal occlusive disease.

Material and methods: During an 18-months period a total of 48 HEMOBANH™ stent-grafts (GORE) were used in 41 patients presenting with chronic occlusions (n = 30) or high-grade stenoses (n = 11) of the superficial femoral artery (SFA). 11 female and 30 male patients (mean age 61.8 ± 7.6 years) were treated. Mean lesion length was 8.9 ± 4.5 cm. Mean pre-interventional run-off status of lower leg arteries was 2.3 ± 0.7. Follow-up evaluations with assessment of Rutherford clinical stage of peripheral vascular disease (PVD), color-coded duplex sonography and MR-imaging were carried out at discharge and 1, 3, 6, 12 and 18 months thereafter.

Results: Initial technical success was achieved in all patients. Stent-graft placement induced an initial improvement of the doppler-ankle-brachial index from 0.55 ± 0.2 to 0.89 ± 0.15 (p < 0.01). Mean clinical stage of PVD changed from Rutherford category 3 to 1. So far 30/41 patients were follow-up for at least 6 months. 6 of these patients showed recurrences, primarily due to poor run-off or diffuse disease with additional high-grade lesions proximal or distal to the graft. Primary and secondary patency rates at 6 months were 80% (SE = 7.4) and 90% (SE = 5.6) respectively.

Conclusion: Endovascular placement of HEMOBANH™ stent-grafts for the treatment of femoro-popliteal occlusive disease shows promising results. However, "intention-to-treat" stent-graft placement should be limited to patients with local disease and sufficient distal run-off.

C-0458 PWT 09
Inhibition of TGF-beta and VEGF expression in human endothelium cell lines with antisense-compounds: Potential tools for gene therapy
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Background: In development of restenosis in stents, TGF-β and VEGF play a key role. Our aim was to reduce neo intima by inhibiting expression of growth factors.

Methods: Human endothelium cells (HMEC-1) were stimulated with IL-1 and transfected by anti-TGF-β and anti-VEGF antisense-oligos containing liposomes. TGF-β and VEGF levels were measured with and without VEGF and TGF-β antisenese transfection before and after stimulation.

Results: TGF-β and VEGF levels increased significantly after stimulation. Endothelial-cells having been transfected with VEGF and TGF-β-antisense oligos showed significantly lower levels of VEGF and TGF-β-expression. Not stimulated endothelium cells showed a reduction of VEGF and TGF-β-expression up to 50 % of the base line expression after transfection.

Conclusion: Anti-VEGF- and anti-TGF-β-antisense-oligos are a powerful tool for reduction of VEGF and TGF-β-expression in endothelial cells in vitro. Preliminary results of our in vivo study confirm its potential role in reducing restenosis in stents.

C-0459
Endovascular treatment of aortic aneurysm and aortic dissection with Woven-Dacron covered Z stent: Technique and clinical feasibility
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Purpose: To assess the technical feasibility and efficacy of endovascular treatmen of aortic aneurysm and aortic dissection.

Materials and methods: 90 patients with thoracic or abdominal aortic aneurysm and aortic dissection (TAA 30, infrarenal AAA 47, aortic dissection 13) were treated by endovascular stent-graft implantation from September 1996 to September 2000. The average age of the patients was 70.4 years. Stent-grafts were constructed from self-expandable Z stent with thin-walled woven dacron grafts and were deployed through a 18 – 20 F delivery sheath under fluoroscopic guidance.

Result: We took a successful team approach by Interventional Radiology and Vascular Surgery. Stent-grafts were successfully implanted in 88 patients. The mean diameter of TAA determined at CT was 6.2 cm (range 4 – 10 cm). Thirteen (43 %) of 30 patients with TAA had proximal endoleaks on first postoperative CT and nine (30 %) of them had short proximal neck of less than 2 cm. The mean diameter of infrarenal AAA was 4.7 cm (range 3.1 – 6.0 cm). Complete exclusion of the aneurysm was obtained in 44 (84 %) of 47 patients with AAA. Or two patients (6.2 %) who had most tortuous neck had proximal endoleaks. Shower embolism in a patient with shaggy aorta caused early fatal disseminated intravascular coagulopathy with cerebral infarction and trash buttock Obliteration of the entry was successful in all 13 patients with type B chronic aortic dissection.

Conclusion: Endovascular treatment by stent-grafts is a safe and effective type of treatment in selected patients with aortic aneurysms and aortic dissection.

C-0460
Transcatheter embolotherapy of systemic-to-pulmonary artery collateral vessels in patients with cyanotic congenital heart disease
H. Toqi, T. Shinozaki, Y. Sakuhara, M. Furuse, Tochigi/JP

Purpose: To evaluate the value of systemic arteriography and transcatheter embolotherapy in patients with cyanotic congenital heart disease.

Materials and methods: We analysed symptoms, angiographic findings, method of embolization, and clinical courses in six patients (2 male, 4 female; age range 7 – 32 years). Four patients had severe stenosis of pulmonary trunk due to tetralogy of Fallot, two with atresia of the pulmonary trunk.

Results: The main symptom was frequent hemoptysis in five patients and cardiac failure due to bronchopulmonary shunts in one. Bronchial arteriography and transcatheter embolotherapy was performed successfully with gelfoam and microcoils. Immediate control of bleeding or bronchopulmonary shunts were obtained in all patients. In three patients, recurrent hemoptysis was observed 3 – 8 month later but re-embolization was performed successfully. In one patient, hypervascularization was also noted in the left internal mammary and left lateral thoracic artery, and was successfully treated with additional embolization.
Conclusion: Transcatheter embolotherapy of systemic-to-pulmonary artery collateral vessels is very useful to treat hemoptysis and cardiac failure in patients with obstruction or severe stenosis of the pulmonary artery. However, the high risk of recurrence should be considered due to their unique hemodynamics.

C-0461
Endovascular procedures in the treatment of supra-aortic vessels
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Purpose: To assess early effects, possible risks, and long term results of percutaneous transluminal angioplasty (PTA) of brachiocephalic trunk (BT) and subclavian arteries (PA).
Methods: During a period of 11 years, 93 PTA of PA/BT were performed in 92 patients (57 males – 62 %, mean age 53.5 ± 7.8 years); 70 (75 %) lesions were stenoses with a mean grade of 83.1 ± 6.2 %, while 23 (25 %) lesions were occlusions. Clinical indications were: vertebrobasilar insufficiency (N = 57), upper limb ischemia (N = 40), coronary steal syndrome (N = 4) and scheduled aorto-coronary bypass (CABG), using internal thoracic artery (ITA) (N = 4 asymptomatic patients). Mean lesion length was 22 ± 8 mm.
Results: 81 (87 %) out of 93 lesions were successfully dilated; all 12 (13 %) failures were due to unsuccessful recanalization of occluded arteries. In 10 patients 10 stents were implanted (2 in BT and 8 in left PA). There were 6 (6.5 %) procedural complications: 1 dissection, 1 thrombosis of the left PA, TIA in 2 patients, and 2 cases of dislocation of atheromatous plaque from the right PA into the carotid artery. During a mean follow-up of 48 ± 3 months, 16 (20 %) restenoses were treated by PTA (N = 7) or operatively (N = 9). Primary and secondary patency for all lesions treated during 11 years was 87 % and 80 % (stenosis: 97 % and 89 %, occlusions: 58 % and 58 %).
Conclusions: PTA with or without stenting is a relatively simple, efficient and safe procedure. It necessitates a short hospitalization with low treatment cost.

C-0462
Endovascular management of traumatic thoracic aortic transection after blunt chest trauma
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Purpose: Retrospective analysis of three polytraumatized patients with aortic laceration who were not a candidate of routine surgical therapy because of respiratory insufficiency.
Material and methods: We treated three patients with traumatic thoracic aortic transection with a stentgraft. All patients were injured in a motor vehicle collision. The first patient, a 54-year-old man, was treated 5 days after an accident by an Elta stentgraft (34 x 100 mm). The second patient, a 52-year-old woman, was treated 4 days after a motor crash by a Talent stentgraft (34 x 130 mm). The third patient, a 31-year-old man, was treated 8 days after trauma by a Talent stentgraft (34 x 130 mm). All patients were poor surgical candidates due to lung contusion and respiratory insufficiency.
Results: The first and the third patient fully recovered from their injuries and 2 month CT follow-up revealed no evidence of endoleak. The second patient had no sign of endoleak. At 3 months after the injury she remains paraparetic.
Conclusion: Endoluminal technique can be successfully used in the immediate repair of thoracic aortic trauma. A spinal ischemic injury occurred in one of three patients.

C-0463
Individual kidney function before and after renal angioplasty or stenting
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Introduction: New investigations demonstrate that the individual glomerular filtration rate (GFR) for kidneys with renal artery stenosis, can not be improved by renal artery angioplasty (Farmer. Lancet. 1996). Since the GFR only describes a part of renal hemodynamics, we performed examinations investigating the influence of renal angioplasty (and stenting) on the effective renal plasma flow (ERPF) and on the tubular renal function.
Methods: In a prospective study we performed nuclear medicine examination (single kidney clearance with MAG-3 for right and left kidney) in 12 patients with high grade renal artery stenosis. Examinations were performed before, 2 days and 3 months after intervention. Four patients had a solitary kidney. Mean serum creatinine was at 1.9 mg/dl.
Results: Immediately after therapy, we observed a mean increase in ERPF of 18 % in the kidney, treated by angioplasty (before: 105 ml/min; after: 122 ml/min). But also untreated kidneys show an increase of 11 % (111 ml/min to 122 ml/min).

After 3 months, ERPF and tubular function show further improvement. 3 patients demonstrated reduction of ERPF shortly after angioplasty. After initial increase of ERPF, 1 patient showed progressive decrease of renal function, caused by cholesterol emboli. Mean serum creatinine after therapy was 1.8 mg/dl.

Conclusion: ERPF can be improved by angioplasty (stenting) of renal artery stenosis. In the evaluation of changes of renal hemodynamics, ERPF seems to be of comparable importance as the assessment of GFR. But until now, it is not possible to predict and exclude patients, who do not profit from angioplasty or stenting.

C-0464
Percutaneous treatment in pancreatic pseudocysts: Experience in 16 cases
M. Ferrer, J. Guijarro, J. Gil, P. Luch; Valencia/ES
Purpose: Analyze results in short and long term of percutaneous treatment in pancreatic cysts and compare with actual techniques.
Material and methods: From 1998 to 2000 we studied 16 cases of pancreatic pseudocysts in 15 patients. (mean age: 56, range 37 – 83), 9 men and 6 women. Causes of the pseudocysts included alcoholic or gallstone pancreatitis, pancreatic surgery and abdominal trauma. We realized percutaneous drainage in cysts less than 5 cm. without spontaneous resolution after three weeks time.
Results: Successful drainage was achieved in 83 % cases. Unsuccessful drainage was defined when surgery was required. Cather drainage averaged 17.3 months (mean time). 91 % infected pseudocysts and 81 % non-infected cysts was resolve and no differences were meet in both cases. There were any differences due to the location or cysts size. The quantity of cysts had no influence in cure period time. Pseudocyst with fistulas development required major number of days to reach the resolution. The 14 % of cases were no resolve and surgery was required.
Conclusion: Percutaneous drainage is an effective front-line treatment for most pancreatic pseudocysts. The possibility to make percutaneous techniques to treat this pathology in Interventional Radiology centers present a high successful rate and let ambulatory control patient and improving quality life. We conclude percutaneous drainage is the elective treatment for pancreatic pseudocysts.

C-0465
Heterogeneous database for interventional radiology with internet access
A. Radulescu, V. Saplaca, R. Adam, S. Marinescu; Cluj-Napoca/RO
Purpose: Heterogeneous medical databases system integrates applications from Macintosh, Windows and AIX platforms into a unitary system, to assist the clinician for manage a complex data work-flow (hospital information, patient records with radiological images, etc.) and for educational purposes.
Methods and materials: The system allows general patient's information management, digital images acquisition, images archiving and display, LAN and Internet communication and data processing oriented to computer-assisted diagnosis. We used a general client-server medical database on NT operating system and specialised databases on other platforms. The medical database contains extensive personal and clinical information related to patients from the Interventional Radiology Department (Radiological Clinic) and also medical images corresponding to patients. Due to the particular characteristics of the medical services the system's interface use variable fields with an installation at users customised choice. The access modules are written in Delphi and VB.
Results: Authorised users from clinic departments may consult the multimedia databases system, with different access rights, for diagnosis or learning process.
Conclusion: The system was tested in the Radiological Clinic and is used to manage hospital information data and images with good results. It is used for both purposes: medical, diagnosis and education.

C-0466
Metallic stents in the management of malignant biliary obstruction
Y.-Y. Cheng, J.-I. Hwang, H.-S. Tseng, J.-H. Chang, C.-Y. Chang; Taipei/TW
Purpose: To evaluate the clinical efficacy of metallic stents in the management of malignant biliary obstruction.
Materials and methods: From June 1997 to August 1999, 102 patients (80 male and 22 female) with malignant biliary obstruction underwent percutaneous transhepatic placement of metallic stents. The level of obstruction was at the liver hilum in 44 patients and extrahepatic in 58 patients. We used 116 stents (78 Memotherm stents and 38 Wallstents). In the hilar group, 30 patients had a single stent and 22 bilateral stents. In the hilar group, 30 patients had a single stent and 22 bilateral stents. We compared stent patency rates with the Kaplan-Meier method in relation to the level of obstruction, stent type, number of stents, and stent location.
Results: Stent placement was successful in all patients. Mean patency rate was 71.4 vs 49.9 weeks in the hilar group vs extrahepatic group (p = 0.047). Mean patency rate was 53.9 vs 73.0 weeks for Memotherm stent vs Wallstent (p = 0.115). Mean patency rate was 82.1 vs 58.0 weeks for bilateral vs single stent (p = 0.039). Mean patency rate was 46.3 vs 45.5 weeks for crossing the papilla or not (p = 0.338).

Conclusions: The efficacy and patency rate of metal stents in the management of malignant biliary obstruction is satisfactory. No difference in stent patency rate between Memotherm stent and Wallstent was observed. Stent patency rate in the hilar group is longer than in the extrahepatic group. Bilateral stenting is better than single stenting in hilar obstruction.

C-0467 Interventional procedures under CT-Guidance in pain management B.A.C. Kastler, C. Clair, Z. Boulahdour, E. Delabrousse, J. Litzler, B. Fergane; Besançon/FR

Procedures under CT-Guidance offer precise means of durable pain relief by interruption of nociceptive pathways (neurolytic by alcoholization, or radiofrequency, ...). These interventions are rather low in cost, can be performed ambulatory, are efficient immediately without any significant side effects. They appear complementary to specific medication therapy. This exhibit reflects our experience on our first 1500 interventions. Most common indications of neurodestructive procedures include: sympathetic chain blocks, stellate ganglion neurolysis, thoracic and lumbar sympathectomy, celiac plexus & splanchnic nerve neurolysis, spinal nerve blocks: sphenopalatine neurolysis, maxillary & mandibular nerve neurolysis. Radiologists have to get skilled in these procedures in order to play an active role in the management of pain, both in diagnosis and therapy, as part of a multidisciplinary team including pain and palliative care therapists and oncologists.

C-0468 PWT 09 Experience with a new method to obtain samples of pulmonary tissue during cardiac catheterisation, transvascular pulmonary puncture biopsy and its utility in the diagnosis of cardiovascular diseases I. Benedek, R. Toganel, E. Fagarasanu, T. Hintea, L. Marginean; Tirgu Mures/RO

Purpose: Histological examination of pulmonary vessels is important to estimate the reversibility of the pulmonary vascular changes, which correlate with the evolution of many heart diseases and the results of surgical treatment. The aim of our study was to elaborate a reliable method for sampling pulmonary tissue, without risk of complications of the method as it is used presently.

Materials and methods: We evaluated the method on 35 dogs and 20 corpses. We specially designed a biopsy catheter for this purpose (patent OSIM nr. 100.812 from 1990.03.21). Via right cardiac catheterization, we blocked the catheter in a branch of the pulmonary artery, and obtained a sample of 2 – 3 mm of pulmonary tissue, which was sufficient for histologic examination. We monitored blood pressure and heart rate of the animals.

Results: After performing biopsy, we performed a segmentectomy of the punctured lobe and obtained macroscopic and microscopic examinations of this fragment. We did not find any significant traumatic injury at the puncture site.

Conclusion: Endovascular pulmonary biopsy can be a useful method to assess the changes of pulmonary circulation in cardiac diseases. This novel biopsy technique can be repeated and is free of complications.

C-0469 Complications of percutaneous RF ablation of focal liver lesions L. Thanos, P. Vrettakos, K.S. Malagani, E.N. Broutzinos, M. Papathanasiou, D.A. Kelekas; Athens/GR

Purpose: The aim of this study is to evaluate the complications in patients who underwent percutaneous radiofrequency (RF) electocautery of focal liver lesions.

Materials and methods: From February 1999 to September 2000 we treated 32 hepatic lesions (24 primary tumors and 8 metastatic lesions ranging from 2 to 8 cm in size.). In 25 focal lesions we used a multi-array needle electrode and in 7 cases a monopolar electrode for the RF application. All treatments were performed under local anesthesia (xylocaine 1%). Electrode insertion was performed under CT guidance.

Results: Complications during and after RF application were observed in 14 cases (44%), including abdominal pain in 6 cases (43%), fever ranging from 37.5°C to 38.5°C in 4 (28.5%), nausea in 2 (14%), right shoulder pain in 3 (21.5%) and pleural fluid in 1 case (7.6%). Duration of symptoms ranged from one hour to a few days. One patient required antibiotics per os and in another patient with shoulder pain a subcapsular hematoma was demonstrated and resolved spontaneously.

Conclusion: Percutaneous RF thermal ablation of focal liver lesions using monopolar and multi-array needle electrodes causes no major complications and is a safe, effective and well tolerated technique.

C-0470 PWT 09 Prediction of tumor response in patients with non-resectable hepatocellular carcinoma undergoing transarterial chemoembolization: A prospective study T.D. Kirchhoff, S. Merkesdal, A. Chavan, M. Galanski; Hannover/DE

Purpose: Identification of predictors of tumor response after transarterial chemoembolization (TACE) in patients with non-resectable hepatocellular carcinoma (HCC).

Materials and methods: 78 patients with histologically proven HCC were prospectively enrolled (76 % male, mean age 62 (+ 10) years, 76 % TNM-stage IV 62 % disseminated disease). TACE was performed using cisplatin (100 mg/m²) and adriamycin (60 mg/m²). In addition, degradable starch microspheres (600 mg to 1200 mg) and/or lipiodol (up to 10 ml) were administered. Favourable response to therapy was defined as follows: complete/partial remission or stable disease for more than 9 months (acc. to WHO). Independent variables were dichotomized at the median and screened by univariate logistic regression analysis (p < 0.2). All identified variables were divided into subgroups. A multivariate logistic regression analysis using the backward method was performed for each subgroup and the significant variables were tested in the final model (p < 0.05).

Results: AFP, CHE, albumin and Karnowski-Index (KI) were identified as important predictive parameters of the subgroup clinical variables. Tumor blush, vascularisation und a.v.-shunting entered the subgroup imaging and the embolisation mode entered the subgroup therapy variables. Regression analysis (final model) (R²: 42 %) revealed that the presence of a markedly hypervascularised tumor is associated with a 7-fold higher likeliness (CI: 1.2 – 10.7) and a KI of 100 % with an almost 6-fold higher likeliness (CI: 1.1 – 9.4) of a favourable response. Conclusion: TACE as a palliative measure seems to be particularly effective in prolonging stable disease in patients with hypervascularized HCC.

C-0471 Interventional radiology in treatment of iatrogenic occlusion of peripheral arteries. Our experience M. Saporoski, M. Ostojic, B. Beleslin, S. Stojkovic, M. Nedeljkovic, G. Stankovic; Belgrade/YU

Purpose: The aim of our study was to evaluate the alternative approach in treating peripheral vascular occlusions by combined use of thrombolysis and angioplasty or atherectomy as an alternative to surgical procedure.

Methods: The study group consisted of 25 patients (23 male, 2 female; mean age 50 ± 12 years) in whom complete occlusion or subocclusion were induced by interventional coronary procedure (6 pts), diagnostic catheterization (7 pts), and surgical procedure (12 pts). The affected peripheral arteries were iliac (12 pts), superficial femoral (11 pts) and popliteal artery (2 pt) were scheduled for thrombolysoangioplasty (TLA) for limb salvage, in order to avoid surgical treatment or amputation. Following approaching the thrombus with catheter, streptokinase infusion was started (30 000 IU per hour) for 24 hours. Final results were established by applying the conventional balloon angioplasty, stenting and/or peripherical atherectomy (PA).

Results: In all pts we have successfully applied TLA. However, when adequate post angioplasty result was not achieved, PA was performed: directional atherectomy (DA) in 6 pts and extracranital atherectomy (EA) in one patient and stenting in 4 pts. There were no primary failures in the whole group. In 2/17 pts recoclussion was observed during the follow-up period requiring major amputation. In 23 pts successfully treated with TLA or PA, Doppler evaluation showed adequate flow parameters during the 18 months follow-up period.

Conclusion: Our experience suggests that thrombolysoangioplasty and peripherical atherectomy may be utilized as effective procedures and alternative to surgery for treatment of peripheral occlusions of recent origin.

C-0472 Transcutaneous catheter removal of foreign bodies from cardiovascular system: Seven-year experience M. Saporoski, M. Ostojic, B. Beleslin, M. Nedeljkovic, S. Stojkovic; Belgrade/YU

Rapid development of various diagnostic techniques and application of invasive procedures have been accompanied by some unusual complications during interventions, including presence of foreign bodies in cardiovascular system representing usually accidentally destructed parts of diagnostic devices.
In the last 7 years, we have performed more than 12000 interventions in our Cath Lab. In that period, foreign bodies were identified and removed by transluminal catheter technique in 15 cases (< 0.125 %). In 7 instances, parts of diagnostic catheters were identified (most frequently distal part of pig-tail catheter); in 4 cases parts of guide wires were found; and in 4 cases parts of temporary placed pacemaker were found. In 6 instances foreign bodies were found in the right ventricle and atrium, and in 9 cases was found in right iliac artery. For removal of foreign bodies we have used transluminal catheter technique: loop-snare in 9 cases, and basket-retriever in 6 cases. We have also tried to remove foreign bodies using catheters for endomyocardial biopsy, but without success.

No significant complications were observed during removal of foreign bodies. In 2 cases, parts of pigtail catheter were caught and moved to the right iliac artery or vein just in front of the sheath, wherefore ordinary vascular surgery incision and removal of rescue catheter finished the procedures with a foreign body. Thus, transluminal catheter removal of foreign bodies in cardiovascular system (iatrogenically induced) appears to be safe and confident option of treating this bizarre complication of interventions procedures.

C-0473
Strecker stent application in the treatment of strictures of ureterointestinal anastomosis
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Purpose: The authors report their experience in the treatment of metal stent placement as a treatment of ureterointerestinal strictures.
Material and methods: In the last two years, 18 patients (12 men and 6 women), aged 42 – 68 years were treated. Patients presented with malignant disease in the pelvis, and the stricture developed one to 7 years postoperatively. In 15 patients the ureter was diverted into an isolated ileal segment. A colon conduit was present in three patients. In one case a biliary stricture was present. Due to unsatisfactory therapeutic effects, repeated balloon dilatation and catheter placement, metal Strecker stents 4 – 8 cm long and 6 – 8 mm wide were inserted.
Results: Eleven out of 19 procedures (58 %) were evaluated as a short-term clinical success. Restenosis developed in 3 out of 11; only 8 were a long-term success.
Conclusion: The results are substantially superior to other techniques of interventional radiology.

C-0474
Angionephroangiography in the assessment of chemoembolization efficacy in patients with renal cancer - correlation with autopsy findings
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Purpose: To study the role of angionephroangiography (ANS) in assessment of chemoembolization efficacy in patients with renal cell carcinoma (RCC).
Material and methods: Study performed in 16 patients with RCC (10 males and 6 females) aged 22 – 71. All patients underwent chemoembolization followed with nephrectomy. The diagnoses were confirmed morphologically after surgical resection of organs. ANS with 153mTc-DTPA for the evaluation of renal blood flow was performed on APEX SP-6 Micro-camera (Elscint).
The efficacy of chemoembolization was assessed by mean of time-activity curves during the first 60 s p.i. from 3 ROIs over both kidneys and pararenal zone (background). Effective chemoembolization was considered in case of total absence of renal blood flow with the time-activity curve at background.
Results: In 7 of 16 patients (44 %) there were 100 % occlusion of renal artery (5 – in right and 2 – in left kidney) and total absence of function. In 9 patients (56 %) chemoembolization was less effective with full or partial remaining of renal blood flow. Scintigraphic data was compared with echographic, CT findings and also morphological studies of surgically removed organs. 7 patients had small tumors that not exceeded out renal capsule. thus chemoembolization was effective followed with diminishing of tumor size and it’s necrosis. In 9 cases, when tumor exceeded the capsule, there was no effect from chemoembolization.
Conclusion: Hence, ANS is a highly informative, non-invasive method for treatment choice, the efficacy assessment of the roentgen-endovascular treatment and follow up of patients with RCC.

C-0475 PWT 09
Selective ophthalmic arterial infusion therapy for the patients of retinoblastoma
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Purpose: There is increasing interest in treating intraocular retinoblastomas with chemotherapy combined with focal laser therapy and cryotherapy. To reduce the side effects of chemotherapy for intraocular retinoblastomas and to acquire better responses, the system of selective ophthalmic arterial infusion (SOAI) is introduced.
Materials and methods: Selective catheterization to the cervical segment of internal carotid artery was performed with 4 F guide catheter of coaxial micro-balloon system. During temporary occlusion at the portion just distal to the orifice of ophthalmic artery by small occlusion balloon (4 to 5 mm), methylprednisolone (5 – 10 mg/ml) was infused from the lumen of the guide catheter.
Results: 417 SOAI (140 patients, 0 – 12 years, mean 2.6 years) combined with thermotherapy or focal laser therapy were performed. Technical success rate was 95.6 %. There was no significant complication including brain infarction.
Conclusion: The new technique of selective ophthalmic arterial infusion by using micro-balloon is safe and will reduce side effects, such as bone marrow depression.

C-0476
Postoperative contrast-enhancement of patent inferior mesenteric artery (IMA) predicts the fate of infrarenal abdominal aortic aneurysm (AAA) regarding shrinking speed after successful endovascular stent-graft implantation
T. Miwa, Ube/JP
Purpose: To prove the reflection of contrast-enhancement of patent IMA after successful stent-graft implantation to shrinking speed of infrarenal AAA.
Material and methods: We underwent stent-graft implantation in 40 patients. Nineteen of them had patent IMA. Thin-slice CT was performed in all patients before and after the operation. The diameter of the IMA was measured on preoperative CT images. Contrast-enhancement of the IMA in the vicinity of the aneurysm wall and postoperative diameter change of the aneurysm were evaluated on postoperative contrast-enhanced CT images.
Results: The mean diameter of the IMA was 2.9 mm. In 9 of the 19 patients, contrast-enhancement of the IMA was repeatedly seen in the vicinity of the aneurysm wall (IMA+) group). In 7 of the 19 patients, contrast-enhancement of the IMA was not seen (IMA-) group). In 1 patient, contrast-enhancement of the IMA was not seen in the first postoperative CT, but was seen 1.5 months after the operation. Postoperative diameter change of the aneurysm was evaluated in 15 patients (IMA+ group: 8, IMA- group: 7). In the IMA+ group, no change in diameter of the aneurysm was observed until 3 months after the operation then gradual decrease was observed. However, in the IMA- group, diameter of the aneurysm began to decrease immediately after the operation. In 2 of the 7 patients, the diameter decreased more than 1 cm within 6 months.
Conclusion: Postoperative contrast-enhancement of the IMA in the vicinity of the aneurysm wall may predict the shrinking speed of the aneurysm after successful stent-graft implantation.

C-0477
Lipiodol CT in interventional endovascular radiology for lung, renal, primary and metastatic hepatic cancer: General patterns and differences
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Purpose: To study the diagnostic potential of Lipiodol CT and assess the efficiency of arterial chemoembolization (ACE) using iodized oil (IO) in patients with pulmonary, renal, primary (PHC) and metastatic (MHC) hepatic cancer.
Materials and methods: ACE alone and as a component of a multimodality treatment was administered in 144 patients (26 with lung cancer, 57 with renal cancer, 12 with PHC and 49 with MHC). Distribution of IO in the tumor was monitored. Results: IO deposit in the lesion was detected in all 26 lung cancer patients, 47 (82.5 %) renal cancer patients, 10 (83.3 %) PHC and 35 (71.4 %) MHC patients. For basic variants of IO distribution were established: even (1), peripheral (2), random (3) and faint or no fixation (4). Type 1 of IO deposit was more common for lung cancer (53.8 %), type 2 – for renal cancer (45.6 %), types 1 and 2 occurred in an equal number of PHC cases, and all the four types were equally found in MHC. In case of tumor invasion of mediastinal structures, inferior vena cava and liver, Lipiodol CT confirmed involvement. Therapeutic pathomorphism of lung cancer and in neoplasms of small and hepatic tumors were more pronounced with type 1 and 2 IO deposit. A relationship between the tumor response, tumor blood supply and size was established.
Conclusion: The pattern of intratumoral IO distribution is an additional criterion of lesion characterization, and facilitates the assessment of treatment efficacy.

C-0478
Complications associated with the use of collagen devices to seal femoral artery puncture site: Assessment with color-duplex sonography
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Purpose: To show the usefulness of the color duplex sonography (CDS) in the assessment of the complications associated with use of collagen devices (Angiosense, VasoEase) to seal femoral artery puncture site. We described also the normal sonographic appearance of these devices.

Methods and materials: Six patients (n = 6) remitted with clinical suspicion of complication (isostic bruit (n = 2), lower limb ischemia (n = 2), pulsatile mass or hematoma (n = 2)) after the use of collagen devices, were examined with CDS.

Arterography were performed in two cases with absence of discrepancy with CDS.

Results: CDS shows pseudoaneurysm in two patients. In the two cases with acute lower limb ischemia the CDS recognized the position of the collagino into de vesSEL producing complete occlusion of superficial femoral artery (n = 2), estenosis of deep femoral artery (n = 1) and complete occlusion of common and deep femoral artery (n = 1). In both sonography differentiated intraartenal collagen versus thrombus and detected a recanalization flow in popliteal artery. The two cases with isostic bruit CDS showed femoral superficial artery stenosis (n = 1), in the follow-up CDS, two weeks later, a reduction in the size of stenosis was showed. The study was normal in the other patient.

Conclusion: The more frequently use of collagen devices to seal femoral artery puncture site are associated with access site complications. The radiologist must be aware of the normal sonographic appearance of these devices. The CDS permits an precise assessment, mangement and surgical planning of complications.

C-0479
Associated procedures (AP) in the endovascular treatment of abdominal aortic aneurysm (AAA)
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Purpose: The indications for the endovascular treatment of AAA is now established for anatomic criteria (diameter of anchorage necks, size and position of vessels, calcifications). This procedure is feasible in 30–70% of patients (PTS). The association of endovascular and surgical procedures may determine an increase of the number of PTS that may be treated with this procedure.

Materials and methods: From December 1997 to August 2000 we have treated 56 PTS (54 men, 2 women), median age 75 years (range 53–85), affected by AAA. Common iliac arteries were affected in 37.5% (21–56%) of patients. One or more AP were performed in 38 PTS (68%). 18 hypogastic embolization, 11 iliac artery embolization, 12 angioplasty or stenting of iliac axis, 3 renal artery stenting, 8 axillo-femoral guided wire, 3 hypogastic recanalization, 2 femoro-femoral bypass, 1 common femoral artery endarterectomy, 1 common femoral artery aneurysmectomy.

Results: AP has been absolutely necessary for a correct endovascular treatment in 29 PTS (52%). The following complication due to AP were observed: 1 immediate cerebellar stroke due to the axillo-femoral guide procedures, 1 prosthetic infection of femoro-femoral bypass.

Conclusions: Our experience suggests that endovascular or surgical PA increases the number of patients that may be treated with endovascular technique. without increasing, substantially, the complication rate.
Results: After RF treatment, US contrast enhancement was no longer detectable in all 36 of the 42 HCC nodules that were found to be necrotic at spiral CT. In the 6 HCC nodules containing residual viable cancer cells, intratumoral US contrast enhancement corresponding to the enhancing areas at spiral CT were still identified at PI&II. These 6 HCC nodules were retreated with RF, by targeting areas of residual viable tumor on the basis of CT and PI&II results. Complete necrosis was seen after the second RF treatment in five of six cases.

Conclusions: Contrast-enhanced PI&II shows promise in assessing the therapeutic effect of RF thermal ablation on HCC and in guiding additional RF procedures in cases of incomplete response.

C-0484 Is there a role for interventional radiology in the treatment and management of renal tumors?

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Background/purpose: Although the development of noninvasive imaging modalities for exploration of kidney has decreased the use of angiography in the evaluation of renal masses, intrarterial embolization is becoming more and more important in their management.

Materials and method: During the past two years 15 patients were referred to our department for embolization. The indications for embolization were: (1) preoperative embolization at the tumor-harboring kidney to decrease or avoid extensive blood loss during surgery and to facilitate surgery with huge masses with renal vessels difficult to reach. (2) potentially or acutely bleeding tumor. (3) palliative procedure for inoperable patients with renal tumor. (4) alternative treatment for patients contraindicated to surgery. In 2 cases multiple embolizations were performed.

Results: We present the clinical and imaging criteria that determine the indications, the technique, the immediate results and the follow up of these patients (mean follow up period is 14 months). We also present the minor (3 cases) and major complications (1 patient).

Conclusions: We demonstrate that intra-arterial embolization for renal tumors is relatively safe and can improve the clinical outcome and the quality of life, even if used as palliative treatment.

C-0485 New application of single alcohol injection sclerotherapy for symptomatic hepatic or renal cysts

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Purpose: To evaluate the feasibility and therapeutic effect of single alcohol injection with prolonged retention technique in treating symptomatic hepatic or renal cysts.

Patients & methods: Twenty-four benign symptomatic cysts (16 hepatic & 8 renal cysts) in 22 patients were treated by percutaneous alcohol sclerotherapy. The size of cysts ranged from 5 to 23 cm in greatest diameter (mean 10.6 cm). The symptoms and the signs of the treated patients included flank or epigastric pain in most patients, obstructive jaundice in 2 patients, secondary infection and hematuria in one patient each. The cyst was drained percutaneously as conventional technique. 95 % alcohol was injected into the cyst. The volume of injected alcohol ranged from 10 to 120 ml. The alcohol was injected against the wall of the cyst. The alcohol retention was prolonged as 4 hours in one patient and 2 hours in the other. If the alcohol was drained out immediately, the patients were referred to surgery. The alcohol retention was prolonged as 4 hours in one patient and 2 hours in the other.

Results: All cysts showed remarkable volume reduction (94 - 100 %, mean 98.8 %). The maximal blood alcohol concentration ranged from 12 - 60 mg/dl. Minor complications were symptoms of transient drunken.

Conclusions: We present the clinical and imaging criteria that determine the indications, the technique, the immediate results and the follow up of these patients (mean follow up period is 14 months). We also present the minor (3 cases) and major complications (1 patient).

C-0486 Long-term follow-up of reembolization TAE for hepatocellular carcinoma: Value of color angio power and duplex-Doppler US in the assessment of treatment response

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Purpose: To prove the value of color power angio and duplex-Doppler US in evaluating the response of HCC to chemoembolization and establish criteria for next step chemoembolization.

Materials and methods: From 1994 to 2000 96 patients with 132 histologically proved HCC 4 – 27 cm in diameter were treated with repeated TAE. Color angio power and duplex-Doppler US were performed for the assessment of tumor vascularization before, one day after and in 4 weeks intervals after TAE. The changes in intratumoral flow were evaluated. Those results were compared with the findings obtained by DSA.

Results: Before first step of TAE color signal with an arterial Doppler spectrum were demonstrated in 117 (89 %) of 132 lesions. The intratumoral flow disappeared after TAE in all cases (100 %). Revascularization of tumors were deducted in different periods: from 4 to 32 weeks. In all cases revascularization were proved by DSA during next TAE.

Conclusion: Color angio power and duplex-Doppler US are able to evaluate TAE induced changes in tumor vascularity and can be use to assess the therapeutic effect of TAE on HCC. Color angio power and duplex-Doppler US provides reliable informations before the next step of chemoembolization.

C-0487 The TIPS patency: Which factors can predict the likelihood of shunt failure in the long-term follow up

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Purpose: To reveal the factors influencing the long-term TIPS patency by comparison two selected groups of patients with TIPS. The group A included patients with repeated shunt revisions (at least 2 reinterventions in two year follow up), the group B involved patients with excellent long-term patency (no revision in two year period).

Materials and methods: The group A contained 17 patients, 10 men and 7 women, with mean age 39.5 years, mean Child-Pugh score 6.5 and mean number of revisions 3.2 in two year follow up. The group B included 30 patients 17 men and 13 women without any reintervention. The mean age of this group was 56.8 years and mean Child-Pugh score was 7.2. Evaluated parameters were age, sex, Child-Pugh score, the diameter of the portal vein (PV), the angle between the main PV and the spine, the angle between the shunt and punctured branch of the PV, shunt location (peripheral or central), type of used stent, blood count, albumine and creatinine plasma concentration. The statistical analysis was performed using the non-parametric tests.

Results: Only the age reached statistically significant difference between the group A and the group B. The patients with poor shunt patency were significantly younger than patients with excellent shunt function (p = 0.0011).

Conclusion: Patient age can predict long-term patency – younger patients have significantly higher probability of shunt dysfunction in long-term follow up.

C-0488 Initial experience with the new INTRACOIL™ self-expanding nitinol stent for the treatment of infrainguinal occlusive disease

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Purpose: Prospective two-center study to evaluate safety and effectiveness of a new self-expanding nitinol coil stent in patients with femoropopliteal occlusive disease.

Material and methods: The new INTRACOIL™ nitinol stent (IntraTherapeutics) was used in 29 patients, 7 female and 22 male (mean age: 63 years, range 43 – 81 a) presenting with high-grade stenoses (n = 15) or short occlusions (n = 14) of the superficial femoral (n = 24) or popliteal artery (n = 5). Indication for stenting was significant residual stenosis or dissection following angioplasty. Follow-up evaluations with measurement of the ankle-brachial index (ABI), assessment of Rutherford clinical stage and color-coded duplex sonography were carried out at discharge and 1, 3, 6, 12 and 18 months thereafter.

Results: Initial technical success was achieved in all patients. In 8/29 patients more than one device had to be implanted for complete lesion coverage; the total number of stents deployed was n = 40. Stent placement induced an initial improvement of the mean ABI from 0.54 ± 0.2 to 0.92 ± 0.12 (p < 0.01). Mean clinical stage improved from Rutherford category 3 to 1. So far 13 patients have been followed.

Interventional Radiology
Conclusion: Endovascular placement of the INTRACOIL™ self-expanding nitinol stent for the treatment of infragluteal occlusive disease is a safe procedure with promising initial success rates and good mid-term results.

C-0489
Minimally invasive management of biliary complications in liver transplant recipients
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Purpose: To demonstrate biliary complications after liver transplantation (LT), their diagnosis and non-surgical treatment.

Materials and methods: From January 1996 to May 2000, 100 LTs were performed. 36 biliary complications occurred in 21 patients: extra- and intrahepatic biliary stenosis, common bile duct necrosis and bile leakage. In some cases common bile duct necrosis was associated with bilaoma. The main causes were rejection, ischemia or inflammation of the bile ducts, and technical peroperative difficulties. Diagnosis of biliary complications is based on laboratory data, sonography, cholangiography, scintigraphy, CT and C-choangiography (CTC), MRCP, ERCP and PTC. Treatment was surgical and/or a combination of minimally invasive methods. For follow up, US, CT and CTC, scintigraphy and MRCP were used.

Results: 6 intrahepatic, 8 extrahepatic stenoses, 11 common bile duct necroses, and 11 bilomas were diagnosed. We performed 22 PTD in 13 patients. 7 patients had bilioplasty, 5 of them developed restenosis, which was cured with 7 metallic stents. 9 biliary complications were managed with endoscopic stent placement, including 2 cases. with a rendezvous technique. 6 surgical reanastomoses, 3 hepatico-jejunostomy and 6 retransplantation were done.

Conclusion: Radiology plays an important role in the diagnosis and interventional therapy of biliary complications in liver transplant recipients. The modern imaging modalities (CTC, MRCP) are helpful for planning surgical or endovascular therapy. Beside surgery, minimally invasive methods – PTD, bilioplasty and endoscopic or percutaneous stent placement are therapeutic alternatives.

C-0490
MR and histopathological study after microwave coagulation therapy
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Purpose: To evaluate MR images and histopathological changes after microwave coagulation therapy (MCT).

Materials and methods: Twenty-six hepatocellular carcinomas in 17 patients were studied by MR to determine signal changes over time after MCT. Histopathological and electron microscopy studies were performed.

Results: The irradiated region exhibited a low or high-rim signal on T2WI. A rim enhancement was present on Gd-T1WI. On T1WI, most regions (88.5%) presented a high signal intensity. With hematoxylin and eosin stain, the entire irradiated region presented decreased sinusoidal spaces without coagulation necrosis at the center and sinusoidal dilatation at the periphery. With electron microscopy, mitochondria deterioration was observed in the hepatocytes.

Conclusion: After MCT, hepatocytes remained, but mitochondrial structure and cell-cell width was changed. The MR signal intensity reflected tissue changes and the macromolecular hydration effect influenced signal changes on T1WI.

C-0491
Endovascular treatment of aortic aneurysm
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Purpose: Presentation of two clinical cases of patients with thoracic aortic aneurysm treated with stent-graft placement due to high local clinical risk for open heart surgery.

Methods and patients: First patient was 58 years old male, suffering from hoarseness with no changes found on vocal cords. CT showed aortic aneurysm of thoracic descending aorta distal to orifice of subclavian artery. Aneurysm reached into mediastinum and compromized n. recurrens. Surgeons stated the possibility of permanent nerve injury and endovascular treatment was suggested. Aneurysm was treated with tubular stent graft, dimensions 120 x 34 mm. Second patient was 65 years old male, with huge aneurysm of descendant part of thoracic aorta. Aneurysm destructed 5 thoracic vertebral bodies and stenosed spinal canal, causing paraplegia. A high risk for even worse injury of spinal cord during operation was present. Endovascular treatment was suggested and performed at Institution in Portland, USA. The patient was symptomless for two years, in 1996 clinical symptoms recurred. This late complication was resolved with additional stentgraft placement. After two years, symptoms recurred again and Institution in Portland refused another endovascular treatment. The third endovascular treatment was performed in our Institution. We placed tubular stentgraft, dimensions 140 x 35, high over aortic arch, with metallic part distal to orifice of subclavian artery.

Results: Patients are symptomless after 36 and 28 months.

Conclusion: Stent-graft placement is a successful alternative method to open heart surgery not only in high systemic but also in high local risk for operation.

C-0492
withdrawn by author

C-0493
withdrawn by author

C-0494
Vascular complications after hepatic tumor radiofrequency
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Purpose: To show vascular complications after radiofrequency (RF) of hepatic tumors in our hospital.

Materials and methods: In our first year experience we have treated 48 hepatic lesions (primary and secondary tumors) with RF ablation in 30 patients. Tumor size ranged between 0.6 – 5 cm (mean size 2.8 cm). We used a 480 kHz Radionics RF-generator and single monopolar electrodes. An ATL 5000 HD1 was employed to guide all the procedures.

Results: RF is an emerging new therapeutic method that consists in heat ablation of solid malignant hepatic tumors, applied through percutaneous or intraoperative approach under radiological guidance. We have found vascular complications in two patients (4.1%): one was an asymptomatic left portal thrombosis occurred the day after an intraoperative procedure, and the other one was hemoperitoneum caused by a left hepatic artery pseudoaneurysm one month after percutaneous treatment, that was successfully soved with embolization.

Conclusion: RF hepatic ablation is a relative safe, well-tolerated and effective therapy or hepatic masses with low rate of local recurrences but complications, although unusual, may occur.

C-0495
Transjugular liver tumor biopsy: Endovascular approach using combined fluoroscopic and sonographic guidance
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Purpose: To evaluate feasibility and results of endovascular biopsy of liver tumors.

Materials and methods: Five patients with liver tumor were biopsled using a transjugular approach because of contra-indication of direct percutaneous technique (ascites, hypocoagulability, hypervascular tumor without normal liver inter-position). Liver tumors were 2 to 16 cm in size located in segment II, III, IV, V, VI of the liver. Patients were 23 to 73 years old. Follow-up was 1 to 6 months. CT scan, ultrasonography and MRI were used for diagnosis and location of liver tumor. Fluoroscopy was used to catheterize a hepatic vein using a common liver biopsy set (9 Fr angled catheter, 0.035 inch guide wire). Tumor biopsy was guided by combined fluoroscopy and sonography. Liver biopsy of normal tissue was achieved to compare with the pathological sample. Two radiologists were required for this procedure. Patients were controlled by liver sonography, to eliminate capsular or parenchymal hematoma. Patients were monitored 24 hours after biopsy.

Results: Combined guidance for biopsy was successful in all targets (5 tumoral and 5 non tumoral biopsies). Pathology showed 4 hepatocarcinomas, 1 gallbladder adenocarcinoma. No immediate and no late complication occurred.

Conclusion: Liver tumors are accessible to transjugular biopsy by using fluoroscopic and sonographic guidance. This technique can be recommended when a direct percutaneous technique is contra-indicated.
Pudendal nerve infiltration under CT guidance: An anatomical and radiological study for aiming at two conflicting sites

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Pudendal neuralgia is rare and very painful and invalidating. Infiltration has been found helpful in managing the pain, particularly in periods of severe pain. To perform the infiltration, one must first have a good understanding of the anatomical relationship of the pudendal nerve and the surrounding structures which determine the possible safe percutaneous pathways. The purpose of this exhibit is first to depict the anatomy of the ischiorectal fossa on human cadavers correlated with CT cross sectional imaging. Anatomical study suggests that there are two possible conflicting sites on the course of the pudendal nerve. The first site is located at the ischial spine as the nerve can be entrapped under the sacrospinous ligament; the second one at the pudendal canal which is a non stretchable aponeurotic tunnel. We will demonstrate step by step our technique of percutaneous infiltration of the pudendal nerve under CT-guidance. CT-guidance allows safe needle progression and precise positioning at target which reduces complications and optimizes procedure results. Positive answer to infiltration allows to select patients for the surgical procedure.

"Stent-sheath" for "percutaneous thrombectomy (PTEE)" - Technical development for treatment embolism in iliac vessel angioplasty

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Purpose: It has been the purpose of the herewith presented new percutaneous device to treat iliacal and to prevent peripheral embolism in iliac vessel angioplasty.

Material and methods: During recanalization of a long iliac artery occlusion on the right side, involving both the common and the external iliac artery, thrombotic material was dislodged in the contralateral common iliac artery. In order to treat iliacal and to prevent peripheral embolism we introduced a self constructed "stent-sheath" which consisted of a standard sheath and a self-expandable stent introduced by an ostial femoral access. Embolectomy was performed with a standard balloon-catheter in a Fogarty-like procedure.

Results: The dislodged material was completely caught by the "Fogerty-manoeuvre" and successfully removed by the "stent-sheath".

Conclusion: The herewith presented device offers the possibility to extract dislodged material or emboli respectively in iliac angioplasty percutaneously without operation. A special designated sheath would make this device even more feasible.

Suprarenal fixation of endografts for endovascular repair of AAA

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Secure endoluminal repair of AAA depends primarily on successful attachment and seal to avoid type I endoleaks. Suprarenal fixation of endografts has been used to increase resistance to migration.

Aim: To present our initial experience of suprarenal fixation and mid term results on renal artery patency.

Material and methods: Of a cohort of 24 patients offered endovascular fixation of AAA suprarenal fixation was preferred in 7. Indications included short aneurysmal necks (mean 12 ± 3 mm) in 4, with angulation in 1, presence of small layer of thrombus in the infrarenal segment in 1. The Zenith device was used (trilab stents in 4 and custom made in 3). Mean aortic body diameter was 27 ± 2 mm and leg diameter 16 ± 2.6. Post interventional work-up included spiral CT on discharge, 1.6 months followed by annual examinations. Blood urea and creatinine levels were recorded and Doppler examination of the renal arteries was performed. Mean follow up for these patients was 6.7 months (7 - 14).

Results: Accuracy of deployment at the intended level was feasible in all cases. During follow up no cases of migration were observed and renal arteries were visualized at spiral CT without detectable stenosis. Blood urea and creatinine levels were not compromised in the follow up period and Doppler US was normal (technically feasible in 9/14 of renal arteries examined).

Conclusions: Suprarenal fixation is a safe alternative in cases with short necks, allows very accurate deployment and expands the indications of endoluminal repair of AAA without impairment of renal artery patency.

Endovascular recanalization of haemodialysis fistula with chronic venous occlusion

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Purpose: Acute thrombosis is defined as total occlusion of the fistula while chronic occlusion is a partial venous occlusion with collateral veins, which leads to impaired fistulous function.

Materials and methods: Between 1994 and 1999, 450 dialysis fistulas were referred for US (ultrasound) examination. Among 392 patients with fistula dysfunction, 71 presented a chronic venous occlusion of the hemodialysis shunt. All patients had chronic renal insufficiency. There were 68 autologous fistulas and 3 PTFE grafts. 57 fistulas were located on the forearm and 14 on the arm. 3 or more collateral veins were present in 69 of 71 patients. In 63 patients, the punctured site was changed for the last 6 months. The mean length of the occluded segment was 3 – 35 cm (subclavian vein 2 – 4 cm). 35 patients (22 male and 13 female) were referred to endovascular recanalization (June 1997 – December 1999). Technique of recanalization included antegrade venous puncture, insertion of a guidewire (0.021"), catheter (5 Fr), balloon catheter (6 - 8 mm) and in 2 cases stent placement.

Results: 19 of 35 recanalization procedures were successful. The main reason of failure was perforation or false channel. Diameter of recanalized veins was about 5 mm.

Conclusion: Results of percutaneous recanalization are not magnificent but it is the only kind of treatment for many patients with fistula failure.