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Intervention-Informal Scientific Presentation

15:40-16:00 B2 Hall

Chairperson(s)
Nam Yeol Yim Chonnam National University Hospital, Korea

ISP 01_IR 01 15:40
Long-term outcomes of percutaneous transhepatic balloon angioplasty with stent deployment for portal vein stenosis after liver transplantation
Hyedoo Jung¹, Nam Yeol Yim¹, Hyoung Ook Kim¹, Yang Jun Kang¹, Jae Kyu Kim¹, Hwan Joon Jae²
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PURPOSE: To retrospectively evaluate long-term outcomes of percutaneous transhepatic balloon angioplasty and stent placement for portal vein stenosis (PVS) after liver transplantation (LT).

MATERIALS AND METHODS: Between January 2004 and December 2014, of 1294 patients (LDLT: 889, DDLT: 405) who underwent LT, 54 patients (M:F = 43:11; mean age, 57.7 years) were confirmed to have portal vein stenosis or thrombosis at follow-up CT or ultrasonography. All patients with PV stenosis underwent percutaneous transhepatic interventions, including direct portography with manometry and balloon angioplasty with/without stent placement. Technical success, clinical success, laboratory findings, manometry findings, patency rates, and major complications were evaluated. Follow-up periods after initial balloon angioplasty ranged from 14 days to 110.6 months (mean, 38.2 months).

RESULTS: Technical success was achieved in all patients, and clinical success was achieved in 50 of 54 patients (92.6%). Of 50 patients undergoing manometry, 46 patients showed significant improvement of pressure gradient across the stenosis after percutaneous transhepatic balloon angioplasty and stent deployment with changing of mean pressure gradient from 11.2 mmHg to 2.04 mmHg. At 1, 3, 6, and 12 months and the last follow-up after balloon angioplasty with stent deployment, the rates of primary patency were 100%, 98%, 98%, 98%, and 98%, respectively. One major complication subsequent to balloon angioplasty with stent deployment was noted: portal vein thrombosis with hepatic infarction.

CONCLUSION: Percutaneous transhepatic balloon angioplasty and stent placement is a safe and effective treatment with long-term patency for PVS after LT.

ISP 01_IR 02 15:45
Percutaneous mechanical thrombectomy for the chronic thrombosed hemodialysis autogenous arteriovenous fistula with biopsy forcep
Joon Young Ohm
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Percutaneous mechanical thrombectomy is effective for restoration for the chronic thrombosed hemodialysis autogenous arteriovenous fistula. However, the adhesive and compact old thrombus is major cause of fistula malfunction. We present the case of a percutaneous mechanical thrombectomy by using biopsy forcep in a 70-year-old man with the chronic thrombosed hemodialysis arteriovenous fistula.

ISP 01_IR 03 15:50
A quick, safe and easy modified double-incisions technique for placement of implantable venous access ports via the internal jugular vein Jing eun Lee¹, Jae Kyu Kim², Yang Jun Kang¹, Hyeong Ook Kim², Hye Doo Jung², Nam Yeol Yim²
¹Chonnam National University Hwasun Hospital, ²Chonnam National University Hospital, Korea.
kjkrad@jnu.ac.kr

PURPOSE: To evaluate the modified double-incisions technique for the placement of venous access ports. Advantage, technical success, and complication were assessed.

MATERIALS AND METHODS: From May 2014 through April 2015, 352 consecutive ports were placed with a modified double-incision technique and sonographic and fluoroscopic guidance via the right internal jugular vein (n = 302) and left internal jugular vein (n = 48). The primary indication was for long term chemotherapy; all patients had malignancy.

RESULTS: All modified double-incision port insertions were technically successful. Patients included 161 men and 191 women with mean age of 59 years. The mean follow-up period was 135 days, and there were no reports of port malfunction. No procedure-related complications, pocket hematomas, venous thromboses, or pneumothoraces were observed. Four ports were removed more than 30 days after implantation for catheter-related bloodstream infection.

CONCLUSION: The modified two-incision technique for placing ports via internal jugular vein was quick, safe and easy procedure with high technical success and low risk of complications.
Diagnostic interventional endocrinology, including inferior petrosal sinus sampling (IPSS), arterial stimulation venous sampling (ASVS), and adrenal venous sampling (AVS) has played a pivotal role in widening understanding about endocrinologic pathology better, in terms of functional and anatomical aspect. However, obscure angiographic understanding about vasculature around deep seated endocrine organ, lack of knowledge for result interpretation, and lack of skill for venous sampling makes these procedures are overlooked, even by interventional radiologist. In this educational poster, various important things related to interventional endocrinology will be provided. And readers could deepen their understanding about venous sampling.

**Intervention-Informal Scientific Presentation**

09:40-10:00  B2 Hall

**Chairperson(s)**

Seo-beom Hur  Seoul National University Hospital, Korea

**ISP 02_IR 01**

09:40  Portal vein tumor thrombus treated by inserting a novel stent loaded with 125I seeds: case report

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Recent progress in imaging techniques has permitted the diagnosis of hepatocellular carcinoma (HCC) at an early stage, portal venous invasion is still found in 12.5–39.7% of patients with HCC. However, the prognosis of HCC patients with portal vein tumor thrombosis (PVTT) has not improved substantially with a dismal median survival of 2.7–4 months, compared to that of 10–24 months without PVTT. The patient was a 72-year-old male with hepatitis B virus-related liver cirrhosis. A giant HCC was detected and an S6/S7 segmentectomy of the liver was performed at another hospital. Recurrence in the residual liver, PVTT in the main portal vein, the left and to show the encouraging effectiveness of inserting a novel biliary stent loaded with 125I seeds in HCC patients with PVTT. The steady position of stent and the nice patency after 30 months. The latest CT cross-sectional image demonstrated the necrosis surrounding the irradiation stent. There was not macroscopic metastasis in the liver parenchymal. And both the portal vein and nearby lymph nodes kept uninvolved. C: Coronal reconstruction image of the novel stent loaded with 125I seeds. D: Ultrasound showed the blood. In this manuscript, we shared our experience of inserting a novel biliary stent loaded with 125I seeds to treat PVTT. The present newly designed biliary irradiation stent seems to be feasible and safe, may provide a higher patency and longer survival.

**ISP 02_IR 02**

09:45  Anomalous systemic arterial supply to the normal lung: differential diagnosis and endovascular treatment

Bo Ra Kim, Byeon-Ho Park, Jeong-Hyun Jo, Ki-Nam Lee, Eun-Ju Kang
Dong-A University Hospital, Korea.
bhpark@dau.ac.kr

We experienced a case of a 24-year-old man with anomalous systemic arterial supply to the normal lung, who was successfully treated with endovascular treatment. Although it is a rare disease entity, imaging findings and classification systems are worth reviewing, because it is diagnosed primarily by radiologic studies and can mimic other more common congenital anomalies. By inspecting this case, other patients with congenital anomalies, and previous literature, we will review the categorizing system of this and how it can be differentiated from other anomalies on imaging, and introduce transarterial embolization, as minimally invasive, emerging treatment of anomalous systemic arterial supply to the normal lung.

**ISP 02_IR 03**

09:50  TEVAR and EVAR complications we met: how to resolve it with literature review

Jeong-Hyun Jo, Byeong-Ho Park
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bhpark@dau.ac.kr

Endovascular aortic repair (EVAR) and thoracic endovascular aortic repair (TEVAR) are attractive alternatives to open repair with significantly improved perioperative mortality. However, secondary intervention for complications, such as endoleak, may be required. From September 2008 to December 2014, 24 and 25 patients underwent EVAR and TEVAR in our institution, respectively. Follow-up radiologic study with computed tomography was performed at least once in 45 patients. We experienced 16 endoleaks (14 type II, and 2 type III suspected), 2 limb occlusions, 2 stent-graft migrations, 1 aorto-esophageal fistula, and 1 aortic rupture. Of 14 type II endoleaks, 7 (2 TEVAR, 5 EVAR) spontaneously resolved or were no expansion of aneurysmal sac. 5 (2 TEVAR, 3 EVAR) were associated with a documented increase in sac size. The remaining 2 patients were lost to follow-up. Type III endoleak was suspected in two patients who underwent TEVAR. One remained under observation, although there was an increased amount of endoleak and expanded false lumen of aortic dissection on follow-up CT. The other who was suspected of type III endoleak was lost to follow-up. Aortic rupture was seen in a patient who underwent infrarenal abdominal aortic aneurysm (AAA) and lost to follow-up for 3.5 years. The cause of aortic rupture was unclear and the patient underwent emergent operation. Of total 22 complications, secondary intervention was primarily performed in 5 patients: endovascular and/or percutaneous embolization for 3 patients (1 TEVAR, 2 EVAR) with type II endoleak, stent-graft extension for 1...
EVAR patient with stent-graft migration, and mechanical thrombectomy with bare stent assistance for 1 EVAR patient with occluded limb of stent-graft. After surgery for stent-graft migration with type I endoleak, stent-graft extension was performed in 1 TEVAR patient. The increased use of endovascular repair for aortic disease and longer follow-up duration have led to various complications and increased need for secondary intervention. Regular radiologic follow-up and adequate re-intervention may as important as the EVAR and TEVAR procedure itself.

ISP 02_IR 04 09:55
The safety of wiping off technique after application povidone-iodine for interventional preparation
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PURPOSE: We aimed to assess quantitatively the effects on the resident skin flora of wiping off aqueous povidone-iodine soon after application compared with leaving it to dry.

MATERIALS AND METHODS: Between February 1 and March 31, 2015, 15 patients (M:F = 10:5; mean age, 33.5 years; age range, 28-45 years) were recruited. We sorted three groups (5 min air-dry after application, swiping off skin soon after application by dry gauze, and by wet gauze) and collected 53 culture samples at the medial portion of both arms, respectively. We also collected 53 samples without culture from skin for control study. We collected total 212 samples by using Transport Medium (Transport Medium-Amies, W/O charcoal). We performed smear culture at blood agar plate.

RESULTS: Colony were checked at 3 cases (1 case in dry gauze group, 1 case in wet gauze group, and 1 case in control group). There was no significant difference between each groups.

CONCLUSION: The technique of swiping off skin soon after povidone-iodine application whether using dry or wet gauze are bacteriologically safe.

ISP 03_IR 01 11:10
Selective transarterial embolization: the effective and safe method for the renal injury
Weon Jang, Young-Min Han, Gong Yong Jin, Young Gon Kim
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PURPOSE: To evaluate renal artery embolization (RAE) therapy for treatment traumatic, iatrogenic, and spontaneous renal injuries.

MATERIALS AND METHODS: This study retrospectively reviewed 42 patients who underwent superselective renal embolization between 2004 and 2010. Median age of the patients was 59.9 years (range, 13 to 89), and they underwent superselective renal embolization due to renal injuries; traumatic, iatrogenic, and spontaneous renal injuries. All patients underwent superselective embolization with microcatheter and microcoils. Technical and clinical success rate were retrospectively assessed from the patient’ record. To assess the effect of RAE, serum hemoglobin and hematocrit values were evaluated before embolization, 5 days after embolization, and next OPD follow up day. Serum creatine and eGFR values were evaluated to assess the safety of the RAE.

RESULTS: Most of cases were effectively controlled with superselective renal arterial embolization. Technical success rate was 100% and the overall clinical success rate was 92.9%. The mean serum hemoglobin value was increased 7.96 to 9.89 g/dL and mean serum hematocrit value was increased 24.0 to 29.0%. There was no significant differences in serum creatine level or eGFR after RAE.

CONCLUSION: Superselective renal embolization is the effective and safe method to manage for various causes of renal injuries.

ISP 03_IR 02 11:15
Congenital bronchial artery to pulmonary artery malformation as a cause of hemoptysis
Eun Mi Cho, Gyoo Sik Jung, Jong Hyouk Yun
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There are normal connections between the systemic and pulmonary vascular channels at precapillary levels, which are functionally closed under normal condition. Most systemic to pulmonary shunts are acquired as a result of chronic inflammatory pulmonary disease, neoplasms, or trauma. Congenital malformations involving a bronchopulmonary arterial connection are exceedingly rare. The authors report two cases of a quite rare congenital anomaly, a bronchial (systemic)-to-pulmonary artery malformation that presented as hemoptysis. The presenting symptom of hemoptysis was successfully managed by tran-
chronic unilateral hematuria (CUH) is characterized by intermittent or continuous gross hematuria that cannot be diagnosed using standard radiology and hematology methods. Persistent hematuria in the face of a negative radiographic evaluation can be distressing and debilitating to patients. Flexible ureteroscopy has recently become an excellent diagnostic modality as well as a powerful therapeutic option in patients with CUH. Hemangioma and minute venous rupture are two most common causes on the endoscopic evaluation for CUH. Several investigators have reported their experience with flexible ureterorenoscopy for treating CUH by means of electrocoagulation or laser treatment. However, no endoscopic abnormality was seen in 16% of cases of CUH. Herein, the authors report a case of CUH with no endoscopic abnormality, successfully treated by selective transcatheter renal artery embolization. We suggested that renal artery embolization can be a treatment option for selected patient with CUH.

SE 06 IR-01
Complications of portal vein embolization: evaluation on cross-sectional imaging
Yoo Kyung Yeom, Ji Hoon Shin
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In patients in whom the future liver remnant (FLR) is thought to be insufficient, portal vein embolization (PVE) is known as an effective and safe preoperative procedure which increases the FLR. However, some possible major complications can lead to nonresectability or delayed elective surgery, and thus resulting in increased morbidity and mortality. Although the majority of these complications are rare, knowledge of the radiology findings of post-procedural complications will facilitate making an accurate diagnosis and ensuring prompt management in these situations. The purpose of this exhibition is to review the CT findings of the complications of PVE.

SE 06 IR-02
Radiological approach and Interventions in gastrointestinal hemorrhage of arterial origin
Krishna Prasad Bellam Premnath, Brijesh ray, Vijay Jayakrishnan
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Gastrointestinal bleed poses a great diagnostic difficulty. Imaging can sometimes not be able to answer as to the exact site or cause of bleed, owing to the intermittent nature of bleed and bleed rate being below sensitivity of imaging modalities used. Imaging work up typically includes Multiphasic contrast enhanced multi-slice CT, RBC scintigraphy and conventional angiography. There is no role of MRI or conventional barium studies in evaluation of acute GI bleed. CT has a higher sensitivity than angiography. RBC scintigraphy has the highest sensitivity however plays poor role in fine localization. CT reduces fluororo time, contrast volume requirement during angiography and overall time of the procedure. Arterial interventions include intraarterial vasopressor injection, embolization with permanent or temporary agents and catheter induced vasospasm. Embolization can be an endpoint in management or be an adjunct to surgery helping in presurgical patient stabilization and aiding in intraoperative localization - thereby reducing on table time and blood loss.

A total of 11 patients with upper GI scopy and colonoscopy negative GI bleed were managed. CT was the key diagnostic tool, and in negative cases, was repeated when there was an episode of fresh bleed, drop in blood pressure or hemoglobin level. Other CT negative cases were subjected to RBC scintigraphy. 8 patients underwent embolization. Four among them underwent surgery post embolization. Three other cases achieved remission on conservative management. One patient died of multorgan dysfunction.

To conclude, CT is the key diagnostic tool in diagnosing and localizing bleed and culprit vessel and embolization is a novel approach to control bleed and cure or stabilize patient for surgery.

SE 06 IR-04
Retrieval technique of a migrated guide wire during central venous catheterization
Se Hwan Kwon, Joo Hyeong Oh
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Kwon98@khu.ac.kr

Central venous catheterization is a routine technique used in the emergency department and intensive care unit (ICU). Loss of a complete guide wire in the circulation is a rare and preventable complication. Depending on the catheter type, central venous cannulation can be performed at various sites, for example, the jugular, subclavian, femoral, and brachial veins. The complication rate of central venous cannulation may be as high as 12%. Migration of a guide wire into the circulation can occur from any of the usual central venous catheter insertion sites. This is a rare and completely avoidable complication of central venous catheterization. Predisposing factors for intravascular placement of the guide wire include
inattention, inexperience - either in method or central venous cannulation - inadequate supervision of trainees, and overtired operators. Sudden patient movement and excessive guide wire length may be additional factors. Expert operator skills and compliance with the catheterization protocol are vital for preventing this complication. In this presentation, we describe cases of unrecognized guide wire migration during central venous catheterization and its successful retrievals using a snare-wire under fluoroscopic guidance.

SE 06 IR-05
Fluoroscopic guide preoperative colonic stenting for malignant colonic obstruction: case presentations and literature review
Se Hwan Kwon, Eun Jee Song, Jeo Hyoong Oh
Kyung Hee University Medical Center, Korea.
Kwon98@khu.ac.kr

Approximately 8–29% of colon cancer patients present with obstructive symptoms on diagnosis. In these cases, emergency surgical decompression becomes mandatory as traditional treatment option. It involves defunctioning stoma with or without primary resection of obstructing tumor. Although effective, this is associated with high mortality ranging from 23% to 45% due to old age, pre-existing co-morbidities, anesthetic risks, and emergency surgery risks. Stoma itself may be a major source of morbidity with up to 30% of patients that would never be reversed. It is necessary, therefore, to identify other alternatives for malignant colorectal obstruction decompression in order to avoid emergency surgery. Self-expanding metallic stents (SEMS) have been suggested to facilitate bowel decompression and act as a “bridge to surgery” for those with resectable disease. Furthermore, SEMS have been associated with decreased morbidity, mortality, stoma formation, and wound infections compared with emergency surgery. The aim of our presentation is interesting case presentations and literature review about the fluoroscopic guide preoperative colonic stenting for malignant colonic obstruction.

SE 06 IR-06
Should interventional radiologists be proactive in DVT?
Krishna Prasad Bellam Premnath
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Deep vein thrombosis is a major health issue and can affect the lower limb or the upper limb, more commonly the lower. Therapy has till recently been directed only towards preventing progression of clot and preventing pulmonary embolism, and the fate of the clot the involved vein has been left to body thrombolytic mechanisms. Little attention has been given to clot retrieval or pharmacological lysis except in phlegmasia. Not only does the clot take a long time to lyse, the natural clot organization process results in destruction of the venous valves and fibrosis of the walls of the vein. In the absence of normal valves, the orthostatic pressure in the involved veins rise and give rise to symptoms of severe venous insufficiency including skin changes and varicose veins - the so called post thrombotic syndrome. Post thrombotic syndrome is a non-curable condition and poses a lifelong morbidity hampering patient life style, especially so in a young patient with DVT. This presentation outlines the indications, benefits and methods of early vein recanalization in DVT, and interventional aid to post thrombotic syndrome.

SE 06 IR-08
Efficacy and safety of transarterial sorafenib chemoembolization in VX2 tumor model of rabbit liver
Gyoung Min Kim, Man Deuk Kim, Jong Yoon Won, Sung Il Park, Do Tun Lee, Wonseon Shin, Minwoo Shin
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PURPOSE: To assess the efficacy and safety of the intraarterial delivery of tyrosine kinase inhibitor sorafenib to the hepatic tumor using transarterial chemoembolization method in VX2 tumor model of rabbit liver as a novel approach to hepatocellular carcinoma therapy.

MATERIALS AND METHODS: Twenty New Zealand white rabbits were used in the study. A VX2 tumor chip (0.125 mL in volume) was implanted in left hepatic lobe of each rabbit two weeks before treatment. After placement of a catheter in the left hepatic artery, ten rabbits (treated group) were treated with emulsion of sorafenib and ethiodized oil (9 mg and 0.5 mL, respectively), and ten rabbits (control group) were treated with 0.5 mL of ethiodized oil only. Liquid chromatography tandem mass spectrometry was used to measure the concentration of sorafenib in the peripheral blood 0.5-, 1-, 2-, 4-, 24-, and 72 hours after treatment and in the liver tissue 72 hours after treatment. Serum hepatic enzymes, serum vascular endothelial growth factor (VEGF) and hypoxia inducible factor 1α (HIF-1α) were measured before treatment, 24 hours and 72 hours after treatment. Histopathologic evaluations including degree of tumor necrosis were also performed.

RESULTS: Mean serum sorafenib concentration showed a peak at 2 hours after treatment (0.5 hour, 62.7; 1 hour, 96.3; 2 hours, 121.0; 4 hours, 110.3; 24 hours, 80.2; 72 hours, 30.8 ng/mL). Mean tissue concentration was 9902.3 ng/g and the average tissue-to-serum ratio was 321.9. Serum hepatic enzymes and total bilirubin concentrations elevated higher in the treated group. The elevation was transient. VEGF and HIF-1α levels showed no significant difference between two groups. Percentage of tumor necrosis was higher in treated group (p = 0.040).

CONCLUSION: Transarterial chemoembolization with sorafenib in ethiodized oil can be an effective and safe method for the localized delivery of this drug to the hepatic tumor.
SE 06 IR-09
Transvenous embolization of renal arteriovenous malformation
Chang Won Kim, Seungchan Lee
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PURPOSE: To evaluate safety and therapeutic efficacy of the transvenous embolization of renal arteriovenous malformation (AVM).

MATERIALS AND METHODS: 5 patients (M:F = 3:2; mean age, 47.8 years) underwent the transvenous embolization for renal AVM. We evaluated technical success, clinical success and complications retrospectively by medical records.

RESULTS: All patients presented macroscopic hematuria and one patient also presented palpitation. 4 cases had multiple arterial feeders and single draining vein and one case had multiple arterial feeders and multiple draining veins. Transvenous embolizations were performed in all patients. Embolic materials for transvenous embolizations were Amplatz vascular plugs and coils. A coil with 0.5 ml ethanol was used for adjunctive arterial embolization in one patient. Macroscopic hematuria was disappeared in all patients after embolization. Technical and clinical success rates were 100% each. There was no procedure related complication and recurrent hematuria during follow-up period (mean, 28.8 months).

CONCLUSION: Transvenous embolization is safe and effective method for the management of renal AVM.

SE 06 IR-10
Fluoroscopic removal of retrievable expandable metallic stents: experiences in 129 patients with malignant esophageal strictures
Ho-Young Song, Ha Jung Kim, Eun Jung Jun, Jung-Hoon Park, Young Chul Cho, MinTae Kim
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PURPOSE: To evaluate the safety and efficacy of fluoroscopic removal of retrievable expandable metallic stents (REMSs) in patients with malignant esophageal strictures, to compare clinical outcomes regarding removal techniques and removal timing, and to identify predictive factors related to successful removal.

MATERIALS AND METHODS: In this retrospective study, 129 patients with a total of 139 stent placements were reviewed retrospectively. Of the 139 stents, 95 stents were removed electively. Technical success rate and complication rate of the standard removal technique (Primary technical success) and modified removal technique (Secondary technical success) were evaluated. Logistic regression models were constructed to identify predictive factors related to successful removal.

RESULTS: Primary technical success rate was 78.4% (109/139) and secondary technical success rate was 100% (30/30). We observed 6 (4.3%) cases of complications associated with the removal. All complications were caused by the standard removal technique. There was no complication noted when REMSs were removed within 4 weeks of placement. Stent location at the upper esophagus (p = 0.006), and stricture length ≥ 8 cm (p = 0.026) were negative predictive factors for technical success of the standard technique.

CONCLUSION: Fluoroscopic removal of retrievable SEMSs for malignant esophageal strictures can be performed in a safe and convenient manner. Caution should be posed when removing stents located at the upper esophagus and stricture length ≥ 8 cm as they show higher tendency to failure of the standard removal technique.

SE 06 IR-11
Bronchial and nonbronchial systemic artery embolization: experience with 50 patients
isa Cam1, Ahmet Kaya2, Sevtap Gumustas2, Ercument Ciftci2, Zakir Sakci2, Ismail Mese2
1 Kocaeli University Medical Faculty, Department of Radiology, 2 Kocaeli University, Turkey.
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BACKGROUND: Massive hemoptysis is potentially fatal complication leading up to 85% mortality when treated conservatively. Bronchial and nonbronchial Systemic Artery Embolization is a well-accepted and widely utilized technique in the management of massive and recurrent hemoptysis.

PURPOSE: To evaluate the safety and efficacy of bronchial and nonbronchial systemic artery embolization in the management of major hemoptysis. To learn about treatment results and complications risks.

MATERIALS AND METHODS: Bronchial and nonbronchial systemic artery embolization was performed in 50 patients (40 male, 10 female) with massive hemoptysis between January 2005 and March 2015. Age range was 19 to 72 years (mean age, 44 years). Bronchial arteries (n = 70) as well as nonbronchial arteries - internal mammary (n = 3); lateral thoracic (n = 5); costocervical trunk (n = 4), thyrocervical trunk (n = 2), pulmonary artery aneurysm (n = 1) and anomalous systemic artery arising from descending aorta (n = 1) responsible for hemoptysis were selectively embolized. Embolic materials used included PVA (49), embosphere microspheres (n = 28), coil (n = 4) n-butyl-2-cyanoacrylate (NBCA: Histoacryl, B. Braun, Melsungen, Germany) (n = 5) but coil were not used alone.

RESULTS: The causes of hemoptysis included bronchiectasis (36%), lung cancer (24%), tuberculosis (20%), pneumonia (10%), pneumoconiosis in coal miners (4%), Behcet’s disease (1%), arteriovenous malformation (1%). Cause could not be identified in 4%. Bronchial and nonbronchial systemic artery embolization was attempted in 50 patients, completed in 47 patients, and was unsuccessful in 3 patients. Control of hemoptysis was observed in 47 patients (94%) at 1 month. Rebleeding occurred within 30 days in 3 patients. The complications of embolization included subintimal dissection of a bronchial artery (two patients), bronchial arterial perforation by a guide wire (one patient), and the reflux of embolic material into the aorta without adverse sequelae (one patient).
Percutaneous nephrostomy in malignant ureteric obstruction - a regional hospital’s experience
Ka Yan Alice Au, Chi Yeung Chu, Kam Wing Warren Leung, Wai Kuen Kan
Pamela Youde Nethersole Eastern Hospital, Hong Kong, China.
augar520@gmail.com

PURPOSE: To retrospectively review percutaneous nephrostomy (PCN) performed for malignant ureteric obstruction and determine the outcomes in terms of creatinine level (Cr).

MATERIALS AND METHODS: 46 patients (M:F = 24:22, mean age, 63.5 years) with PCN for malignant ureteric obstruction from June 2013 to June 2014 were included. Their medical records and radiological images were retrospectively reviewed. Patients with unilateral or bilateral hydronephrosis and with different malignancies were categorized for comparison. The mean period of Cr returning to normal was calculated as outcome. Welch two-sample test and ANOVA were used when appropriate.

RESULTS: Our study group comprised of 12 (26.1%) colorectal, 10 (21.7%) gynecological, 8 (17.4%) bladder, 5 (10.9%) prostate, 4 (8.7%) stomach cancers and 7 (15.2%) other malignancies. 40 (87.0%) patients presented with raised serum urea/Cr levels and 6 (13.0%) were incidentally found to have hydronephrosis during follow-up. In our study group, Cr reaching a nadir took 22.6 days on average, with a range of 10.1-35 days in five groups of cancer patients (prostate, stomach, bladder, colorectal and gynecological malignancies), and no statistically significant difference between the five groups. All patients except one had unilateral PCN [28(62.2%) right and 17(37.8%) left] as treatment. Unilateral and bilateral hydronephrosis were seen in 34 and 12 patients respectively. In all unilateral PCN, Cr in patients with unilateral hydronephrosis returned to baseline faster than those with bilateral hydronephrosis. (15.6 days vs. 25.2 days, p = 0.044).

CONCLUSION: Our study showed that PCN is an effective means to improve renal function in malignant ureteric obstruction, with faster renal function recovery in patients with unilateral hydronephrosis, which may imply that bilateral PCN should be considered in cases of bilateral hydronephrosis due to malignant ureteric obstruction.

Risk factors of biliary infection after biliary stenting
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Biliary stenting as one of the most important palliative treatment of malignant biliary obstruction, can relieve biliary obstruction symptoms for patients unable to receive surgical resection. A multicenter randomized clinical study has showed that biliary drainage before the pancreatic head carcinoma surgery doesn’t increase operative mortality and hospitalization time, but increase the incidence of complications. As well, the common complications of biliary stent includes: stent misplaced and broken, the local complications after stent implantation (biliary infection, biliary tract hemorrhage, biliary fistula, pancreatitis), biliary obstruction and stent migration, what’s more, biliary infection has a high incidence, reported in 1.9-12%. It’s known that the main pathogenic bacteria of ERCP caused biliary infection is E. coli and enterococcus. Generally, higher biliary internal pressure caused by biliary imaging, pushes the infectious bile getting into bloodstream, can lead to severe sepsis. Hongtao Niu has shown that diabetes, liver function grade, ERCP or bile intestinal anastomosis surgery history, both internal and external drainage and existence of bile duct failed to drain are risk factors of PTBD postoperative biliary infection. Yifeng Tian reported that bile culture positive, high preoperative bilirubin concentration and diabetes mellitus are major risk factors of biliary infection before laparotomy for biliary surgery. When it goes to biliary stenting by endoscopy, something has changed. Whether stents covered or not doesn’t increase the incidence of biliary infection after biliary stenting. If tumor grows across cystic duct orifice and gallstone exists in gallbladder, the risk of biliary infection may go up.
SE 06 IR-14
Transcatheter renal artery interventions: a review of various established procedures and clinical outcomes

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PURPOSE: To overview of the minimally invasive therapies for renal artery pathology including renal neoplasms, with an emphasis on interventional technique and clinical outcomes of the procedure.

MATERIALS AND METHODS: The Institutional Review Board approved this retrospective study and waived informed consent. We reviewed 36 patients (M:F = 23:13; mean age, 51 years) who had transcatheter renal interventional techniques, such as angioplasty, stenting, and embolization for renovascular disease and embolization for renal neoplasms in two different hospitals from December 1988 to March 2015.

RESULTS: Renal artery stenosis (n = 16), renal artery aneurysm/pseudoaneurysm (n = 4), renal arteriovenous fistula and malformation (n = 4), renal tumors including angiomyolipoma (n = 4) and renal cell carcinoma (n = 3), and traumatic renal injury (n = 6) were treated by angioplasty (n = 4), embolization (n = 12), stenting (n = 12), and tumor embolization (n = 7). There was no technical failure and no major complication such as life-threatening hemorrhage, end-organ infarction, need for salvage surgical intervention or death.

CONCLUSION: Transcatheter interventions play an important role in the treatment of renal pathology, and to know about the interventional techniques will help to manage the wide variety of kidney diseases.

SE 06 IR-15
Initial experience in UAE as interventional radiologists

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Since January 2015, various interventional procedures were done, starting from percutaneous catheter drainage of ascites in cancer patient in northern area of United Arab Emirates with succeeding central vein catheter insertions, embolization for bleeding, chemoport insertion, TACE with beads, pre-operative embolization of neck tumor, etc.

We want to present the initial experience of adapting period in UAE including build-up and propagation of interventional radiology that were not experienced before in Korea, including the joining into local meetings, communication with local doctors, and many features of patient and equipment factors for interventional procedures.

SE 06 IR-16
Prognostic effect of arterioporal shunt in radioembolization using Yttrium-90 resin microspheres for hepatocellular carcinoma with portal vein thrombosis-a single center study

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PURPOSE: The aim of this study was to analyze a prognostic effect of the arterioporal (AP) shunt in Yttrium-90 (Y90) radioembolization for hepatocellular carcinoma (HCC) with portal vein thrombosis (PVT).

MATERIALS AND METHODS: A total of 20 patients with HCC and PVT were treated with Y90 radioembolization between December 2008 and April 2014. Each target lesions were divided in two groups which tumors with or without AP shunts. The HCCs in same areas of the AP shunt were considered as same lesion, and the HCCs without AP shunt in same patient were considered as same lesion. Radiological tumor response of the target lesions was assessed using modified Response Evaluation Criteria in Solid Tumors (mRECIST). Uni/multivariate analyses were performed.

RESULTS: Eleven target lesions were with AP shunts and 14 target lesions were without AP shunt. Target lesions with AP shunts show 6 (54.5%) partial response (PR), 2 (18.2%) stable disease (SD) and 3 (27.3%) progressive disease (PD). Target lesions without AP shunt show 1 (7.1%) complete response (CR), 7 (50.0%) PR, 3 (21.4%) SD and 3 (21.4%) PD. Disease control rates (CR + PR + SD) of target lesions with or without AP shunts were 72.7% and 78.6%, each (p = 0.420).

CONCLUSION: The presence or absence of the AP shunts in the target lesions was not a significant prognostic factor in patients with HCC and PVT. But prospective study with more number of the patients is possible, the result could be changed.

SE 06 IR-17
Interventional management in pylephlebitis with portosystemic shunt: a case report and literature review

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Pylephlebitis is defined as infective suppurative thrombosis of portal vein. It is rare but carries a significant morbidity and mortality rate. The standard treatment for portal vein thrombosis including pylephlebitis has not been established. We describe a case of pylephlebitis coincidentally with portosystemic shunt managed by endovascular treatment, along with a wide literature review.
SE 06 IR-18
The incidence and management of central vein rupture during PTA for hemodialysis access patients
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PURPOSE: To evaluate the incidence and management of central vein rupture during PTA for central vein stenosis/occlusion in hemodialysis patients.
MATERIALS AND METHODS: Between 1998 and 2013, 3103 PTAs were performed for central vein stenosis (2437)/occlusion (666) in hemodialysis patients (M:F = 1445:1658; brachiocephalic/subclavian = 1735:1368) using various techniques. PTA or stenting were performed regardless of vein rupture when the guide wire passed through the stenosis/occlusion. The incidence of central vein rupture according to the location, sex, right versus left, thrombosis, stenosis or occlusion were analyzed using Chi-Square test. Percutaneous management of central vein rupture were also evaluated.
RESULTS: Central vein rupture was documented by fistulography in 12 cases (0.39%). All ruptures occurred in occluded lesions (brachiocephalic: subclavian = 9:3) and none in stenotic lesions (p = 0.00). There were no statistically significant differences in location (p = 0.409), sex (p = 0.811), right versus left (p = 0.081), and thrombosis (p = 0.331). Causes of central vein rupture were; guide wire induced rupture in 9, sharp recanalization with Colapinto needle in 2, and during balloon dilation in one case. Central vein rupture were managed by stenting (n = 5), low pressure balloon tamponade in the rupture site (n = 2), and balloon occlusion of proximal inflow vein and observation (n = 5). In 5 patients, recanalization of central vein failed.
CONCLUSION: Central vein rupture occurs very rare during PTA, and the majority can be easily managed by percutaneous techniques. When a guide wire can pass through the occlusive lesion, PTA could be performed even if central vein rupture occurs.

SE 06 IR-22
Transcatheter arterial embolization of both uterine arteries and extra-uterine feeding arteries in uterine arteriovenous malformation with positive serum β-hCG: a case report
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The incidence of uterine arteriovenous malformation (UAVM) is rare. But it is clinically significant in that it can cause life-threatening massive vaginal bleeding, making clinical management difficult. We report a case of uterine arteriovenous malformation with positive serum β-hCG, which can be confused with retained product of conception (RPOC) and gestational trophoblastic disease. The vascularity of UAVM didn’t decrease despite the embolization of both uterine arteries, so additional embolization was performed for extra-uterine feeding arteries. MTX therapy was also performed. Three months later completing treatment, the large vascular mass disappeared on transvaginal ultrasonography and serum level of β-hCG was within normal range.

SE 06 IR-23
Percutaneous renal procedure-related bleeding: outcome of angiographic management in 74 patients at a single medical institution
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PURPOSE: To present the radiological and clinical results of transcatheter arterial embolization (TAE) in patients with active bleeding following percutaneous renal procedures.
MATERIALS AND METHODS: Seventy-four, consecutive patients who underwent angiography for percutaneous renal procedure-related bleeding were retrospectively analyzed. Details of the patient characteristics, angiographic management, and clinical outcomes were recorded.
RESULTS: On angiography, bleeding foci were observed in 58 patients (78.4%), all of whom underwent TAE. Among the 16 patients (21.6%) with no bleeding focus, prophylactic TAE was performed in six. Technical and clinical success was 100% and 82.8% (53/64), respectively, in all of the 64 patients who underwent TAE. Eleven (17.2%, 11/64) patients with clinical failure underwent repeat TAE and achieved clinical recovery. Clinical outcomes were not significantly related to the biopsy procedure, a bleeding tendency, the latency time or the presence of active bleeding seen on angiography (p > 0.05). There was no significant decrease (p > 0.05) in eGFR following TAE in the 42 patients with available follow-up data. There were no major complications.
CONCLUSION: TAE is a safe and effective method of treating percutaneous renal procedure-related bleeding without renal function deterioration. In patients with clinical failure, repeat TAE was also effective in achieving hemostasis.
MILLER (minimally invasive limited ligation endoluminal-assisted revision) procedure for treatment of access-related high flow state and steal syndrome

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PURPOSE: To evaluate the efficacy of the MILLER (minimally invasive limited ligation endoluminal-assisted revision) procedure in treating dialysis associated steal syndrome and high-flow access problems.

MATERIALS AND METHODS: Seventy patients (M:F = 33:37; mean age, 53.44 ± 13.78 years, mean fistula age, 67.73 ± 57.60 months) underwent MILLER procedure which 3 presented with hand ischemia and 67 with clinical manifestation of high access flow. MILLER procedure requires a small skin incision for the placement of a ligation and utilizes a 4 or 5 mm diameter endoluminal balloon to achieve and standardize the desired reduction of inflow size. Patients were assessed for technical success, complications, flow reduction and primary patency rate.

RESULTS: Technical success achieved in 69 patients (98.6%). Venous rupture occurred in 2 patients. The amount of flow reduction in access vein was 759 – 5270 ml/min (mean, 1530.47 ± 1283.88 ml/min). At 6-month primary patency rate was 78% and the thrombotic event rates for fistulas and grafts were 0.10 and 0.82 per access-year, respectively.

CONCLUSION: The MILLER procedure appears to be an effective and durable option for treating dialysis access-related steal syndrome and high-flow-associated symptoms.

Percutaneous cryoablation in patients with lung tumors using cone-beam CT guidance: advantages and limitations

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PURPOSE: The role of tumor ablation in the management of patient with lung tumor is evolving. Cryoablation can effectively ablate tumors in the lung and has the advantage of being relatively resistant to the cold-sink effects of ventilation, compared with RF ablation. Unlike heat-based ablation, percutaneous cryoablation is better for pain-relief and not limited to pleura-based lesions, as well as in preservation of collagenous architecture of cell, which can be applied in tumors that are relatively central or closely adjacent to or invasive into the mediastinum or chest wall. The purpose of this exhibit is to review advantages and limitations of lung cryoablation.

CONCLUSION: Percutaneous cryoablation may have a useful role in the management of stage I NSCLC and colorectal pulmonary metastases, when surgical resection is not an option.