Interventional radiology

Nonvascular

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Radiology
At tempted non surgical invasive therapy with good results (sometimes as good as surgery), tolerated better by the patients. Sometimes the only way of treatment, palliative or curative.
Basic techniques (to enter the body)

- Seldinger
- Trockar
- Biopsy
Biopsy

• Percutaneous sampling
  – Cells/cytology
    • FNAB/ 21-23G needles
    • Smear
    • Searching for malignity
  – Tissue/core
    • 14-20G needle
    • In diffuse or localised pathologies
    • (More complications)
Percutaneous ablative techniques

• Chemical
  – Ethanol /PEI/ (acetic acid, *hot saline*…)/~3cm/

• Thermoablation
  – Cryo, laser, focused US, RFA
    • Appr.5-6cm max.diameter/session
  – Liver, kidney, lung, breast, bone

• Percutaneous, laparoscopic, open surgical
  – Combined
Clinical Complications

MAJOR COMPLICATIONS (2.1%)
Intraperitoneal hemorrhage
Intrahepatic hematoma
Seeding
Abscesses
Hemothorax
Diaphragmatic paresis
Biloma
Pneumothorax
Portal hypertension
Stenosis of common hepatic duct
Venous thrombosis
Multisegmental hepatic infarction
Acute cholecystitis
Septicemia

MINOR COMPLICATIONS (4.7%)
Skin burn
Asymptomatic thickening of gallbladder wall
Self-limiting intraperitoneal bleeding
Arterio-portal shunt
Thickening of diaphragm
Subcapsular hematoma
Biloma
Intratumoral hematoma
Pain
RENAL CC ABLATION

Best indication for RF
Never seen recurrence in treated area
Low complications
Outpatient
RF Ablation of RCC

**Initial Indications**

- Co-Morbidities, Poor Surgical Candidate
- Life Expectancy Less Than 10 years
- ± Solitary Kidney
- No Evidence of Metastatic Disease

**Expanded Indications**

- Palliation of large central tumors while maintaining renal function
- Hematuria Control
RF Ablation of Renal Tumors: Tumor Factors

Tumor Size

- 3 cm or less ideal
  - 100% Technical Success
  - > 90% single session
- 3.0 - 5.5 cm can be done with more ablations; some more sessions
  - 100% success if exophytic
  - ~ 70% single RF session
Aspiration/drainage

• Fluid collections, abscesses
• Diagnosis+therapy
  – Fluid aspiration, bacteriology, cytology
  – Drainage, lavage
• Depends on
  – Why we do it
  – The viscosity of the fluid
  – Safe access
Preparation

- Sedation
- Local anesthetic
- Puncture needle
- Guidewire
- Drainage catheter
Coaxial access
Trokar access
Trokar access
Aspirate evaluation

Bacteriogram
Leukocytes, no germs abscess
Creatinin
Lymphocytes, fat
Bilirubin
Amylase pseudocyst

- Pus
- „sterile
- Urinoma
- Lymphocele
- Bilioma
- panc.
Sclerotheraphy

- Cysta, lymphocele, seroma...
  - Percutaneous puncture, or drainage
  - The amount of the agent depends on the volume of the fluid in the collection
  - Alcohol
  - Betadine/braunol

- 20-30 min to be effective
- Aspiration of the sclerotizing fluid
- Repeat!
Biliary obstructions

• Cause can be
  – Stone
  – Stenosis/compression
    • Benign/malignant

• Therapeutic choices
  – Surgical
  – Endoscopic
  – Percutaneous (PTD: percutaneous transhepatic drainage, PTC: ~ cholangiography)
PTC-PTD

- US or fluoro guidance
- Transhepatic fine needle puncture of one dilated bile duct
- 0.018” initial guide wire insertion through the needle lumen
- 2 step coaxial dilatation of the tract (4-6F)
- Catheter/gw manipulation (0.035”gw)
- 6-10F drain, external/external-internal
- Stents
PERCUTANEOUS BILIARY INTERVENTION

Future changes

• MRCP will allow better selection of patients
• Endoscopic stents will be used in most patients
• Metallic biliary stents will be used in hilar strictures and endoscopic failures
• Biodegradable stents will have an important role in benign strictures
Uroradiology endourology

- Urine deviation
- Stone extraction
- dilatation
- ureteroplasty
- stenting
- Urology/radiology
  - Retrograde
  - Anterograde
Special interventions

- TIPS
- Shunt pta
- PVE
- Islet cell tx
- Hepatocyta tx
- GI-stents
GI-stents

- GI occlusion, when surgery not performed, due to the patient’s condition, or technical factors
- Palliative stent placement
- 18-25 mm diameter
- OTW or endoscopic route
  - Min. 10F shaft – working channel
- **PTA** (percutaneous transluminal angioplasty)/stenting in lower limb
- Arterial thrombolysis
- Aortic stent graft
- Carotid stenting
- **RAS** (renal artery stenosis)
- Embolisation for GI bleeding
- AV-fistula management (dialysis shunts)
CIRSE /2

- Trauma
  - Management of injuries with IR techniques
- UFE (uterine fibroid embolisation)
- IVC (inferior vena cava)-filters
- Stroke (lysis)/neurointervention
- Coronarography (PTCA, stents)
- TIPS (transjugular intrahepatic portosystemic shunt)
CIRSE /3

- Venous access
- Venous intervention
- Musculoskeletal/ RFA (radiofrequency ablation), vertebroplasty, biopsy
- PVE (portal vein embolisation)
- Venous insuff. /ablation, sclerotisation
- Biliary interventions
• Oncotherapy
  – TACE (transarterial chemoembolisation), CP (chemoperfusion), RFA, PEI (percutaneous ethanol infiltration),
• RFA
• Abscess drainage
• Biopsy
• FNAB (fine needle aspiration biopsy)
• Robotics