Locoregional TreatmentS
Of NET liver metastasis

MP Vullierme
Beaujon Hospital
Locoregional Treatments

Liver NET metastasis

Not the primary
- Surgery if possible

Two main topics:
- Trans arterial chemoembolization (TACE)
- Radiofrequency
Multidisciplinary treatment liver metastases

Simple pattern:
One liver lobe

Complex pattern:
One lobe predominantly affected

Diffuse pattern

surgery

Surgery AND local ablative treatment

Medical therapy
Systemic chemotherapy
Endovascular therapy
Molecular targeted therapy

Pavel Neuroendocrinology 2012
Loco-regional Treatments

Chemoembolization

Percutaneous ablation
- Ethanol injection
- Thermal ablative therapies: Radiofrequency, microwave
- Non thermal ablation: electroporation

Arterial chemotherapy

Internal radiation, radioembolization

- No randomized study comparing efficacy
- Multidisciplinary board
Transcatheter Arterial Chemo Embolization: TACE

injection of Drug + vector into the arty, then embolization
Transcatheter Arterial Chemo Embolization: TACE
Background

Liver metastases are frequent in patients with carcinoid tumors, significantly influencing overall prognosis.
And with malignant duodenopancreatic NET.

Hepatic intra-arterial embolization (HAE) TACE are effective in controlling hormonal symptoms 70-100% reducing tumor size (response rates 33-92%).

Roche et al, Eur Radiol 2003
Gupta et al, Cancer 2005
Marrache et al, Br J Cancer 2007
TACE: contra indications

Renal failure: clearance < 30 ml/mn
  - Iodinated contrast

Main portal vein thrombosis
Including Tumorous portal vein thrombosis
  - Hepatic failure

Entero biliary anastomosis
Biliary obstruction or papillary incontinence
  - Liver abscesses
TACE: side effects risks and % liver affected

- Higher incidence of major complications
  - Depends on % of liver involved
  - 50-75%

  If > 50% liver involvement: TACE performed with 2 steps
  - Treating half of liver,
  - 1-2 months separating each

Gupta cancer 2005
Roche hepatogastroenterology 2004
Marrache, 2007

One TACE: right liver
One TACE: left liver
TACE: real life

Premedicated patient, somatostatin analogs, antibiotic debated

Angiography room

Surgical asepsy

Local anesthesia: xylocain

Femoral artery ponction (5F)

Temporary device

Catheter in the hepatic artery

Iodinated contrast
fluoroscopic guidance
Angiography

2D

3D

Deschamps CVIR 2010
PATIENT SIDE: mixture of...

Vector: Emulsion of 10-15 mL Lipiodol UltraFluid (LUF) and Chemotherapy
TACE and LIPIODOL
Survival rate/Arterial enhancement on CT

Multivariate analysis of predictors of tumour response (n= 43 pts) :  **OR: 8.11;**  CI 95%: 1.06–62; P<0.044
Embolization

Embolization with gelatin sponge particles (Gelitaspon, Gelita Medical, Amsterdam, The Netherlands): injected with iodinated contrast immediately after Chemotherapy with LUF

Always performed

- After arterial chemotherapy
- Or alone
Arterial Embolization alone versus Chemoembolization

A prospective randomized study

Results

Progression free survival

<table>
<thead>
<tr>
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<th>HACE</th>
<th>HAE</th>
<th>P</th>
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<tbody>
<tr>
<td>median PFS</td>
<td>19.2 [16.1-26.8]</td>
<td>23.6 [12.7-NA]</td>
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<td>2-year PFS rates</td>
<td>38%</td>
<td>44%</td>
<td>0.90</td>
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Maire, Neuroendocrinology. 2012
Results evaluation: MDCT
Thermal ablative therapy

Radiofrequency

Microwave
Percutaneous treatment contra-indication

Hemostatic

Proximity of
  ◦ Digestive structure
  ◦ Heart

Ascitis

Number of lesion? (>10, 15 ? ....)

Size of lesion
  ◦ 3.5-5 cm

Entero biliary anastomosis

General anesthesia
Radiofrequency

Background Tissue

Applicator

Tumor

Radiofrequency
Ahmed M et al. Radiology 2011;258:351-369
Technical approach

Radiofrequency:
  ◦ Ultrasound: the lesion must be visible
  ◦ Fusion with CT or MRI is possible
Multipolar

Simultaneous needle: synergie
IMAGING RESULT mdct
Complete ablation

If < 4 mm/vessels: incomplete
- 23% (26 mets with contact), 3% (201 mets without contact) p<0.02

Elias, de Baere ann surg oncol 2004
Microwave

Higher energy: 915 MHz - 2,45 GH
High temperature

no “heat sink effect”
Non-thermal Ablation: Irreversible Electroporation

Irreversible Electroporation

- **Opening of tumorous cells membrane**: Tumor necrosing (apoptosis) without normal surrounding parenchyma necrosis

90 electrical pulse
CONCLUSION

Association of all treatments: surgery, TACE and radiofrequency
In the same patient
During the follow up