

TREATMENT OPTIONS IN ADVANCED RAI RESISTANT THYROID CANCER

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Disclosure

Relevant financial relationships

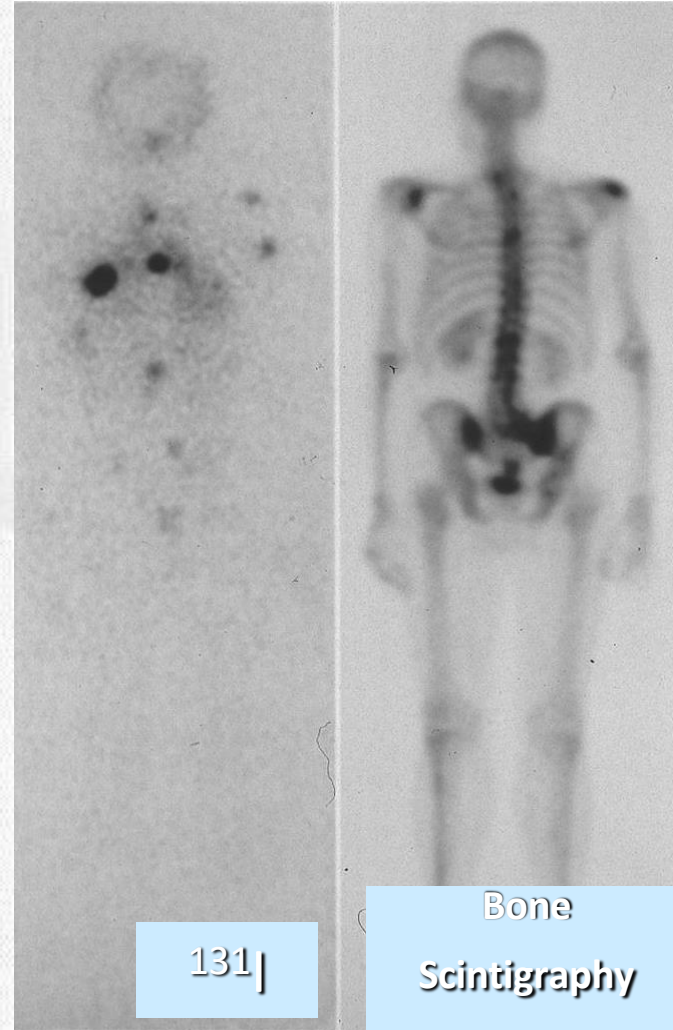
Amgen, Astra-Zeneca, Bayer, Boehringer Ingelheim, Eisai, Exelixis-IPSEN, Sanofi-Genzyme, Roche.

Distant metastases from DTC

- 6-7 patients/million population: < 10% of clinical DTC patients.
- Involve lungs – bones:
 - bones (25%)
 - lungs (50%)
 - lungs and bones (20%)
 - other sites (5%).
- 50% are present initially.
- ^{131}I uptake present in 2/3 of cases: ^{131}I is the first line systemic treatment



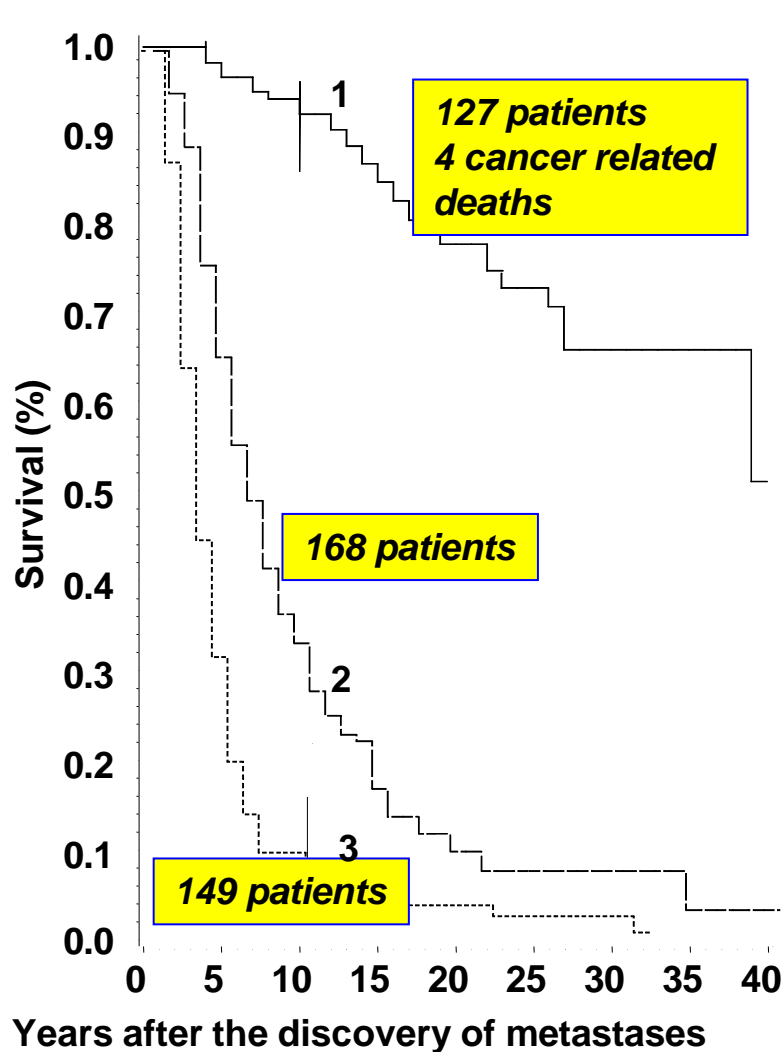
^{131}I



^{131}I

Bone
Scintigraphy

Survival and Response to ^{131}I Treatment



- Group 1: initial ^{131}I uptake and CR
 - Age < 40 years
 - Well-differentiated cancer
 - Small size of metastases
- Group 2: initial ^{131}I uptake and persistent disease
- Group 3: no initial ^{131}I uptake

^{131}I treatment may eradicate neoplastic foci (<1/3 of patients)

- *^{131}I uptake*
- *High radiation dose*

« Radio-sensitivity »

- *Younger age*
- *Well differentiated tumor*
- *Neoplastic foci: small size*
- *FDG uptake: absent or low*

Pitfalls (>2/3 of patients): refractory cancers

No uptake in at least one target lesion

Progression within 12 months after a radioiodine treatment

« Radio-resistance »:

- *Older age*
- *Poorly differentiated /aggressive tumor*
- *Neoplastic foci: large*
- *FDG uptake: high*

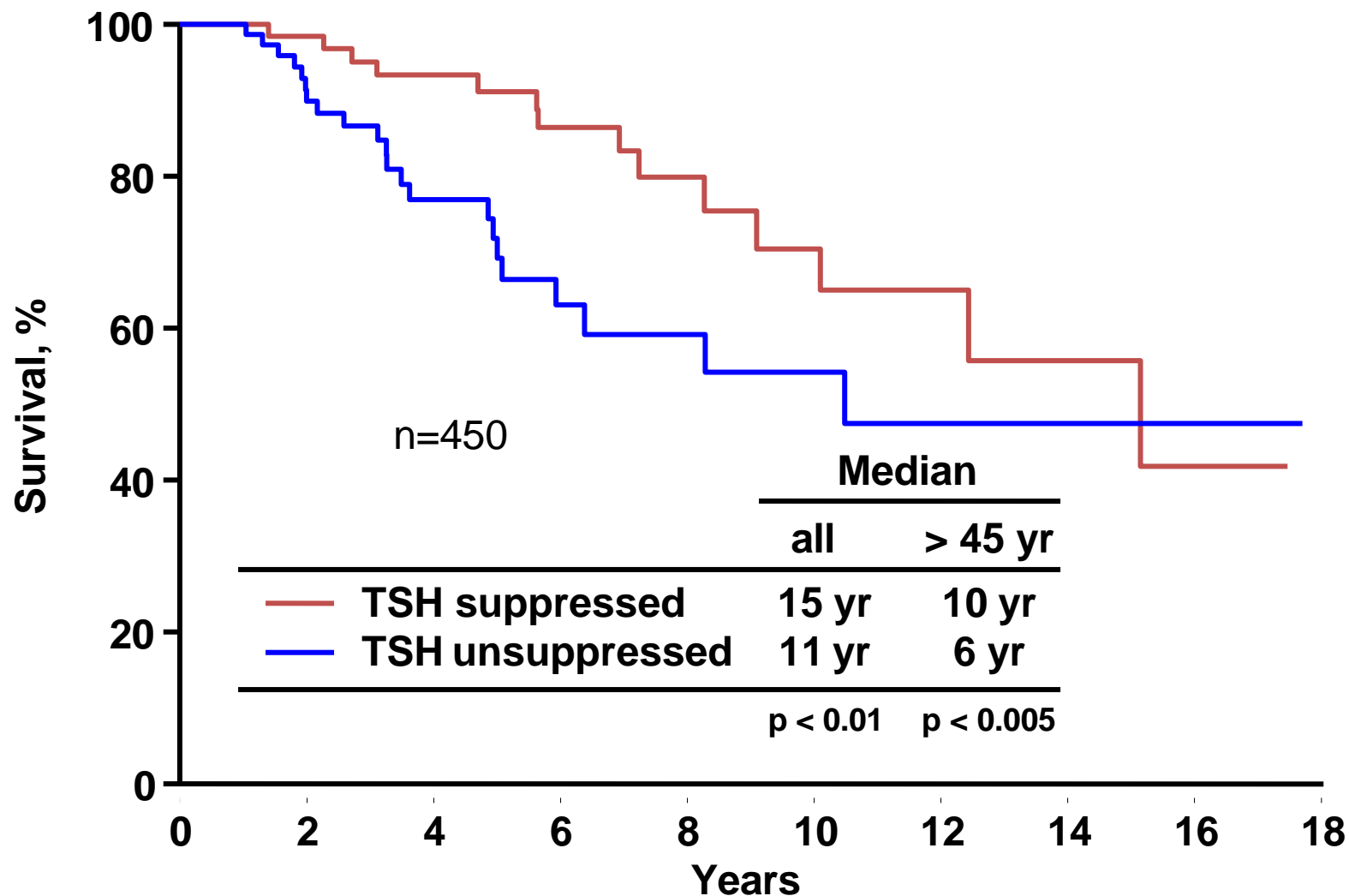
Refractory DTC: definition and incidence

- Metastatic differentiated TC refractory to ^{131}I : 4-5 cases/million population; in France 250 new cases/year (population: 65 millions; 8000 new cases of TC/year)
- Definition:
 - *^{131}I uptake absent in all target lesions*
 - *Initially or during treatment*
 - *Uptake is present in some but not in other lesions*
 - *Uptake is present in all lesions but progression occurred during the 12 months after ^{131}I treatment*
 - *Discussion: persistent disease after the administration of a cumulative activity of 600 mCi ^{131}I . Should ^{131}I treatment be given again?*

Management of refractory DTC

- Stop 131-I treatment
- L-T4 treatment: serum TSH < 0.1 mU/L
- Focal treatments whenever needed
- Imaging follow-up every 4-6 months
- Stable disease: follow-up.
- Progression:
 - > 20% (RECIST) in 6-12 months
 - Inclusion in a trial
 - Chemotherapy: low efficacy, significant toxicity (eg, doxorubicin: <5% PR, median PFS: 7 mo)
 - Targeted therapy as first line treatment (ATA, Cooper, *Thyroid* 2009; 19:1167)

TSH suppression improves survival for DTC patients with metastases



Focal treatment for advanced disease

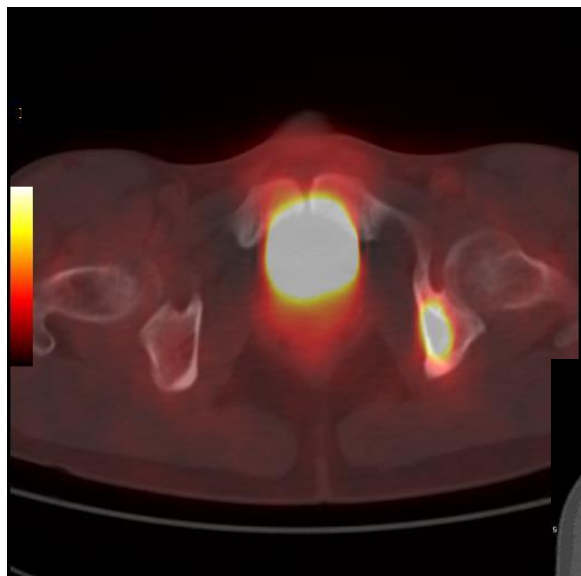
- Brain metastases:
 - Surgery and/or stereotactic EBRT
- Bone metastases with imaging abnormalities:
 - Surgery and ERBT
 - Thermal ablation (radiofrequency-cryoablation), cement
 - **Biphosphonates or denosumab**
- Lung metastases, in case of predominant lesions:
 - Thermal ablation, stereotactic EBRT
 - Surgery

Focal treatment modalities may be used alone or in combination with systemic treatment

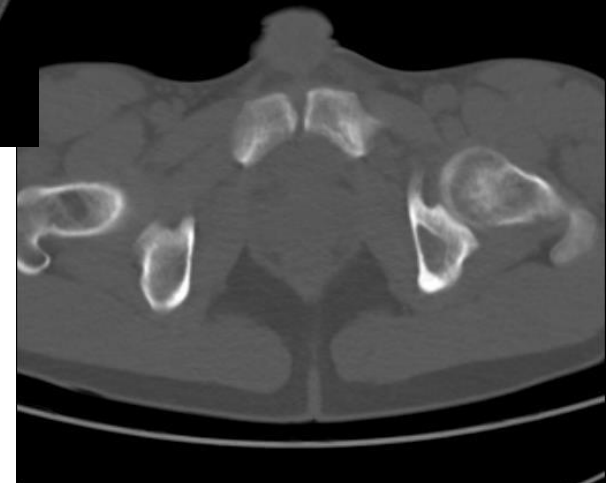
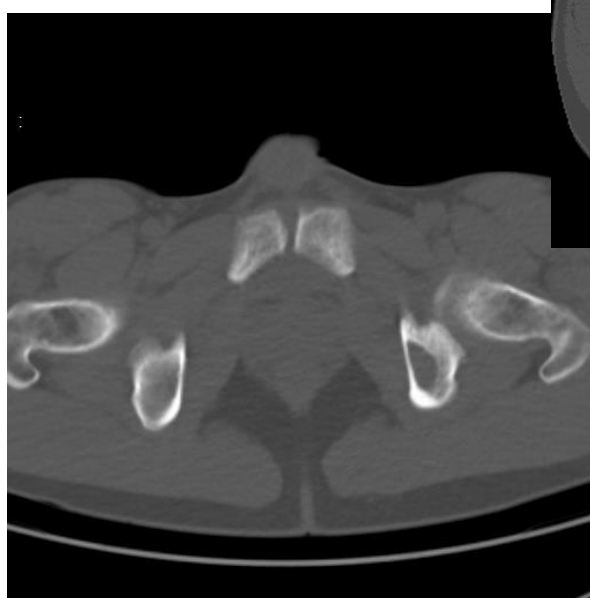
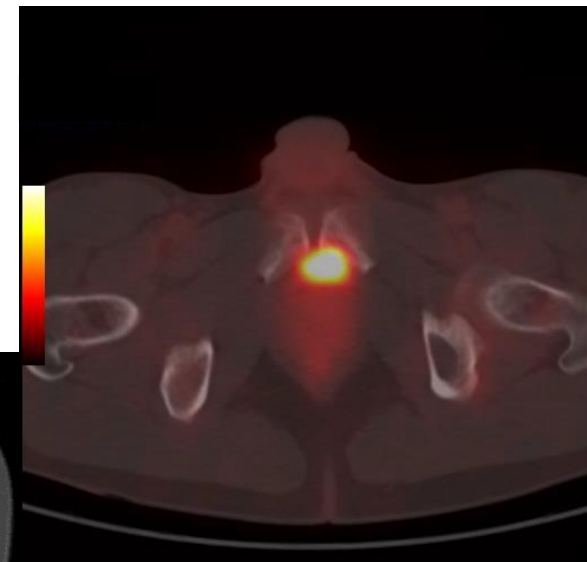
Radiofrequency ablation and FDG-PET

Pre

Post



Radiofrequency



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