

# Local Radiotherapy in metastatic prostate cancer

**F. Guedea**

Prostate Team: F. Ferrer, A. Boladeras, N. Garcia, A. Slocker.

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University of Barcelona (UB)*

## Outline of the presentation

### The context:

“New concept” in Radiation Oncology: Local consolidative therapy of the primary prostate tumour for patients with oligometastatic disease

Local consolidative therapy of the primary prostate tumour with RT

Local consolidative therapy of the primary prostate tumour with Surgery

“New concept” in Radiation Oncology: Metastasis direct therapy with SBRT

From Conventional Imaging (Bone Scan/CT Scan) to Choline PET-CT to PSMA PET-CT:

Conclusions:

**How many new cancer patients in Europe will require radiotherapy by 2025? An ESTRO-HERO analysis**

**Based on the projected cancer distributions in 2025, a 16% expected increase in the number of RT treatment courses was estimated.**

**Borras JM, Lieuvens Y, et al (Spain & other countries)  
How many new cancer patients in Europe will require radiotherapy by 2025? An  
ESTRO-HERO analysis  
Radiother Oncol. 2016;119(1):5-11**

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**“New concept” in Radiation Oncology: Metastasis direct therapy with SBRT**

**From Conventional Imaging (Bone Scan/CT Scan) to Choline PET-CT to PSMA PET-CT:**

Conclusions:

| Source                                   | Study design   | Inclusion   | Intervention  | OS*  | CSS*   | MVA  | Additional information  |
|--|--|---|---|--|--|--|---|
| Culp <i>et al.</i> <sup>44</sup>         | Population-based, n=8,185, median follow-up period: 16 months  | M1a–M1c   | <ul style="list-style-type: none"> <li>• RP (n=245)</li> <li>• BT (n=129)</li> <li>• NLT (n=7811)</li> </ul>                        | <ul style="list-style-type: none"> <li>• 67.4%</li> <li>• 52.6%</li> <li>• 22.5%</li> </ul> <p>P&lt;0.001</p>  | <ul style="list-style-type: none"> <li>• 75.8%</li> <li>• 61.3%</li> <li>• 48.7%</li> </ul> <p>P&lt;0.001</p>  | SHR (CSM) <ul style="list-style-type: none"> <li>• 0.38 (0.27–0.53; RP)</li> <li>• 0.68 (0.49–0.93; BT)</li> <li>• 1.00 (ref; NLT)</li> </ul>                                    | MVA includes: Gleason score ≥8, T4, PSA ≥20 ng/ml, AJCC N1 (versus N0), AJCC M stage (versus M1a), year of diagnosis  |
| Antwi <i>et al.</i> <sup>45</sup>        | Population-based, n=7,858, median follow-up period: NR   | M1a–M1c   | <ul style="list-style-type: none"> <li>• RP (n=222)</li> <li>• BT (n=120)</li> <li>• NSR (n=7516)</li> </ul>                        | <ul style="list-style-type: none"> <li>• 82.0%</li> <li>• 66.7%</li> <li>• 43.6%</li> </ul> <p>P&lt;0.0001</p> | <ul style="list-style-type: none"> <li>• 84.7%</li> <li>• 71.7%</li> <li>• 54.6%</li> </ul> <p>P&lt;0.0001</p> | aHR (CSM) <ul style="list-style-type: none"> <li>• 0.22 (0.27–0.28; RP)</li> <li>• 0.40 (0.32–0.51; BT)</li> <li>• 1.00 (ref; NSR)</li> </ul>                                    | MVA includes: age, race, marital status, tumour grade, PSA level, and cancer registry   |
| Gratzke <i>et al.</i> <sup>46</sup>      | Population-based, n=1,538, median follow-up period: NR   | M*  | <ul style="list-style-type: none"> <li>• RP (n=74)</li> <li>• RT (n=389)</li> <li>• ADT (n=635)</li> <li>• Other (n=440)</li> </ul> | <ul style="list-style-type: none"> <li>• 55% (RP)</li> <li>• 21% (other therapy)</li> </ul> <p>P&lt;0.01</p>   | • NR   | NR   | Overall survival compared between RP patients and non-RP patients (including RT, ADT, and other)  |
| Satkunasivam <i>et al.</i> <sup>47</sup> | Population-based, n=4,069, median follow-up period: NR   | <ul style="list-style-type: none"> <li>• M*</li> <li>• Age ≥65 years</li> </ul> | <ul style="list-style-type: none"> <li>• RP (n=47)</li> <li>• IMRT (n=88)</li> <li>• CRT (n=107)</li> <li>• NLT (n=3827)</li> </ul> | <ul style="list-style-type: none"> <li>• 73%</li> <li>• 72%</li> <li>• 37%</li> <li>• 34%</li> </ul>           | <ul style="list-style-type: none"> <li>• 79%</li> <li>• 82%</li> <li>• 49%</li> <li>• 46%</li> </ul>           | aHR (CSM) <ul style="list-style-type: none"> <li>• 0.48 (0.27–0.85; RP)</li> <li>• 0.38 (0.24–0.61; IMRT)</li> <li>• 0.85 (0.64–1.14; CRT)</li> <li>• 1.00 (ref; NLT)</li> </ul> | <ul style="list-style-type: none"> <li>• MVA includes: sociodemographics, primary tumour characteristics, CCI, ADT, and bone radiation within 6 months of diagnosis.</li> <li>• On CRR: SHR (95% CI) for PCSM versus NLT: RP 0.58 (0.35–0.95), IMRT 0.43 (0.27–0.68)</li> </ul> |
| Heidenreich <i>et al.</i> <sup>48</sup>  | Case-control, n=61, median follow-up period: <ul style="list-style-type: none"> <li>• 40.6 months (RP)</li> <li>• 44.0 months (no RP)</li> </ul> | Limited M1  | <ul style="list-style-type: none"> <li>• RP (n=23)</li> <li>• No RP (n=38)</li> </ul>   | <ul style="list-style-type: none"> <li>• 91.3%</li> <li>• 78.9%</li> </ul> <p>P=0.048</p>                      | <ul style="list-style-type: none"> <li>• 95.6%</li> <li>• 84.2%</li> </ul> <p>P=0.043</p>                      | • NR   | Inclusion criteria: ≤3 lesions on bone scan; absence of visceral or extended LN metastases; PSA nadir <1 ng/ml after 6 months of neoadjuvant ADT  |
| Cho <i>et al.</i> <sup>49</sup>          | Case-control, n=140 (38 cases), median follow-up period: 34 months   | M1  | <ul style="list-style-type: none"> <li>• RT (n=38)</li> <li>• No RT (n=102)</li> </ul>  | <ul style="list-style-type: none"> <li>• 69%</li> <li>• 43%</li> </ul>   | • NR   | HR (OM) <ul style="list-style-type: none"> <li>• 0.43 (P=0.015)</li> </ul>   | MVA includes: ECOG status, site of metastasis   |

# Retrospective data for local consolidative therapy of the primary prostate tumour

**Tosoian, J. J. et al. (2016)**  
**Oligometastatic prostate cancer: definitions, clinical outcomes, and treatment considerations**  
**Nat. Rev. Urol.**

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Conclusions:

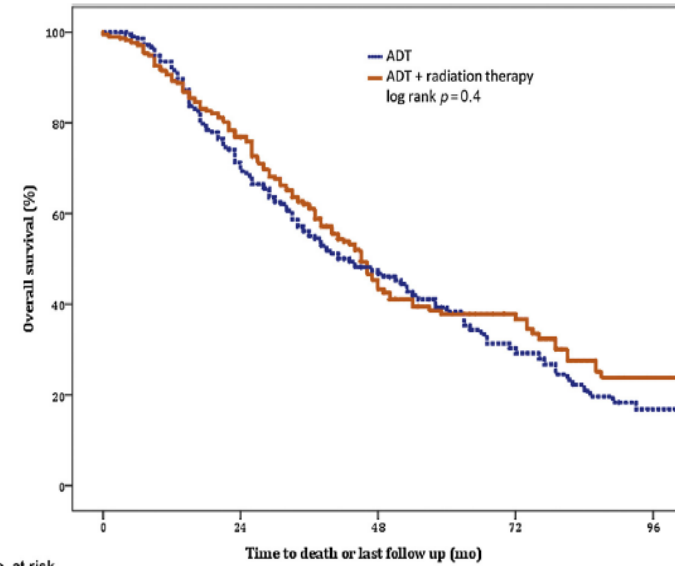
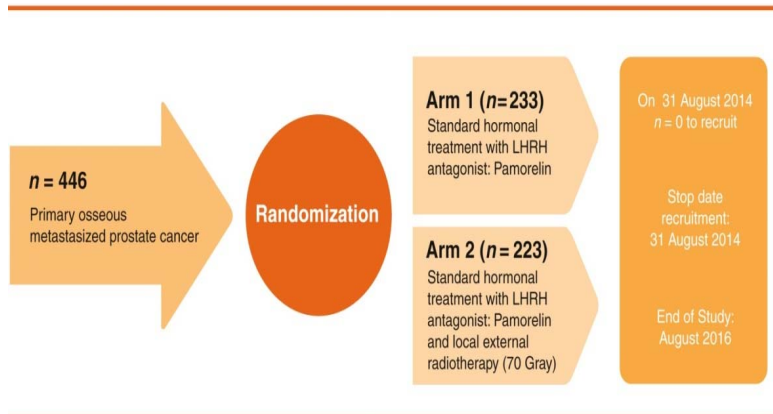
available at [www.sciencedirect.com](http://www.sciencedirect.com)  
journal homepage: [www.europeanurology.com](http://www.europeanurology.com)



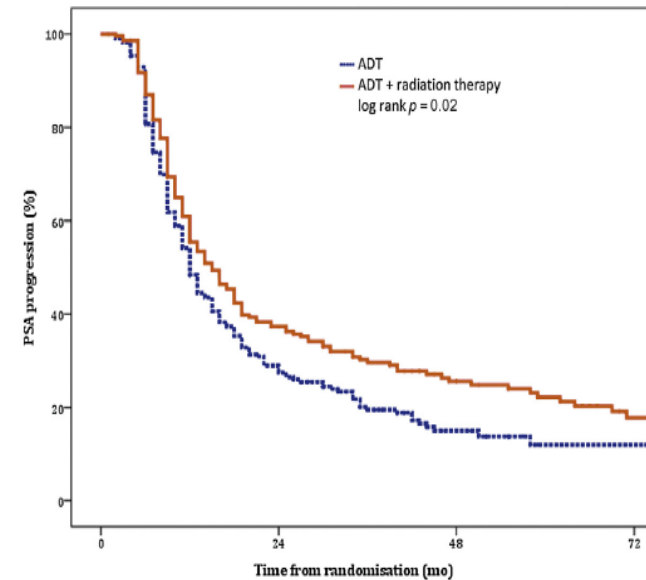
Platinum Priority – Prostate Cancer  
Editorial by XXX on pp. x–y of this issue

## Effect on Survival of Androgen Deprivation Therapy Alone Compared to Androgen Deprivation Therapy Combined with Concurrent Radiation Therapy to the Prostate in Patients with Primary Bone Metastatic Prostate Cancer in a Prospective Randomised Clinical Trial: Data from the HORRAD Trial

Liselotte M.S. Boevé<sup>a,b,\*</sup>, Maarten C.C.M. Hulshof<sup>c</sup>, André N. Vis<sup>b</sup>, Aeilko H. Zwinderman<sup>d</sup>, Jos W.R. Twisk<sup>e</sup>, Wim P.J. Witjes<sup>f</sup>, Karl P.J. Delaere<sup>g</sup>, R. Jeroen A. van Moorselaar<sup>b</sup>, Paul C.M.S. Verhagen<sup>h</sup>, George van Andel<sup>a</sup>



| No. at risk             | 0   | 24  | 48 | 72 | 96 |
|-------------------------|-----|-----|----|----|----|
| ADT                     | 216 | 145 | 65 | 27 | 11 |
| ADT + radiation therapy | 215 | 161 | 61 | 33 | 13 |



| No. at risk             | 0   | 24 | 48 | 72 |
|-------------------------|-----|----|----|----|
| ADT                     | 214 | 56 | 14 | 5  |
| ADT + radiation therapy | 210 | 72 | 32 | 13 |

## The HORRAD Trial

### Results and limitations:

- Median PSA level was 142 ng/ml and 67% of pts had more than 5 bone metastases: Patients enrolled were predominately high volume M1.
- No significant difference was found in overall survival.
- Subset analysis within the HORRAD trial, investigators showed an interaction between volume of disease (eg, number of metastatic sites) and benefit of RT, with low-volume patients trending toward a significant improvement in OS (HR:0,68)

Boevé LMS, et al (The Netherlands)

Effect on Survival of Androgen Deprivation Therapy Alone Compared to Androgen Deprivation Therapy Combined with Concurrent Radiation Therapy to the Prostate in Patients with Primary Bone Metastatic Prostate Cancer in a Prospective Randomised Clinical Trial: Data from the HORRAD Trial  
Eur Urol. 2019 Mar;75(3):410-418



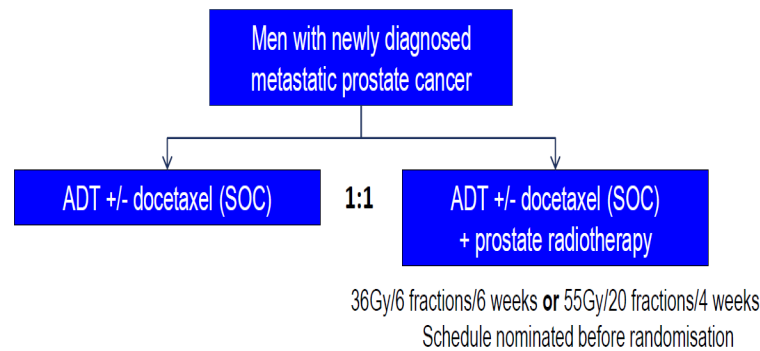
Radiotherapy to the primary tumour for newly diagnosed, metastatic prostate cancer (STAMPEDE): a randomised controlled phase 3 trial



## Local radiotherapy improves survival in metastatic prostate cancer with low disease burden [ESMO 2018 Press Release]

Christopher C Parker, Nicholas D James, Christopher D Brawley, Noel W Clarke, Alex P Hoyle, Adnan Ali, Alastair W S Ritchie, Gerhardt Attard

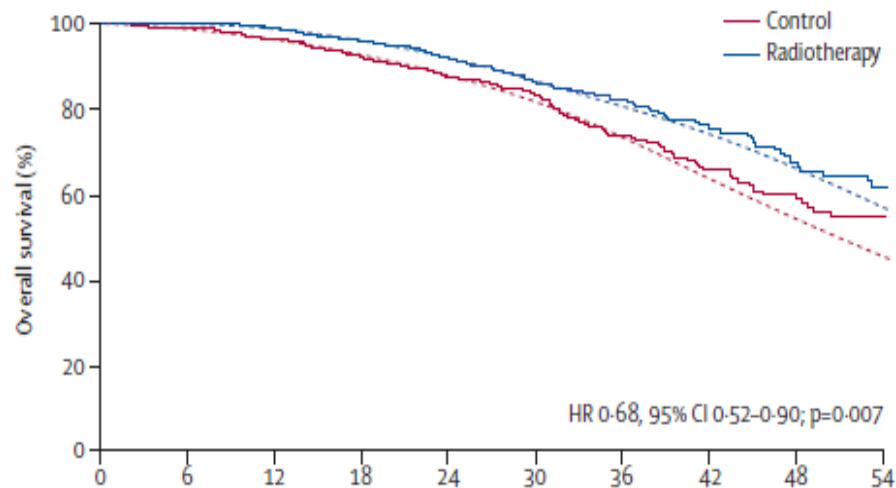
### Study design



**Parker c. et al.  
Lancet Oncol 392: 2353-2366. 2018**

| Characteristic     |                     | SOC (n=1029) | SOC+RT (n=1032) |
|--------------------|---------------------|--------------|-----------------|
| Age (years)        | Median (IQR)        | 68 (63-73)   | 68 (63-73)      |
|                    | Range               | 37-86        | 45-87           |
| PSA (ng/ml)        | Median (IQR)        | 98 (30-316)  | 97 (33-313)     |
|                    | Range               | 1-20590      | 1-11156         |
| Metastatic burden  | Low                 | 409 (42%)    | 410 (43%)       |
|                    | High                | 567 (58%)    | 553 (57%)       |
|                    | Not classified      | 53           | 69              |
| Site of metastases | Bone                | 919 (89%)    | 917 (89%)       |
|                    | Liver               | 23 (2%)      | 19 (2%)         |
|                    | Lung                | 42 (4%)      | 48 (5%)         |
|                    | Distant lymph nodes | 294 (29%)    | 304 (29%)       |
|                    | Other               | 35 (3%)      | 33 (3%)         |
| Docetaxel use      | No                  | 845 (82%)    | 849 (82%)       |
|                    | Yes                 | 184 (18%)    | 183 (18%)       |

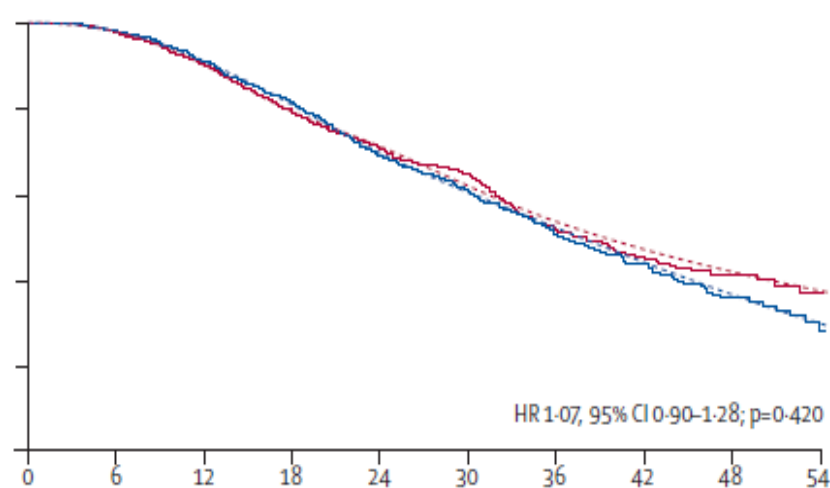
**A Overall survival in low metastatic burden**



Number at risk  
(events)

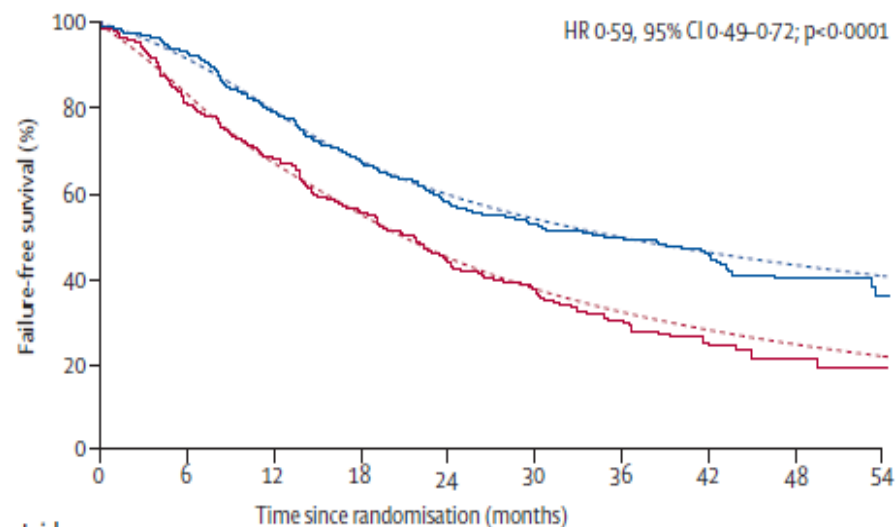
|              |         |         |          |          |          |          |          |          |        |    |
|--------------|---------|---------|----------|----------|----------|----------|----------|----------|--------|----|
| Control      | 409 (5) | 400 (9) | 387 (17) | 361 (17) | 265 (12) | 217 (22) | 155 (16) | 110 (8)  | 67 (5) | 25 |
| Radiotherapy | 410 (1) | 405 (4) | 399 (12) | 366 (12) | 301 (19) | 242 (10) | 200 (15) | 137 (11) | 77 (5) | 25 |

**B Overall survival in high metastatic burden**



|              |          |          |          |          |          |          |          |         |        |    |
|--------------|----------|----------|----------|----------|----------|----------|----------|---------|--------|----|
| Control      | 567 (11) | 547 (42) | 500 (58) | 428 (41) | 312 (27) | 245 (43) | 161 (20) | 100 (7) | 48 (3) | 13 |
| Radiotherapy | 553 (10) | 537 (38) | 487 (48) | 424 (59) | 282 (30) | 216 (31) | 146 (19) | 90 (14) | 44 (5) | 20 |

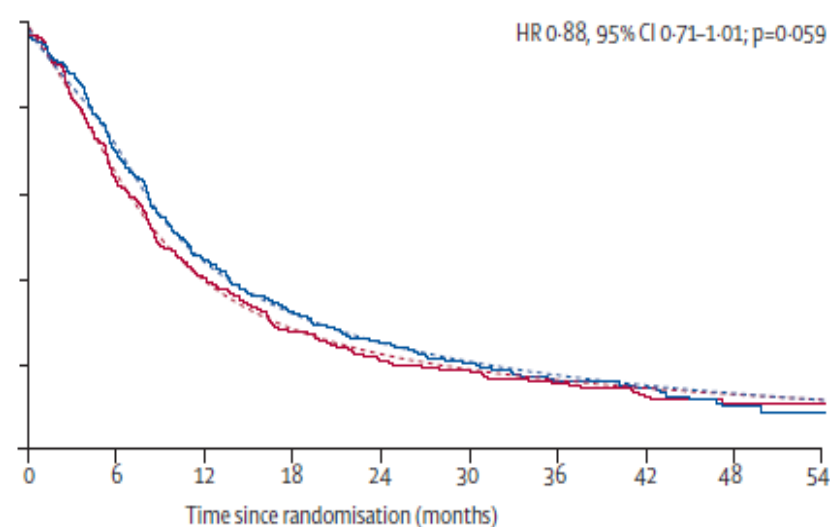
**C Failure-free survival in low metastatic burden**



Number at risk  
(events)

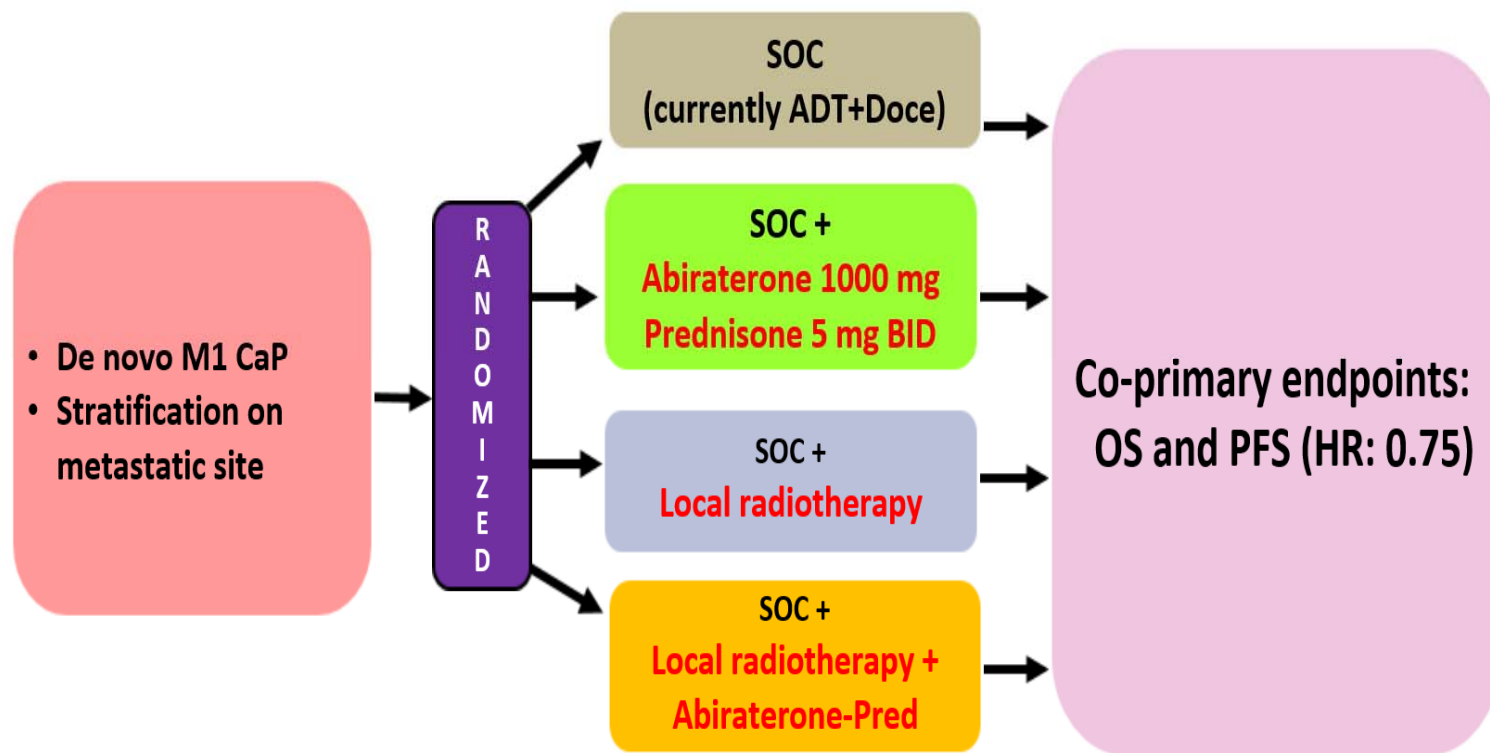
|              |          |          |          |          |          |         |         |        |        |    |
|--------------|----------|----------|----------|----------|----------|---------|---------|--------|--------|----|
| Control      | 409 (78) | 324 (50) | 269 (49) | 211 (39) | 121 (16) | 83 (15) | 53 (8)  | 32 (4) | 16 (1) | 6  |
| Radiotherapy | 410 (29) | 377 (57) | 318 (45) | 255 (32) | 178 (16) | 142 (8) | 113 (7) | 75 (8) | 35 (2) | 12 |

**D Failure-free survival in high metastatic burden**



|              |           |           |          |          |         |         |        |        |        |   |
|--------------|-----------|-----------|----------|----------|---------|---------|--------|--------|--------|---|
| Control      | 567 (207) | 350 (126) | 223 (68) | 147 (32) | 83 (8)  | 59 (10) | 41 (5) | 21 (3) | 11 (0) | 3 |
| Radiotherapy | 553 (168) | 379 (135) | 237 (64) | 166 (34) | 96 (17) | 60 (11) | 35 (2) | 22 (6) | 10 (1) | 5 |

# PEACE-1: European Phase III Trial in *de novo* Metastatic Prostate Cancer



# Summary for prospective randomized trials with AD +/- Local Therapy with Prostate Radiotherapy in M1 Disease

| Survival benefit when added to ADT | High Volume | Low Volume |
|------------------------------------|-------------|------------|
| Prostate Radiotherapy              | X           | ✓          |

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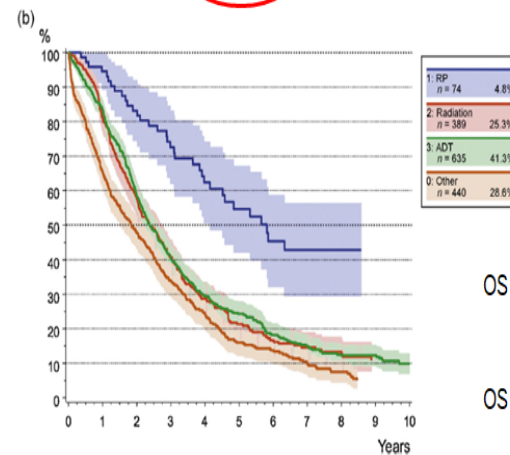
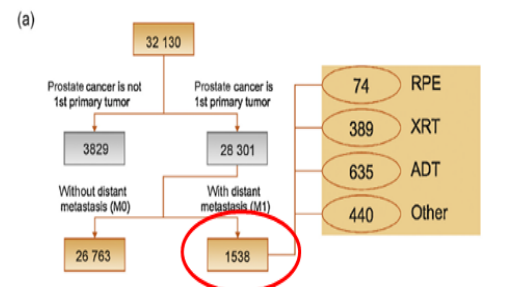
**From Conventional Imaging (Bone Scan/CT Scan) to Choline PET-CT to PSMA PET-CT:**

Conclusions:

| Source                            | Study design   | Inclusion                        | Intervention  | OS*   | CSS*                                      | MVA  | Additional information   |
|-----------------------------------|--|----------------------------------|---|---|---|--|--|
| Culp et al. <sup>44</sup>         | Population-based, n=8,185, median follow-up period: 16 months                            | M1a-M1c                          | • RP (n=245)<br>• BT (n=129)<br>• NLT (n=7811)                  | • 67.4%<br>• 52.6%<br>• 22.5%<br>P<0.001      | • 75.8%<br>• 61.3%<br>• 48.7%<br>P<0.001  | SHR (CSM)<br>• 0.38 (0.27-0.53; RP)<br>• 0.68 (0.49-0.93; BT)<br>• 1.00 (ref; NLT) | MVA includes:<br>Gleason score ≥8, T4, PSA ≥20ng/ml, AJCC N1 (versus N0), AJCC M stage (versus M1a), year of diagnosis |
| Antwi et al. <sup>45</sup>        | Population-based, n=7,858, median follow-up period: NR                                   | M1a-M1c                          | • RP (n=222)<br>• BT (n=120)<br>• NSR (n=7516)                  | • 82.0%<br>• 66.7%<br>• 43.6%<br>P<0.0001     | • 84.7%<br>• 71.7%<br>• 54.6%<br>P<0.0001 | aHR (CSM)<br>• 0.22 (0.27-0.28; RP)<br>• 0.40 (0.32-0.51; BT)<br>• 1.00 (ref; NSR) | MVA includes: age, race, marital status, tumour grade, PSA level, and cancer registry                                  |
| Gratzke et al. <sup>46</sup>      | Population-based, n=1,538, median follow-up period: NR                                   | M <sup>+</sup>                   | • RP (n=74)<br>• RT (n=389)<br>• ADT (n=635)<br>• Other (n=440) | • 55% (RP)<br>• 21% (other therapy)<br>P<0.01 | • NR                                      | NR   |  |
| Satkunasivam et al. <sup>47</sup> | Population-based, n=4,069, median follow-up period: NR                                   | • Age ≥65 years<br>• NLI (n=...) |   |   |   |  |  |
| Heidenreich et al. <sup>48</sup>  | Case-control, n=61, median follow-up period: • 40.6 months (RP)<br>• 44.0 months (no RP) | Limited M1                       | • RP (n=23)<br>• No RP (n=38)                                   | • 91.3%<br>• 78.9%<br>P=0.048                 | • 95.1%<br>• 84.1%<br>P=0.001             |  |  |
| Cho et al. <sup>49</sup>          | Case-control, n=140 (38 cases), median follow-up period: 34 months                       | M1                               | • RT (n=38)<br>• No RT (n=102)                                  | • 69%<br>• 43%                                | • NR                                      |  |  |

### ROLE OF RADICAL PROSTATECTOMY IN M1 PC: DATA FROM THE MUNICH CANCER REGISTRY

Gratzke C, Eneal J, Stief C. *Eur Urol* 2014;66:599-603



OS @ 5y: 55%

OS @ 5y: 21%

P<0.01

Highly selected patients

No information of PS, comorbidity, site-specific EBRT codes, CTh, Hormonotherapy, extent of bony M1.

Fig. 1 - Survival of patients in the Munich Cancer Registry who did and did not undergo radical prostatectomy: (a) patient cohort, 1998-2010; (b) overall survival in M1 prostate cancer patients. ADT = androgen deprivation therapy; RP = radical prostatectomy; RPE = extraperitoneal radical prostatectomy; XRT = external-beam radiation therapy.

| Source | Study design | Inclusion | Intervention | OS* | CSS* | MVA | Additional information |
|--------|--------------|-----------|--------------|-----|------|-----|------------------------|
|--------|--------------|-----------|--------------|-----|------|-----|------------------------|

Culp et al.<sup>44</sup> Population-based, n=8,185, median follow-up period: 16 months

- RP (n=245)
- BT (n=129)
- NLT (n=70)

• 67.4%      • 75.8%

SHR (CSM)      MVA includes:

Antwi et al.<sup>45</sup> Population-based, n=7,858, median follow-up period: NR

Gratzke et al.<sup>46</sup> Population-based, n=1,538, median follow-up period: NR

Satkunasivam et al.<sup>47</sup> Population-based, n=4,069, median follow-up period: NR

- M<sup>+</sup>
- Age ≥65 years

## Cytoreductive Radical Prostatectomy in Patients with Prostate Cancer and Low Volume Skeletal Metastases: Results of a Feasibility and Case-Control Study

Axel Heidenreich,\* David Pfister and Daniel Porres

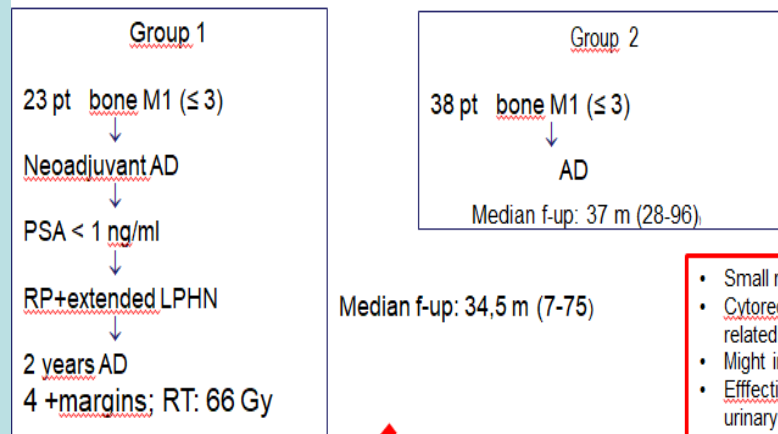
From the Department of Urology, Uniklinik RWTH Aachen, Aachen, Germany

THE JOURNAL of UROLOGY®



Vol 193;832-838, March 2015

**Criteria for CRP:** resectable, ≤ 3 M1, no gross retroperitoneal lymph nodes, no bulky LNM (>3cm), no visceral M1, informed consent.



- Small number of patients and heterogeneous
- Cytoreductive RP is feasible and does not increase surgery related complications
- Might improve OS and CSS in selected patients
- Effectively prevents complications of the lower and upper urinary tract.

Table 2. Oncologic outcomes

|  | Group 1      | Group 2 (all) | Group 2 (adapted)* | p Value         |
|--|--------------|---------------|--------------------|-----------------|
| No. pts  | 23           | 38            | 26                 |                 |
| Median mos followup (range)                    | 40.6 (3–71)  | 44.0 (24–96)  | 42.3 (27–89)       | Not significant |
| Median mos to castration resistant PCA (range) | 40 (9–65)    | 29 (16–54)    | 35.4 (22–47)       | 0.014           |
| Median mos CSS (range)                         | 47 (9–71)    | 40.5 (19–75)  | 44.3 (21–75)       | Not significant |
| Median mos clinical PFS (range)                | 38.6 (42–52) | 26.5 (12–48)  | 32.4 (19–48)       | 0.032           |
| Surgery-free survival rate (%)                 | 100          | 71.1          |                    | <0.01           |
| Overall survival rate (%)                      | 91.3         | 78.9          |                    | 0.048           |
| CSS rate (%)                                   | 95.6         | 84.2          |                    | 0.043           |

\* Only patients with PSA less than 1.0 ng/ml after 6 months of ADT.

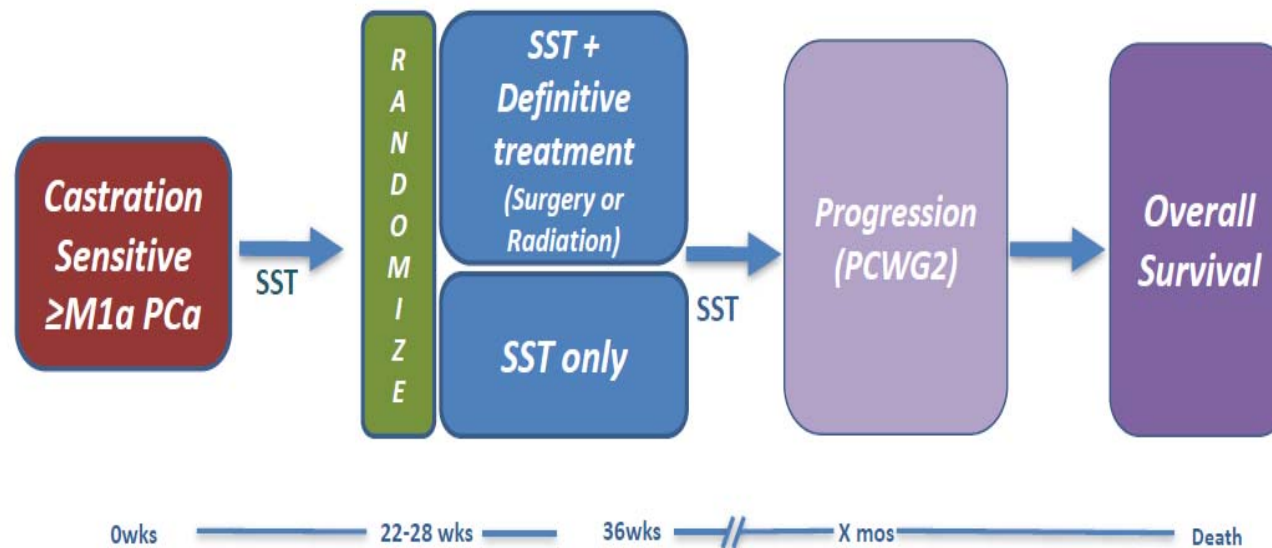
Heidenreich et al.<sup>48</sup> Case-control, n=140 (38 cases), median follow-up period: 34 months

- No RP

Cho et al.<sup>49</sup> Case-control, n=140 (38 cases), median follow-up period: 34 months

- RP
- No RP

# Randomized, Phase III Trial of Standard Systemic Therapy (SST) or SST Plus Definitive Treatment of the Primary Tumor in Metastatic Prostate Cancer (S1802)



PI: Brian F Chapin, MD

Supported by: NCTN

**SWOG 1802 (NCT03678025)**





## Interventionelle Studie beim metastasierten, hormonnaiven Prostatakarzinom

Multizentrische prospektive randomisierte  
Studie zur Evaluierung des Effekts der  
medikamentösen Standardtherapie  
mit oder ohne radikale Prostatektomie  
bei Patienten mit einem begrenzt  
ossär metastasierten Prostatakarzinom  
(G-RAMPP-Studie AP 75/13 der AUO)

**Metastatic, hormone-naive prostate cancer interventional study :  
Multicenter, prospective, randomized study to evaluate the effect of  
standard drug therapy with or without radical prostatectomy in  
patients with limited bone metastasized prostate cancer  
(TRoMbone (ISRCTN15704862). G-RAMPP - the AUO AP 75/13 study)**

# Summary for prospective randomized trials with AD +/- Local Therapy with Surgery in M1 Disease

| Survival benefit when added to ADT | High Volume | Low Volume |
|------------------------------------|-------------|------------|
| Surgery                            | ?           | ?          |

## **STAMPEDE: Is Radiation Therapy to the Primary a New Standard of Care in Men with Metastatic Prostate Cancer?**

**... Preclinical data suggest that radiation therapy (RT) to the primary can prevent further metastases possibly because of an immunologic effect from RT....**

**... RT and surgery are also biologically different treatments. It is unknown if the proven synergy of RT with ADT will exist with RP. In fact, in localized prostate cancer that synergy has not been demonstrated when adding ADT to RP....**

**Choudhury A, et al (UK)**

**STAMPEDE: Is Radiation Therapy to the Primary a New Standard of Care in Men with Metastatic Prostate Cancer?**

**Int J Radiat Oncol Biol Phys. 2019 May 1;104(1):33-35**

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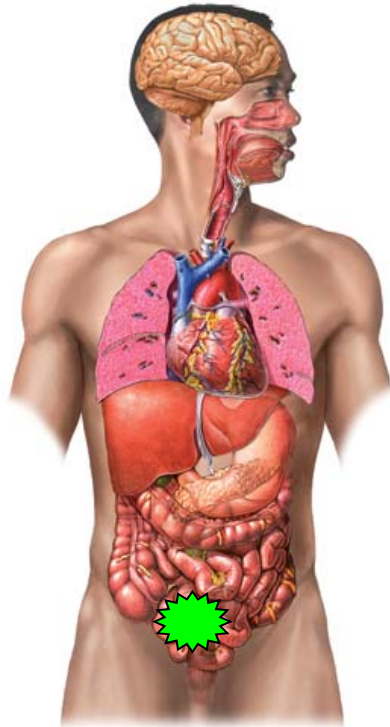
“New concept” in Radiation Oncology: Metastasis direct therapy with SBRT

From Conventional Imaging (Bone Scan/CT Scan) to Choline PET-CT to PSMA PET-CT:

Conclusions:

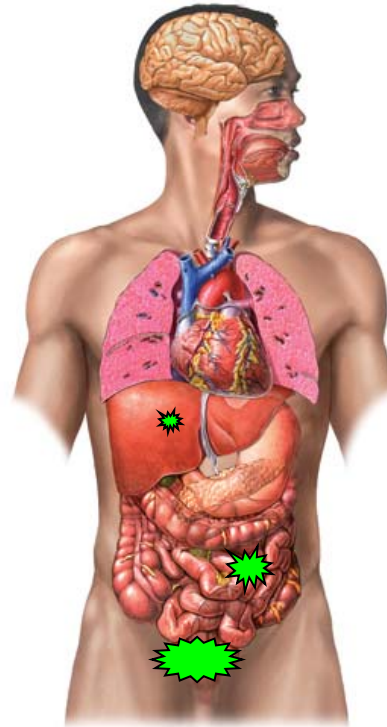
# “New Concepts” in Radiation Oncology

**Clinically  
localized disease**



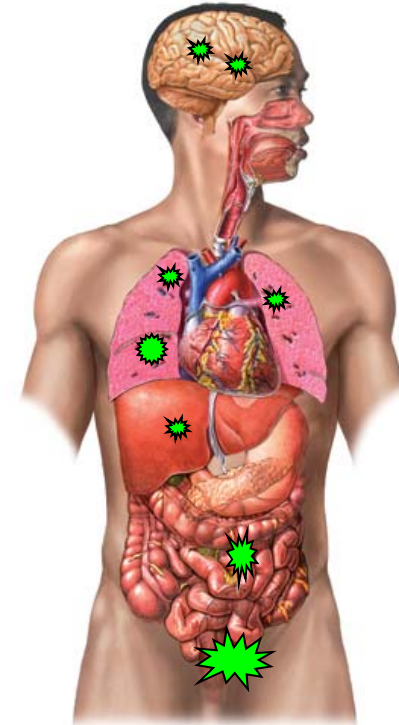
**Cure with local treatment**

**Oligometastatic  
disease**



**Cure with local treatment  
possible**

**Wide-spread  
metastatic disease**



**Local therapy is not  
curative, Local treatment  
for symptom control**

**Hellman S.,and Weichselbaum R. (USA,Chicago).  
Editorial: Oligometastases. JCO 13, 8-10. 1995.**

**“New Concepts” in Radiation Oncology:  
SABR-COMET Trial: Stereotactic Ablative Radiation Therapy for  
Oligometastatic Tumors**

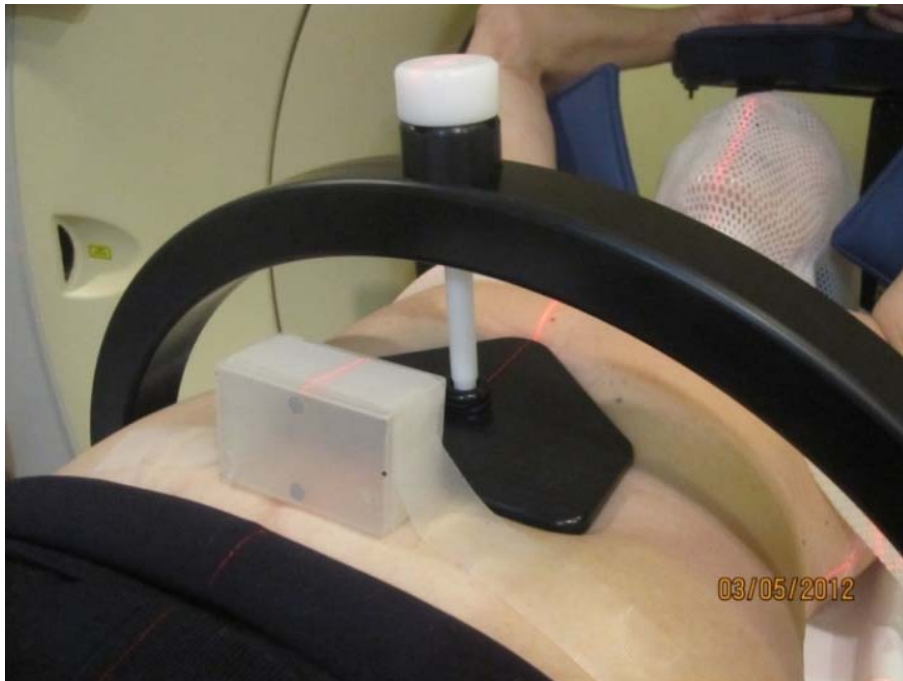
**In a series of 99 patients with ECOG 0-1  
(16 with prostate cancer, 18 with breast cancer, the rest  
lung and Colorectal cancer)  
and with 1-3 metastases (93% of cases).**

**At 5y, 46% of patients in the SBRT arm were alive  
compared with 24% in the control arm.  
SBRT Doubles 5-Year Survival in Oligometastatic Cancer**

**Palma D. et al. (Canada). Lancet 2019, 393. 2051-2058  
Oral Communication ASTRO 2021 (With longer FU and More pts.)**

**“New concepts” in Radiation Oncology:  
Phase II Trials SBRT at ICO using SBRT (On going Trials)**

- **5 fractions of 6,5 Gy in lymph nodes oligometastasis.**
- **1 fraction of 16 Gy (Spine) or 3 fractions of 7,5 Gy (flat bones) in bone oligometastasis.**



# **Radioterapia estereotáctica fraccionada más antiandrógeno de segunda generación para pacientes oligometastáticos con cáncer de próstata resistente a la castración. Estudio español fase II, prospectivo, metacéntrico. (OLIGORESIST)**

## **1. Objetivo**

Analizar los resultados obtenidos en supervivencia libre de progresión radiológica (SLPR), seguridad y calidad de vida tras la combinación de radioterapia corporal estereotáctica /radioterapia ablativa estereotáctica (SBRT/SART por sus siglas en inglés) más antiandrógeno de segunda generación en pacientes CPRCM1 en situación de oligometástasis ( $\leq 5$ ).

## **2. Hipótesis**

El tratamiento combinado sistémico (antiandrógeno de segunda generación) más local ablativo (SBRT) consigue mejorar resultados en SLPR comparado con el tratamiento sistémico aislado.



## Outline of the presentation

The context:

“New concept” in Radiation Oncology: Local consolidative therapy of the primary prostate tumour for patients with oligometastatic disease

Local consolidative therapy of the primary prostate tumour with RT

Local consolidative therapy of the primary prostate tumour with Surgery

“New concept” in Radiation Oncology: Metastasis direct therapy with SBRT

From Conventional Imaging (Bone Scan/CT Scan) to Choline PET-CT to PSMA PET-CT:

Conclusions:

**Conventional  
Imaging (Bone  
Scan/CT Scan)  
PSA>10 ng/ml**



**Choline PET-CT  
PSA>1 ng/ml**



18 February 2019 C-Choline

**PSMA PET-CT  
PSA <0,5 ng/ml**



27 February 2019 Ga-PSMA

**Images from S. Fanti at Advanced Prostate Cancer  
Consensus Conference (APCCC 2021), Lugano,  
Switzerland.**

# Can PSMA PET-CT replace conventional imaging modalities?

**Table 1 – Sensitivity and specificity of different imaging modalities for detection of lymph node metastasis.**

| Imaging modality             | Study               | Patients (n)      | Sensitivity (%)                     | Specificity (%)                     |
|------------------------------|---------------------|-------------------|-------------------------------------|-------------------------------------|
| CT                           | Hövels et al [2]    | 1024 (18 studies) | 42                                  | 82                                  |
| MRI                          | Hövels et al [2]    | 628 (10 studies)  | 39                                  | 82                                  |
| WB-MRI                       | Johnston et al [6]  | 56                | 100                                 | 96                                  |
| Choline PET/CT               | von Eyben et al [7] | 609 (11 studies)  | 62                                  | 92                                  |
| <sup>68</sup> Ga-PSMA PET/CT | Johnston et al [6]  | 33                | 100                                 | 82                                  |
|                              | Perera et al [9]    | 244 (5 studies)   | 77 (per patient)<br>75 (per lesion) | 97 (per patient)<br>99 (per lesion) |
|                              | Kim et al [11]      | 298 (6 studies)   | 71 (per patient)                    | 95 (per patient)                    |

CT = computed tomography; MRI = magnetic resonance imaging; WB-MRI = whole-body MRI; PET = positron emission tomography; PSMA = prostate-specific membrane antigen.

**Table 2 – Sensitivity and specificity of different imaging modalities for detection of bone metastasis.**

| Imaging modality             | Study                  | Patients (n)     | Sensitivity (%)  | Specificity (%)  |
|------------------------------|------------------------|------------------|------------------|------------------|
| Nuclear bone scan            | Shen et al [3]         | 901 (13 studies) | 79 (per patient) | 82 (per patient) |
|                              | Shen et al [3]         | 1077 (6 studies) | 59 (per lesion)  | 75 (per lesion)  |
|                              | Johnston et al [6]     | 56               | 60               | 100              |
|                              | Lengana et al [14]     | 113              | 73.1             | 84.1             |
| WB-MRI                       | Johnston et al [6]     | 56               | 90               | 88               |
| NaF PET                      | Sheikhbahaei et al [5] | 507 (12 studies) | 98 (per patient) | 90 (per patient) |
|                              | Sheikhbahaei et al [5] | 1812 (7 studies) | 97 (per lesion)  | 84 (per lesion)  |
| Choline PET/CT               | Johnston et al [6]     | 33               | 80               | 92               |
| <sup>68</sup> Ga-PSMA PET/CT | Lengana et al [14]     | 113              | 96.2             | 99.1             |

WB-MRI = whole-body magnetic resonance imaging; PET/CT = positron emission tomography/computed tomography; PSMA = prostate-specific membrane antigen.

**Can PSMA PET-CT replace conventional imaging for primary lymph node & bone staging of prostate cancer.**

Esen T., et al. Eur Urol Focus 2019.

## Outline of the presentation

The context:

“New concept” in Radiation Oncology: Local consolidative therapy of the primary prostate tumour for patients with oligometastatic disease

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From Conventional Imaging (Bone Scan/CT Scan) to Choline PET-CT to PSMA PET-CT:

Conclusions:

## **Is RT to the primary a new standard of care for M1 prostate cancer patients?**

- 1. Yes, for low-volume patients who have no contraindications to RT. In these patients, RT to the primary provides no increase in grade 3 toxicity, and an impressive OS benefit within the first 3 years after treatment.**
- 2. For men with high-volume disease, RT to the primary does not appear to improve OS.**
- 3. PSMA PET-CT offers new possibilities for Metastasis direct therapy with SBRT**