

**Results.** From the 95 patients treated, we analyse the subgroup of 85 patients who had enough follow-up to evaluate late toxicity. The mean age at treatment was 67 (range 45–92). Most of the tumors were located at external superior quadrant (41.2%) or joint of superior quadrants (15.3%). Eighty per cent were infiltrating ductal carcinomas with an 84.7% of stage IA tumors and 70% of luminal A molecular subtypes. Only 6 patients were grade 3, they were treated with HDR-BT due to their age. Fifty-one patients received adjuvant hormonal therapy. Most patients (70.6%) were treated using 7 needles (range 4–12) in 2–3 planes, with a mean active length of 4.5 cm (range 2–7 cm). With a mean follow-up of 23.47 months (range 6–124), only one patient has experimented a recurrence in the ipsilateral breast 21 months after the procedure, she had a triple negative tumor and was treated with mastectomy without disease nowadays. Three patients died from another non-related disease (cerebral-vascular stroke), none of them died from breast cancer disease. Late toxicity was mild, with 27% and 5% of grade I cutaneous and subcutaneous toxicity respectively.

**Conclusions.** Accelerated partial breast irradiation using HDR-BT is a proper approach, with excellent results in terms of disease free survival and very good tolerance in terms of normal tissue late toxicity.

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### Brachytherapy implant for patients with transurethral resection in prostate cancer

J. Anchuelo Latorre<sup>1</sup>, A. García Blanco<sup>1</sup>, G. Payá Barceló<sup>1</sup>, J. Vázquez Rodríguez<sup>2</sup>, A. Montejo Arteché<sup>2</sup>, J. Cardenal Carro<sup>1</sup>, E. Acuña Rubio<sup>1</sup>, P. Prada Gómez<sup>1</sup>

<sup>1</sup>Hospital Universitario Marqués de Valdecilla, Oncología Radioterápica, Spain

<sup>2</sup>Hospital Universitario Marqués de Valdecilla, Radiofísica, Spain



**Purpose.** Low dose rate (LDR) prostate brachytherapy is an accepted, effective and safe therapy for localized prostate cancer in patients with transurethral resection. We analyzed oncologic outcome, side-effects and complications after I-125 brachytherapy based on 11 years of experience.

**Methods and materials.** Between June 2000 and December 2005, 56 consecutive patients were treated with clinically localized prostate cancer. No patients received external beam radiation. All of them underwent LDR prostate brachytherapy. Biochemical failure was defined according to the “Phoenix consensus”. Patients were stratified as intermediate risk based on D’Amico definition.

**Results.** The median follow up time for these 56 patients was 100 months; 2 had a clinical relapse and 4 had biochemical relapse. The 11-year actuarial biochemical control was 92%, (SD ±3%) for overall group. The multivariate Cox regression analyses no identified, independent prognostic factors for biochemical failure. The actuarial biochemical control with Gleason score was 93% and 88% for patients with Gleason score of ≤6 and =7, respectively. The biochemical control was 95%, and 85% for patients with PSA of ≤10 and >20 ng/ml, respectively. A patient reported incontinence after treatment (1,7%). Acute urinary retention was seen in 2 (3.5%). Gastrointestinal toxicity grade III–IV has been observed in 2 patients (3.5%).

**Conclusions.** The excellent long-term results and low morbidity presented, as well as the many advantages of prostate brachytherapy over other treatments, demonstrates that brachytherapy is an effective treatment for patients with transurethral resection and clinical organ-confined prostate cancer.

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### Doppler analysis in regression of uveal melanoma after radioactive plaque

I. Rodríguez Rodríguez<sup>1</sup>, M. Asencio Duran<sup>2</sup>, P. García Raya<sup>3</sup>, P. Moreno<sup>3</sup>, E. Corredoira<sup>4</sup>, E. Pérez<sup>5</sup>, A. Mañas Rueda<sup>1</sup>

<sup>1</sup>Hospital Universitario la Paz, Oncología Radioterápica, Spain

<sup>2</sup>Hospital Universitario la Paz, Oftalmología, Spain

<sup>3</sup>Hospital Universitario la Paz, Radiología, Spain

<sup>4</sup>Hospital Universitario la Paz, Radiofísica, Spain

<sup>5</sup>Hospital Universitario la Paz, Investigación, Spain



**Purpose/objective.** Study the blood supply of uveal melanoma as a sign of tumoral activity and quantify its presence after brachytherapy.

**Materials and methods.** 50 cases treated with brachytherapy were reviewed from July 2005 to June 2010. Mean follow-up was 29 months (13.7–69 months). Duplex Doppler scans (gray scale and Doppler scans) were done at diagnosis and every 6 months after treatment. Presence of intratumoral vessels, maximum systolic and diastolic velocity and resistance index were evaluated. The average age was 60 years; 26 ♂ and 24 ♀. Mean basal size and thickness at diagnosis were 12.1 mm × 5.6 mm (SD 3.0–5.6). The most used plaque was COMS type. Apical dose was 85 Gy.

**Results.** Doppler detected intratumoral vascularization at diagnosis in 21/50 cases, 7 persisted at 6, 12 and 18 months, to 24 months 5/31, 30 months 3/20, 36 months 1/12, 42 months 1/6, 48 months 1/3, 54 months 1/2 and 60 months 0/1. Mean systolic

peak velocity (SPV) at diagnosis was  $25.2 \pm 16.1$  cm/s, and  $15.82 \pm 10.5$  at 6 months. Of those with persistent Doppler signal, 2 were big, 1 developed metastasis and 4 regressed. 8 avascular tumors at diagnosis experienced new vascularization: 1 recurred, 7 regressed and 4 of them developed neovascular glaucoma (NVG). Reduction in thickness was bigger when tumors vascularized, lost Doppler signals. SPV decreased significantly at 6 months ( $p = 0.028$ ), but not the diastolic peak ( $p = 0.116$ ).

**Conclusion.** Doppler scan is an important tool in the management of melanoma after plaque. Majority of tumors lost its Doppler signal in the first 6 months. Persistent intratumoral vessels are associated to big tumour size, recurrence or vascular congestion. New vascularized cases can be explained by persistence of old vessels, recurrence or NVG. We recommend supporting these findings with the current tests in direct ophthalmoscopy and ultrasound.

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#### External-radiotherapy plus HDR-brachytherapy in prostate cancer: ICO long-term outcome

L. Santorsa<sup>1</sup>, C. Gutierrez Miguelez<sup>2</sup>, J. Pera Fabregas<sup>2</sup>, E. Martinez Perez<sup>2</sup>, F. Pino Sorroche<sup>3</sup>, S. Moreno Almagro<sup>3</sup>, J. Suarez Novo<sup>4</sup>, M. Nuñez Fernandez<sup>2</sup>, A. del Carpio<sup>2</sup>, A. Boladeras Inglada<sup>2</sup>, F. Ferrer Gonzalez<sup>2</sup>, F. Guedea Edo<sup>2</sup>



<sup>1</sup> Policlinico di Bari, Radiation Oncology, Bari, Italy

<sup>2</sup> Institut Catalá D'oncologia, Radiation Oncology, Spain

<sup>3</sup> Institut Catalá D'oncologia, Medical Physics and Radiological Protection, Spain

<sup>4</sup> Ciutat Sanitaria de Bellvitge-Prnceps D'espanya, Urology, Spain

**Purpose.** The aim of this study was to evaluate the efficacy and toxicity of combining external beam radiation therapy (EBRT) and high-dose-rate brachytherapy (HDRB) as a boost, in terms of biochemical relapse in patient (pts) with prostate cancer.

**Methods and materials.** From 2002 to July 2012, 377 pts with a diagnosis of intermediate-high risk prostate cancer were treated with EBRT followed by supplemental HDRB. The characteristics were: mean age 65.78 (41–86 years), Gleason was 7 in 191 pts (50.7%) and 8 or higher in 131 (35%), 226 pts. (60%) had a PSA > 10 ng/ml, T3 stage 263 pts (70%), T2 64 (17%) and T1 49 (13%). The EBRT total mode dose was 60.0 Gy (45–70 Gy) on prostate and seminal vesicles. 120 pts (31%) also received a mode of 46 Gy (45–50 Gy) on minor pelvis. All pts received a mode single-fraction of 9 Gy (9–15) of HDRB-boost. Complete androgen deprivation was given to 353 pts (93.63%).

**Results.** The mean follow-up was 48.72 months (6–126). The 5 and 7-year actuarial overall survival was 88% (CI 95%: 84–92) and 75% (CI 95%: 68–83). Cause specific survival at 5 and 7 years was 98% (CI 95%: 97–99) and 97% (CI 95%: 96–98) respectively. Disease free survival was 93% (CI 95%: 89–97) and 91% (CI 95%: 87–95). The 5 and 7-year biochemical free relapse was 91% (CI 95%: 87–95) and 89% (CI 95%: 83–95). The gastrointestinal grade 2–3 late-toxicity was observed in 17 pts (4.6%) and 6 pts (0.8%) respectively. Genitourinary grade 2–3 toxicity was observed in 46 pts (12.2%) and 3 pts (1.6%).

**Conclusion.** The findings after long-term follow-up of intermediate-high risk prostate cancer pts treated with EBRT plus supplemental HDRB boost confirmed the effectiveness of this fractionation schedule in terms of discomfort, treatment-related toxicity and biochemical control.

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#### HDR brachytherapy as monotherapy for prostate cancer: Preliminary toxicity data

E. Krumina, G. Nagore, M. Vila, J. Lozano, A. Garcia, I. Azinovic

Alicante, Instituto Alicantino de Oncología (Grupo IMO), Department of Radiation Oncology, Spain



**Objective.** To evaluate the feasibility and toxicity of high-dose-rate (HDR)-brachytherapy (BT) as monotherapy in a prospective clinical trial consisting of a single implant and two fractions ( $13.5 \text{ Gy} \times 2$ ) for a total dose of 27 Gy, delivered within 1 day for localized prostate cancer. We report the acute and early chronic genitourinary (GU) and gastrointestinal toxicity (GI).

**Methods and materials.** A total of 78 patients were treated between November 2010 and December 2012. A Phase II trial of monotherapy HDRB performed for localized prostate cancer using a single implant and two fractions ( $13.5 \text{ Gy} \times 2$ ) for a total dose of 27 Gy calculated to be radiobiology of HDRB regimens and BED to 261 Gy in 2 Gy fractions ( $\alpha/\beta$  ratio of 1.5 Gy). All patients had clinical Stage T2c or less (AJCC, 5th edition), Gleason score 4–7 (3+4), PSA level of  $\leq 15$  ng/mL. CT scans were done for dosimetry. GU and GI toxicity were evaluated by CTCAE V 3.0. The highest toxicity scores and self-reported sexual function (patients without BAC) were recorded during follow-up.

**Results.** Median follow-up was 9.32 months (range: 2.23–26.07). Grade 1–2 GU acute toxicity was 20.51%, mainly frequency/urgency (14.1%), dysuria (7.7%), hematuria, dribbling/hesitancy (1.3%). One patient required a Foley catheter during 1 week. No acute GI toxicities were recorded. The most common early chronic toxicity was Grade 1 urinary frequency/urgency in 1.3% and Grade 2 dysuria in 7.7% of patients; 1 patient had Grade 2 rectal bleeding, 1 had Grade 4, requiring RTU. Twenty-eight patients without BAC reported potency before therapy; No one of them developed sexual impotence.

**Conclusions.** A single implant HDR-BT to 27 Gy in two fractions within 1 day for localized prostate cancer is feasible with minimal acute or late toxicity. Longer follow-up is needed to confirm these encouraging early results.

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