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ASTRO 2018 Brachyterapia

Mateusz Dąbkowski, Warszawa, 15.06.2018

RADIOTERAPEUCI RADIOTERAPEUTOM MÓWIĄ O RADIOTERAPII

CENTRUM ONKOLOGII – INSTYTUT
IM. MARII SKŁODOWSKIEJ-CURIE

Poverty, P. Picasso, 1903
The Withworth Gallery, Manchester

Plan prezentacji

1. Rak stercza
   - NRG/RTOG0232- jakość życia
   - LDR vs HDR (LDR-like)
2. Rak szyjki macicy
   - Perspektywa europejska vs amerykańska
3. Rak piersi
   - APBI w powtórnym leczeniu oszczędzającym

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NRG/RTOG0232

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- RCT 3 fazy
- Chorzy na raka stercza intermediate risk group
- Lata 2003 -2012, 588 chorych
- Zmienna badana- 5y PFS (ASTRO, LP, DM, śmierć), badanie zaprojektowane by wykryć 10% różnicę pomiędzy grupami

NRG/RTOG0232

RTOG 0232: Study Schema

STRATIFY	Stage 1. T1c 2. T2a – T2b Gleason Score 1. ≤ 6 2. 7 PSA 1. < 10 2. 10-20 Neoadjuvant Hormonal Therapy 1. No 2. Yes	RECORD	Isotope 1. I-125 2. Pd-103	RANDOMIZE	Arm 1: 45 Gy EBRT Partial pelvis (1.8 Gy/fraction M-F for five weeks) followed 2-4 weeks later by Pd-103 (100 Gy) or I-125 (110 Gy) or Arm 2: Pd-103 (125 Gy) or I-125 (145 Gy)

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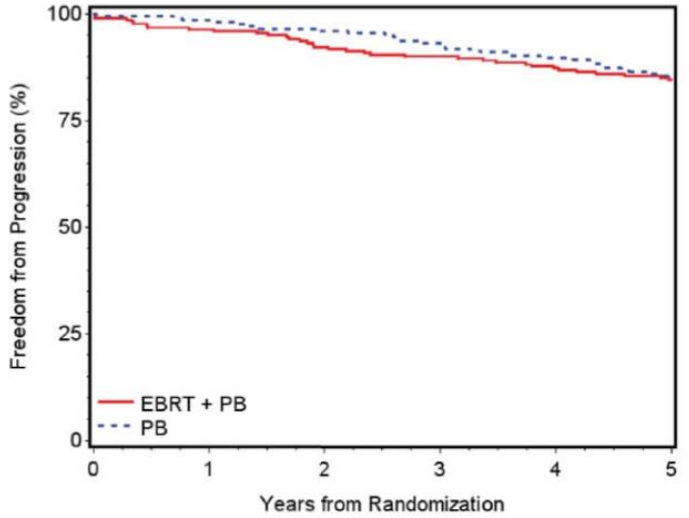
Results: Freedom from Progression



First Failure	EBRT + PB (n=34)	PB (n=32)	Total (n=66)
BF-ASTRO	23 (68%)	17 (53%)	40 (61%)
LP	1 (3%)	1 (3%)	2 (3%)
LP, DM	1 (3%)	0 (0%)	1 (2%)
Death*	9 (26%)	14 (44%)	23 (35%)

5y PFS 85 vs 86%

NRG/RTOG0232

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Conclusions

- Among men with intermediate risk (IR) prostate cancer, the addition of external beam therapy to brachytherapy did not result in superior freedom from progression compared to brachytherapy alone at 5 years in this initial report.

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- ASTRO 2018- analiza częstości powikłań raportowanych przez lekarza i chorego w badanych grupach
- EPIC – przed leczeniem, 4 i 24 m-ce po leczeniu
- Domeny- bowel, urinary (incontinence, irritative/obstruction), sexual
- Bez domeny hormonal (8% chorych neoadjuwant, 0% chorych jednoczasowa)

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- Powikłania raportowane przez lekarza
  - Wczesne G≥3- 6% w obydwu grupach
  - Poźne G≥3
    - 13% EBRT + BT
    - 8% BT
  - Późne GU G≥3
    - 8% EBRT + BT
    - 3% BT

NRG/RTOG0232

- Powikłania raportowane przez chorego
  - Poźne G≥3
    - 34% EBRT + BT (vs 13% lekarze)
    - 23% BT (vs 8% lekarze)

Abstract 3; Table

Domain/ Subscale	24 mos Δ mean ± SD EBT+B	24 mos Δ mean ± SD B	p-value ($\|\mu_B - \mu_{EBT+B}\| > 0$)	Effect Size
Urinary	-11.2 ± 15.7	-5.6 ± 13.6	0.0002	0.38
Urinary-irritative	-11.9 ± 17.4	-4.8 ± 14.3	<0.0001	0.44
Bowel	-7.1 ± 12.6	-2.4 ± 9.9	<0.0001	0.42
Sexual	-16.7 ± 23.4	-10.6 ± 21.0	0.0072	0.27

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NRG/RTOG0232

- U chorych na raka stercza z grupy pośredniego ryzyka dodanie EBRT do BT nie wiąże się z poprawą PFS
- Chorzy z grupy BT moją mniej poważnych powikłań po leczeniu i lepszą jakość życia
- Krytyczna wartość oceny jakości życia przez chorych (vs lekarz)

Rak stercza- LDR vs HDR

A Phase II Randomized Pilot Study Comparing High-Dose Rate Brachytherapy and Low-Dose Rate Brachytherapy as Monotherapy in Localized Prostate Cancer

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CHUM Centre hospitalier de l'Université de Montréal

PURPOSE / OBJECTIVE(s)

To compare Health-Related Quality of Life (HRQoL) and urinary toxicity outcomes of High-Dose Rate Brachytherapy (HDRB) monotherapy to Low- Dose Rate brachytherapy (LDRB) for localized prostate cancer in a multi-institutional phase II prospective randomized trial.

MATERIAL & METHODS

Patients with low risk and favorable intermediate risk disease defined as clinical stage T1-T2, Gleason ≤ 7 and PSA ≤ 20 ng/mL were accrued. Patients with Gleason 7 (4+3) and with ≥ 60% of positive cores involved were deemed ineligible. Patients were randomized between LDRB (144 Gy) and HDRB (19 Gy) in a single fraction to the prostate gland. HRQoL and urinary toxicity were recorded at baseline and at 1, 3 , 6 and 12 months using the Expanded Prostate Cancer Index Composite (EPIC) 26 scoring and the International Prostate Symptom Score (IPSS).

The primary objective was to report HRQoL in the urinary domain at 3 months between patients treated with HDRB and LDRB. The 3 months point was chosen as the primary endpoint based on several studies revealing peak urinary symptoms at 3 to 6 months. Independent samples t-test and mixed effects modeling were performed for continuous variables (EPIC and IPSS). Time to IPSS resolution defined as return to its baseline score +/- 5 points was calculated using Kaplan-Meier survival curves with log-rank test.
A multiple-comparison adjusted P value of ≤ 0.05 was considered significant.

RESULTS

LDRB and HDRB were performed in 15 and 16 patients, respectively for a total of 31 patients. The mean scores of IPSS, EPIC urinary incontinence, EPIC urinary irritative, EPIC bowel habits and EPIC sexual function at baseline were 6.2 (0-16), 95.32 (54.25-100), 89.9 (68-100), 97.6 (95.9-99.2) and 67.9 (59.2-76.8) respectively; not significantly different between groups as shown in table 1. At 3 months, patients treated with LDRB compared to HDRB had a higher IPSS score (mean 15.5 vs 6.0 respectively, p=0.003) and lower EPIC urinary irritative score (mean 69.2 vs 85.3 respectively, p=0.037). On repeated measures at 1, 3, 6 and 12 months, the IPSS (p=0.003) (Figure 1) and EPIC urinary irritative scores (p= 0.019) (Figure2) were significantly better in the HDR arm, translating into a lower urinary toxicity profile. There were no significant differences in the EPIC urinary incontinence, sexual function or bowel habits scores between the 2 groups at any measured time point. Time to IPSS resolution was significantly shorter in the HDRB group (median = 2.0 months) compared to the LDRB group (median= 6.0 months) (p=0.028) (Figure 3).

Table 1: Patient characteristics

Characteristics	Total N (%)	Univariate analysis P-value
Brachytherapy LDR	15 (48.5%)	-
HDR	16 (51.6%)	
Median age (IQR)	64 (61-70)	0.5
Pre-treatment PSA Median (IQR)	5.6 (4.8-8.3)	0.4
Gleason Score 6	12 (38.7%)	0.6
7	19 (61.3%)	
Clinical Stage T1c	24 (77.4%)	0.7
T2a	7 (22.6%)	
Pre-treatment IPSS Median (IQR)	7 (2-9)	0.12
Pre-treatment EPIC urinary incontinence Median (IQR)	100 (93.75-100)	0.3
Pre-treatment EPIC urinary irritative Median (IQR)	93.75 (81.25-93.75)	0.8
Pre-treatment EPIC sexual Median (IQR)	69.5 (47.9-87.5)	0.5
Pre-treatment EPIC bowel Median (IQR)	100 (95.8-100)	0.9

IQR: Interquartile range

Figure 1. Mean IPSS scores at different time points

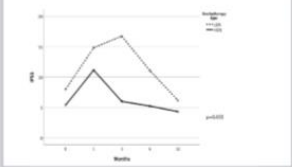


Figure 2. Mean EPIC irritative scores at different time points

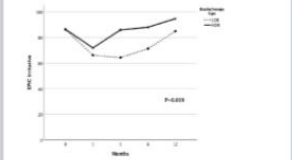
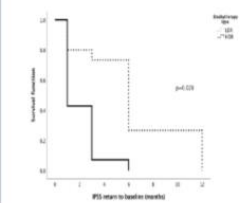


Figure 3: Time to IPSS resolution illustrated using Kaplan Meier survival curves



SUMMARY / CONCLUSION

HDRB 19 Gy single fraction has a superior toxicity profile and higher HRQoL in the first year following the procedure compared to LDRB in men with low and intermediate risk-prostate cancer.

Long-term HRQoL, physician-reported toxicity and treatment outcomes including biochemical and local control will be reported after achieving a longer follow up. Given the lack of long-term outcome results, single fraction HDR 19 Gy should only be delivered in the context of a clinical trial.

ACKNOWLEDGEMENTS

The authors would like to express their deepest appreciation to all the staff of CHUM, CHU de Quebec and Sunnybrook. This project would not have been possible without their support. A special thanks to Abbvie Uro-Oncologic Radiation Awards who provided the financial support to complete this project.

Rak stercza- LDR vs HDR

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- Wieloośrodkowe prospektywne badanie randomizowane 2. fazy
- Porównanie jakości życia i powikłań ze strony dróg moczowych
- 31 chorych z grupy low i low-intermediate risk group
- EPIC i IPSS przed leczeniem i 1, 3, 6 i 12 m-cy po
- LDR- 144 Gy vs HDR 1 x 19 Gy

Rak stercza- LDR vs HDR

HDR 1 x 19 Gy vs HDR 2-3 fx

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Phase II randomized trial

Prostate high dose-rate brachytherapy as monotherapy for low and intermediate risk prostate cancer: Early toxicity and quality-of life results from a randomized phase II clinical trial of one fraction of 19 Gy or two fractions of 13.5 Gy

Gerard Morton *, Hans T. Chung, Merrylee McGuffin, Joelle Helou, Laura D'Alimonte, Ananth Ravi, Patrick Cheung, Ewa Szumacher, Stanley Liu, Motasem Al-Hanaqta, Liying Zhang, Alexandre Mamedov, Andrew Loblaw

Sunnybrook Odette Cancer Centre, University of Toronto, Canada

Radiotherapy and Oncology

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Prostate brachytherapy

Single-dose high-dose-rate brachytherapy compared to two and three fractions for locally advanced prostate cancer

Peter Hoskin, Ana Rojas, Peter Ostler, Robert Hughes, Roberto Alonzi, Gerry Lowe

Rak stercza- LDR vs HDR

Figure 1. Mean IPSS scores at different time points

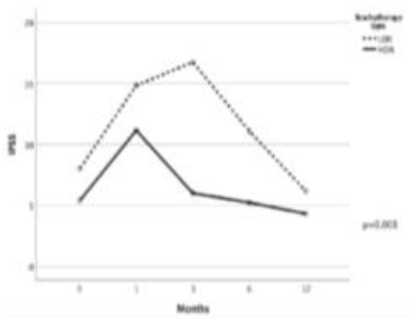


Figure 2. Mean EPIC irritative scores at different time points

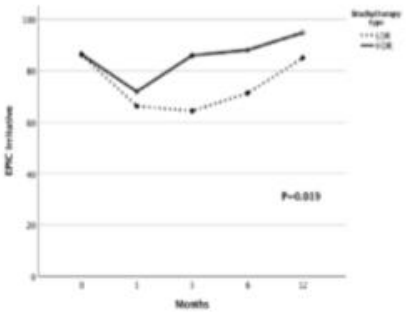
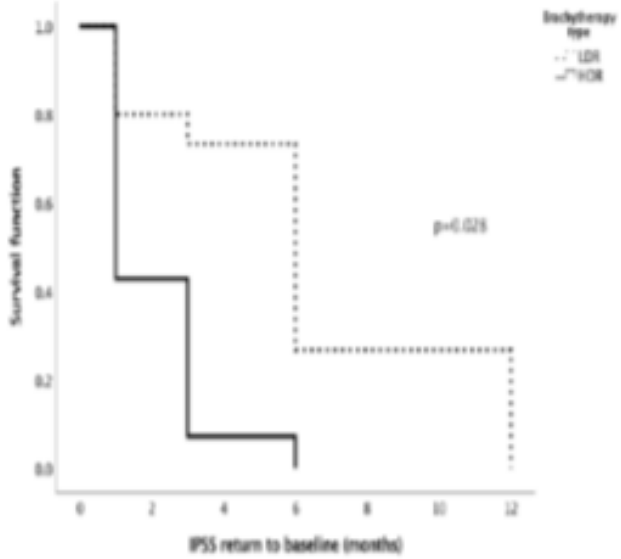


Figure 3: Time to IPSS resolution illustrated using Kaplan Meie survival curves



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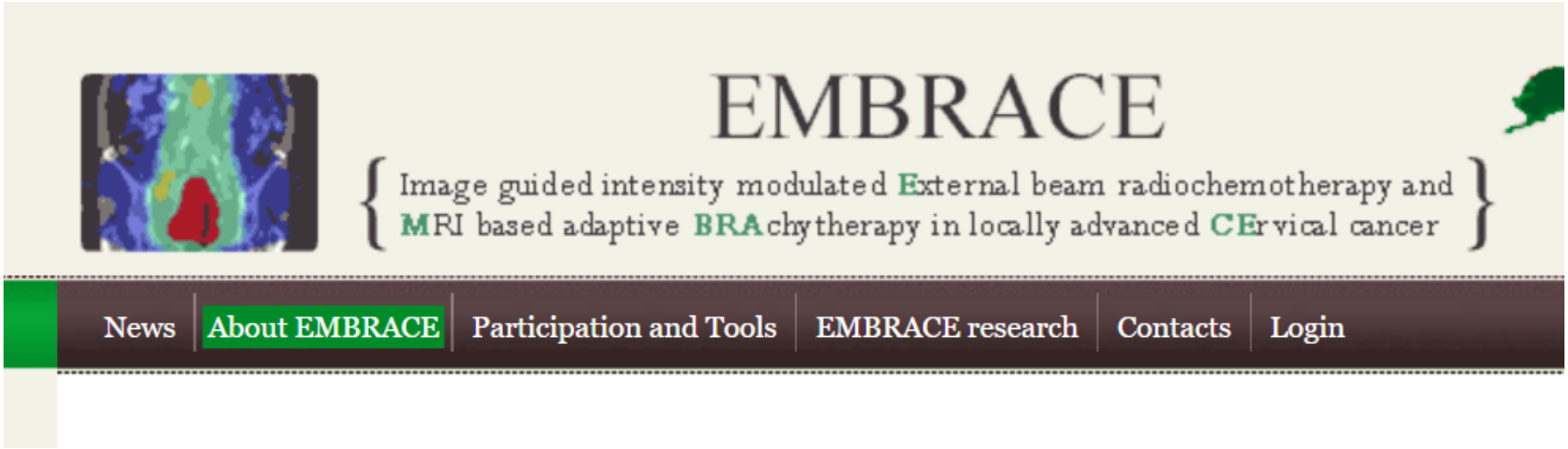
Rak szyjki macicy - perspektywa europejska



EMBRACE

- Projekt grupy ginekologicznej GEC ESTRO
- Zastosowanie IGRT (brachyterapia i teleterapia) w raku szyjki macicy i jego wpływ na wyniki leczenia
- 3 etapy:
  - retroEMBRACE- 2008-2013, 731 chorych, retrospektywne
  - EMBRACE I- 2008-2016, 1416 chorych, prospektywne obserwacyjne
  - EMBRACE II- od 2016, prospektywne, obserwacyjno-interwencyjne

EMBRACE I- ASTRO 2018

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- 1300 chorych z pełnymi danymi dotyczącymi leczenia
- EBRT- 45-50,4 Gy, IMRT 42%, 3DCRT 58%
- BT:
  - HDR 57% (3-5 frakcji), PDR 43% (1-2 frakcje)
  - Ring 58%, owoidy 27%, mould 12%, walec 1%
  - Dojamowa 56%, dojamowa/śródtkankowa 44%
  - Ilość użytych igieł 4,1 $\pm$ 2,8
  - OTT 46,5 $\pm$ 6,5 dnia

EMBRACE I- ASTRO 2018

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- FIGO IB 19%, IIA 5%, IIB 52%, IIIA 1%, IIIB 15%, IVA i B 8%
- Średnia objętość CTV_{HR} 34.5 ± 21.5 cm^3
- Średnia D_{90} dla CTV_{HR} 89.7 ± 8.8 Gy $EQD2_{10}$
- 76% chorych CTV_{HR} D_{90}>85 Gy $EQD2_{10}$
- 92% chorych pęcherz moczowy D_{2cm^3} <80 Gy EQD_3
- 95% chorych odbytnica D_{2cm^3} <75Gy EQD_3.

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	Dojamowa	Dojamowa-śródtkankowa
Średnia objętość CTV_{HR}	26.5 cm^3	44.8 cm^3
Średnia CTV_{HR} D_{90}	90.5 Gy	88.7 Gy
Dla guzów 30 cm^3		
Średnia CTV_{HR} D_{90}	86.5 Gy	92.5 Gy
Średnia D_{2cm^3} pęcherz	79.4 Gy	73.8 Gy
Średnia D_{2cm^3} odbytnica	64.3 Gy	61.1 Gy

EMBRACE I- ASTRO 2018

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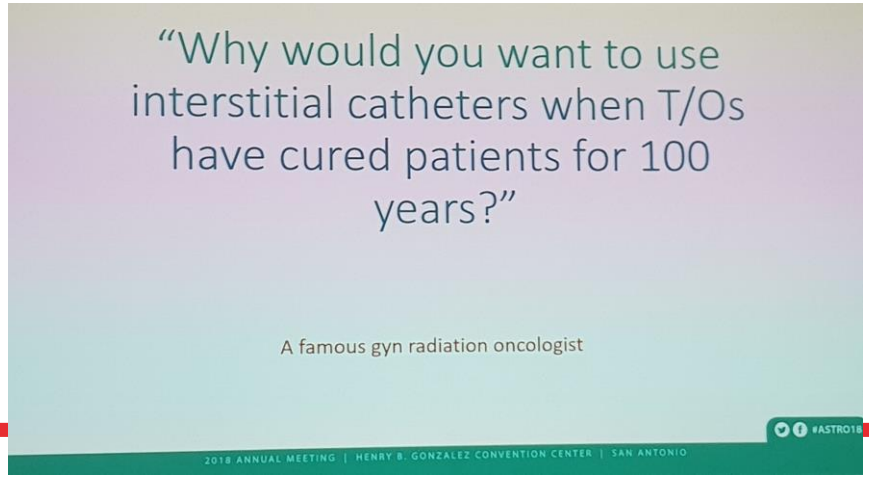
- świetny materiał do benchmarkingu
- Możliwość podania wysokiej dawki w zakresie CTV_{HR} i ochrony narządów krytycznych przy zastosowaniu aplikacji śródtkankowych dla większych objętości



Rak szyjki macicy – perspektywa amerykańska

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Definitive External Beam Radiotherapy with Stereotactic Body Radiation Therapy Boost for FIGO Stage IB - IIB Cancer of the Cervix: Minimum 5-Year Disease Control, Toxicity and Quality of Life Outcomes from a Phase 2 Trial

21st Century Oncology

C. A. Mantz; 21st Century Oncology, Fort Myers, FL

PURPOSE / OBJECTIVE(S)

SBRT for gynecologic cancers may offer practical advantages over brachytherapy at similar radiobiologic dosing:

- Dose-fractionation SBRT schedules may be selected to approximate those of HDR
- SBRT eliminates the needs of optimal applicator placement and sedation
- Additional imaging modalities may be more easily coregistered to baseline planning CT scans – no need to account for anatomic distortions from applicator placements

Herein, we report health-related quality of life (HRQOL), toxicity and disease control outcomes of a prospective, phase II trial of SBRT for primary cervical cancers.

MATERIAL & METHODS

PROTOCOL ELIGIBILITY CRITERIA

(1) pathologically confirmed cervical squamous cell carcinoma or adenocarcinoma – serous and clear cell histologies were excluded
(2) FIGO stage IB, IIA or IIB disease
(3) technical or medical contraindication to brachytherapy
(4) primary GTV volume less than 125 cm^3 following induction therapy

TREATMENT METHODS

- All patients first received concurrent cisplatin-based chemotherapy and external beam radiotherapy to a minimum dose of 45.0 Gy encompassing primary tumor and regional pelvic lymphatics
- SBRT boost treatment planning then followed, and GTV delineation was aided by co-registration of the boost planning CT set to a pre-treatment FDG PET/CT scan and post-EBRT MRI
- A boost dose of 40.0 Gy was prescribed to the primary tumor and delivered over a 10-day schedule of 5 fractions of 8.0 Gy each

OUTCOMES ASSESSMENTS

- Disease response and control were assessed pathologically by 3-month post-therapy biopsy and radiographically by biannual PET/CT imaging for 2 years
- Acute and chronic toxicities were assessed using NCI CTCAE v3 toxicity scales
- Quality-of-life assessment was determined using FACT-G measurements

RESULTS

FOLLOWUP AND STAGE DISTRIBUTION

- Fifty-five patients with FIGO stage IB - IIB cervical cancer were treated between June 2007 for a median of 72.0 months and a minimum of 60.0 months.
- FIGO Stage distribution was as follows: 6/55 stage IB1, 18/55 stage IB2, 3/55 stage IIA1, 6/

DISEASE RESPONSE AND CONTROL

Local Control

- Post-SBRT biopsy at 3 months was negative for 52 of 55 patients, or 94.5%, for all patients.
- 2 patients suffered biopsy-proven local recurrence at 12 months.
- 5 local recurrences were observed in total for 1 stage IB2 patient and 4 stage IIB patients.
- At 5 years, estimated local control at the SBRT treatment site is 90.6 % for all patients (**Figu**

Distant Failure and Survival Outcomes

- 10 distant failures were observed in total.
- At 5 years, estimated failure-free survival is 81.6% and overall survival is 78.7% (**Figure 1**).

TOXICITY AND QUALITY OF LIFE

- 1 patient each suffered NCI CTCAE grade 3 urinary frequency and grade 3 vaginal stenosis,
- All other observed bowel, bladder and sexual toxicities were grade 1 or 2; toxicity rates are
- Post-treatment FACT-G scores were statistically superior compared to pre-treatment asses emotional and functional well-being. (**Figure 2**).

Figure 1. Disease Outcomes

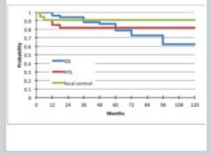
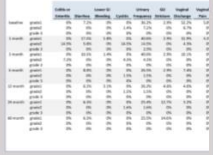


Table 1. Toxicity Rates



SUMMARY / CONCLUSIO

At a minimum followup of 5 years, SBRT offers an effective and well-tolerated boost modality otherwise contraindicated for brachytherapy. To our knowledge, this prospective phase 2 stu treated with curative intent using boost SBRT.

Stereotactic Body Radiation Therapy (SBRT) Boost as a Substitute for Brachytherapy in the Definitive Treatment of Locally Advanced Gynecologic Malignancies: An Analysis of Long Term Efficacy and Late Toxicity.

RUSH

Cory Hogue MD, Yixiang Liao PhD, Summer Dewdney MD, Amina Ahmed MD, Krystyna Kiel MD, Neilayan Sen MD

Department of Radiation and Gynecologic Oncology, Rush University Medical Center

PURPOSE / OBJECTIVE(S)

Delivery of high doses of radiation within a prescribed period of time is associated with local control when treating primary or recurrent gynecologic cancers.

- Not all patients are able to undergo a brachytherapy boost
- We report an update on our experience with alternative stereotactic body radiotherapy (SBRT) boost.

MATERIAL & METHODS

From 2012 to 2014 eight patients with locally advanced squamous cell carcinoma of the uterine cervix, recurrent endometrial cancer in the vaginal cuff, or primary vaginal cancer received an SBRT boost after pelvic external beam (EBRT) radiotherapy (45-50 Gy).

- Patients either refused brachytherapy or were high risk (by medical comorbidities) for brachytherapy.
- Doses typically used for brachytherapy were prescribed to D90 of the PTV (5 mm expansion on CTV excluding rectum when not involved by tumor).
- Dose was limited by organ-at-risk tolerances (EQD2Gy D2cc planning objectives included bladder < 90 Gy, rectum < 75 Gy, sigmoid < 75 Gy, small bowel < 60 Gy).
- Daily cone beam CTs (CBCTs) were performed using rectum, bladder, visible tumor, and markers for image guidance (see Fig. 2)
- Tumor status and toxicities were recorded at regular follow up intervals; toxicity was graded according to CTCAE v. 5.0.

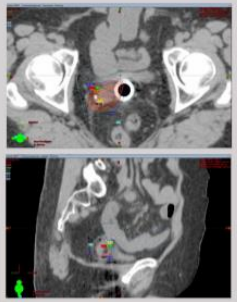


Fig. 1: Representative isodose distribution for VMAT vaginal cuff boost

RESULTS

Two local recurrences were noted at a median follow up of 54.7 months.

- One patient recurred at 16 months and the other at 34 months
- One of these patients went on to develop distant metastatic disease and one was salvaged with surgery and has no evidence of disease.
- One patient developed distant metastases at seven months
- One patient developed a rectovaginal fistula requiring surgical intervention after developing distant metastatic disease at 2 years
- Two patients developed grade 3 vaginal stricture (inability to visualize vaginal apex/cuff on exam).

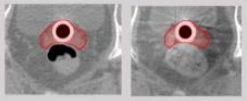


Fig. 2: Left – simulation CT, PTV in red color wash. Right – CBCT prior to daily treatment. Note reproducible rectal/bladder anatomy with vaginal marker placement.

SUMMARY / CONCLUSION

SBRT should not be used as a substitute for brachytherapy boost unless there are absolute contraindications to interstitial brachytherapy delivery.

Primary Site	Histology	Stage (FIGO)	SBRT Target	SBRT Dose	SBRT Fxs	Cumulative EQD2Gy	Follow up (months)	Late toxicity (G3 or greater)
Vagina	SCC	IA	Vaginal Cuff	28 Gy	5	80.7	61	G3 vaginal stricture
Vagina	SCC	II	Vaginal Apex	30 Gy	5	84.3	66	None
Endometrial	Adeno	Cuff recurrence	Vaginal Cuff	30 Gy	5	84.3	55	None
Endometrial	Adeno	Cuff recurrence	Vaginal Cuff	30 Gy	5	84.3	55	G3 vaginal stricture
Endometrial	Adeno	Cuff recurrence	Vaginal Cuff	30 Gy	5	84.3	17	None
Endometrial	USPS	Cuff recurrence	Vaginal Cuff	30 Gy	5	84.3	29	None
Cervix	SCC	IIB	HR-CTV	14 Gy	2	83.9	29	None
Cervix	SCC	IIIB	HR-CTV	16.25 Gy	5	67.9	86	None

Rak szyjki macicy- perspektywa amerykańska

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Effect of Radiation Boost Modality in Overall Survival of Cervical Cancer Patients

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PURPOSE / OBJECTIVE(s)

Radiation therapy (RT) plays a vital role in the management of the patients with cervical cancer[1], especially when surgery is not a viable option. Very good clinical outcome of image-guided brachytherapy (IGBT) has been demonstrated in several reports[2,3]. Current study is to analyze the National Cancer Database (NCDB) for evaluating the efficacy of radiation boost modality in locally advanced cervical cancer patients treated initially with external beam radiation therapy (EBRT) and chemotherapy, followed by EBRT boost or brachytherapy boost.

MATERIAL & METHODS

We have analyzed National Cancer Database (NCDB) for FIGO stage IB-IIIB cervical cancer patients treated from 2004 to 2014. We have considered non-surgical patients who received both chemotherapy and EBRT. Included patients (n = 9,936) received primary, i.e. initial treatment with either intensity modulated radiation (IMRT) or 3D conformal radiotherapy (3D-CRT) of 40-60Gy dose. We have considered three options for radiation boost: no boost, EBRT boost and brachytherapy (BT) boost. Patients who had EBRT boost dose 10-40Gy were included in this study. IBM SPSS software (version 24) was used for statistical analysis; p-value < 0.05 was considered statistically significant.

RESULTS

The median age of the patients was 51 years (range: 18-90). The median follow-up was 33.8 months (range: 6.3-143.1). Mean/median overall survival (OS) in months were: 69.7/52.1, 63.5/38.2 and 90.8/112.9 for no boost, EBRT boost and BT boost, respectively. Observed marginal differences in OS between patients treated with no boost and EBRT boost modalities. However, the OS of the patients treated with BT boost modality was much higher as compared to that of other two groups, i.e. no boost and EBRT boost (Fig. 1-4). The same trend was observed across the clinical stages IB-IIIB (Fig. 1-3 and Table 1). All these differences in OS were statistically significant ($p<0.05$).

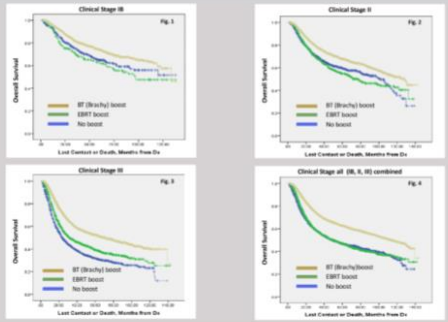

Table 1: Overall survival (OS; mean/ median in months) of stage IB-IIIB cervical cancer patients.

Initial/Primary Tx modality	EBRT (40-60Gy) + Chemotherapy			p-value
Boost Tx modality	No boost	EBRT boost	BT boost	
No. of patients	2,003 (20.2%)	902 (9.1%)	7,031 (70.7%)	
OS for all patients	69.7/ 52.1	63.5/ 38.2	90.8/ 112.9	<0.001
OS for Stage IB pts.	91.1/ 120.3	72.2/ 71.9	102.1/ 133.6	<0.001
OS for Stage II pts.	83.5/ 105.5	73.8/ 65.6	96.3/ 127.9	<0.001
OS for Stage III pts.	52.1/ 24.6	57.8/ 29.1	79.3/ 71.6	<0.001

SUMMARY / CONCLUSION

This study indicates that the brachytherapy (BT) boost is superior to EBRT boost modality for overall survival (OS) in locally advanced cervical cancer patients (clinical stage IB-III). So far the overall survival is concerned, EBRT boost does not appear to be clinically effective for stage IB-II patients; it is marginally better as compared to no boost for stage III patients. Therefore, every effort should be made to use BT boost in treating cervical cancer patients with curative intent. It is not possible to make any comments regarding the toxicity from this database

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2. Pötter R, Georg P, Dimopoulos JCA, Grimm M, Berger D, Nesvacil N, et al. Clinical outcome of protocol based image (MRI) guided adaptive brachytherapy combined with 3D conformal radiotherapy with or without chemotherapy in patients with locally advanced cervical cancer. *Radiother Oncol.* 2011;100:116-123.
3. Ribeiro I, Janssen H, De Brabandere M, Nulens A, De Bal D, Vergote I, et al. Long term experience with 3D image guided brachytherapy and clinical outcome in cervical cancer patients. *Radiother Oncol.* 2016;120:447-454.

ACKNOWLEDGEMENTS

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Rak szyjki macicy- perspektywa amerykańska

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- Analiza National Cancer Database
- Prawie 10000 chorych z rakiem szyjki macicy IB-IIIB, leczonych w latach 2004-2014
- Porównanie grup- bez boostu, z boostem z EBRT (10-40 Gy), z boostem z brachyterapii
- Mediana follow up 34 m-ce

Rak szyjki macicy- perspektywa amerykańska

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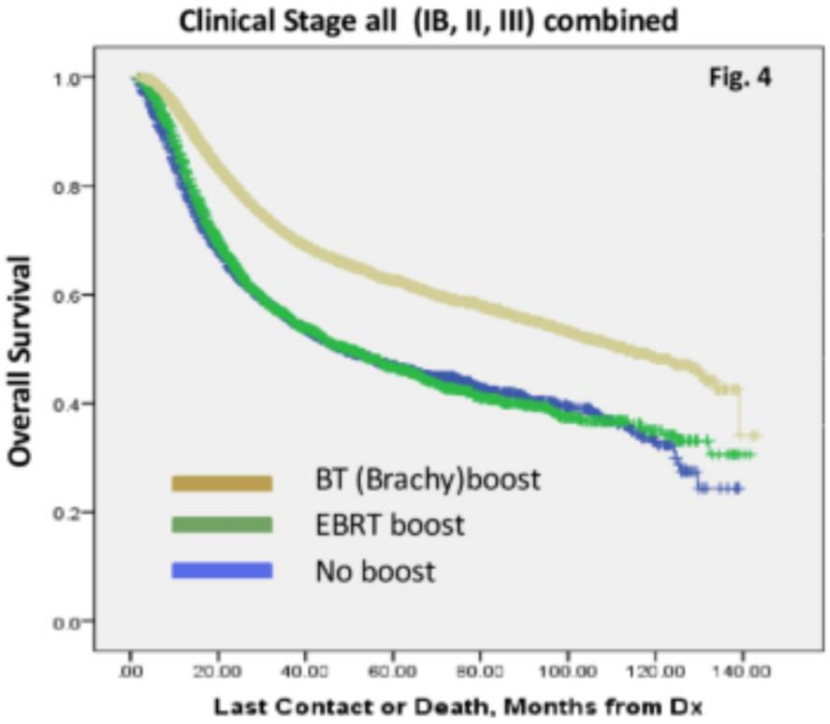
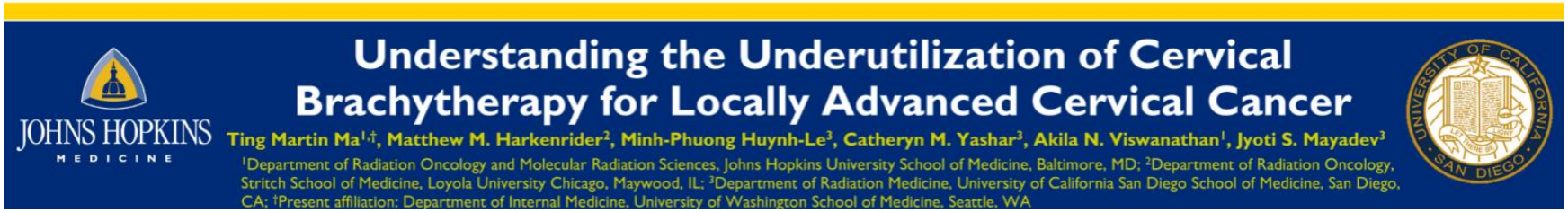


Bez boostu- 20,2% chorych
Boost EBRT- 9,1% chorych
Boost z BT- 70,7% chorych

Mediana OS 52 vs 39 vs 113 m-cy

Perspektywa amerykańska - przyczyny



- Zastosowanie brachyterapii w miejscowo zaawansowanym raku szyjki macicy spadło z 83 do 58 % w latach 1988 – 2009 (Han et al. IJRBOP 2013)
- Badanie ankietowe wśród członków ABS
- 84% respondentów świadomych zbyt małego wykorzystania BT

Perspektywa amerykańska - przyczyny

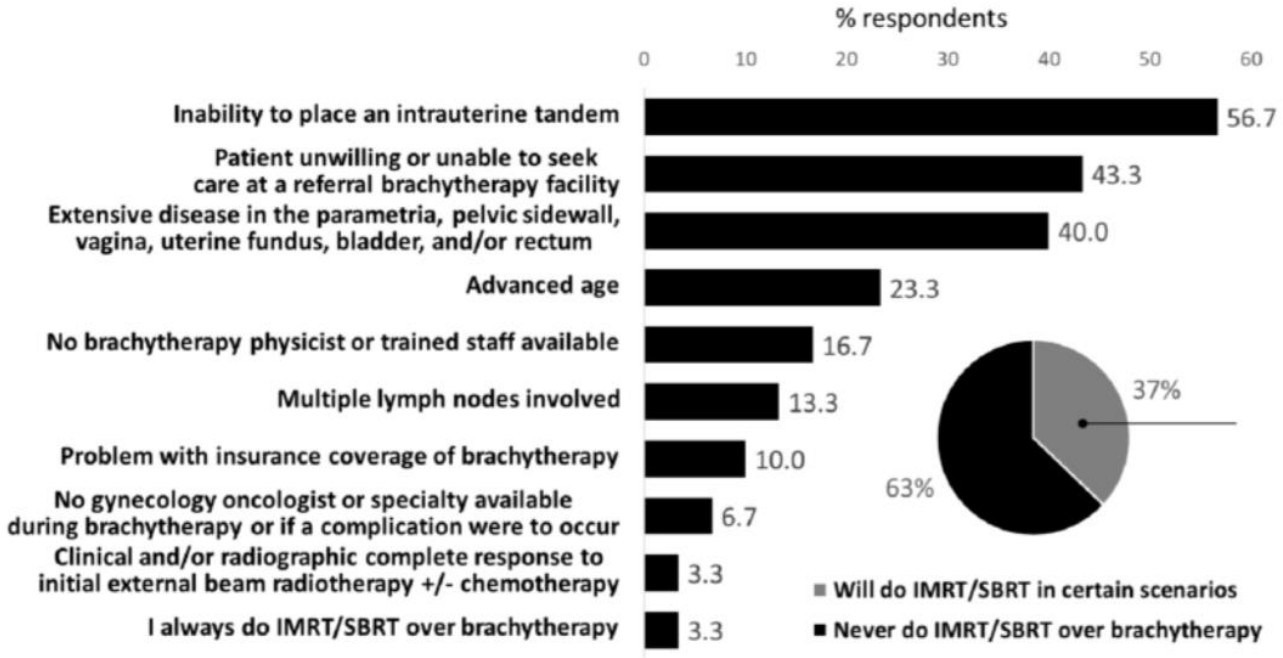


Figure 1. Distribution of response to question "please identify scenarios in which you will recommend IMRT/SBRT boost in lieu of brachytherapy for locally advanced cervical cancer.

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Perspektywa amerykańska - przyczyny

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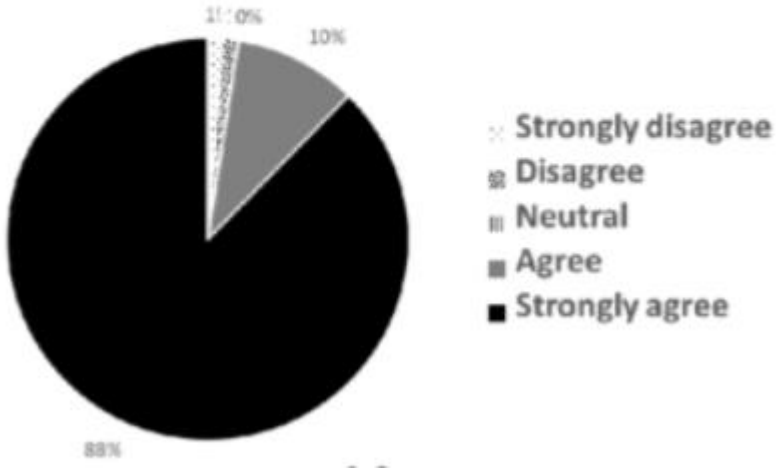
- Szkolenie
  - 46.9% uważa, że rezydenci nie otrzymują wystarczającego szkolenia w zakresie BT
  - 75.3% uważa, że głównym problemem jest brak szkoleń podyplomowych w zakresie BT
- Główne przeszkody w stosowaniu BT
  - Jest to procedura czasochłonna (71.6%)
  - Wycena świadczeń promuje boost z IMRT/SBRT (64.2%)
  - Słaby dostęp do sprzętu do BT (46.9%)
  - Brak fizyków medycznych (35.8%)

Perspektywa amerykańska - przyczyny

"If given access or time, I will recommend brachytherapy as one of the treatment modalities for the majority of my patients with cervical cancer"



APBI w powtórnym leczeniu oszczędzającym

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Salvage Mastectomy Versus Second Conservative Treatment for Second Ipsilateral Breast Tumor Event: A Propensity-Score Matched Cohort Analysis

Tuesday, October 23
1:30 PM - 1:40 PM
Location: Room 303

APBI w powtórnym leczeniu oszczędzającym

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- Analiza wyników ratującej mastektomii i powtórnego leczenia oszczędzającego w przypadku wznowy ipsilateralnej raka piersi
- Metoda dopasowanych prób techniką propensity score z uwzględnieniem następujących cech: wiek, czas do wznowy, wielkość guza, typ histologiczny, grading, status receptorów hormonalnych i HER2, użycie chemioterapii, hormonoterapii, czas od wystąpienia wznowy

APBI w powtórnym leczeniu oszczędzającym

- Główna zmienna badana: DFS, pozostałe zmienna badane: OS, DMFS, czas wolny od kolejnej wznowy ispilateralnej
- Wstępnie 1329 chorych leczonych w latach 2000-2014, 15 ośrodków
- Analizie poddano 430 chorych dopasowanych pomiędzy grupami

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APBI w powtórnym leczeniu oszczędzającym

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	Ratująca mastektomia	Powtórne leczenie oszczędzające
Follow up	65 m-cy	68 m-cy
5y DFS	78%	82%
5y OS	90%	86%
5y DMFS	92%	94%
5Y 3rdILBTE FS	94%	98%

APBI w powtórnym leczeniu oszczędzającym

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- Stosowane schematy APBI:
  - HDR- 32Gy (22-36) w 8 frakcjach (5-10), mediana EQD2 43 Gy
  - PDR- 50,4Gy (49-54)
  - LDR- 46Gy (30-55)
- Obecnie standardem jest ratująca mastektomia
- Planowane jest RCT 3 fazy pod egidą GEC-ESTRO breast group

Czy brachyterapia odchodzi do lamusa?

Tables. Submitted charges to Medicare over time

SBRT		
Year	Percent of total Claims	OR
2012	1.08 %	1.11 (1.07-1.14) p<0.0001
2013	1.16 %	
2014	1.33 %	
2015	1.45 %	

Brachytherapy		
Year	Percent of total Claims	OR
2012	0.37 %	0.97 (0.91-1.02) p=0.23
2013	0.38 %	
2014	0.32 %	
2015	0.34 %	

Proton Therapy		
Year	Percent of total Claims	OR
2012	0.05 %	1.26 (1.11-1.42) p<0.001
2013	0.08 %	
2014	0.09 %	
2015	0.10 %	

Consultations		
Year	Percent of total Claims	OR
2012	10.02 %	1.00 (0.99-1.01) p=0.66
2013	10.09 %	
2014	9.96 %	
2015	9.98 %	

Complex Simulations		
Year	Percent of total Claims	OR
2012	5.40 %	1.01 (0.99-1.02) p=0.28
2013	5.40 %	
2014	5.50 %	
2015	5.50 %	

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Dziękuję za uwagę

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