FUNDACION MARIE CURIE
Córdoba - Argentina

vithas Hospitales

Congreso sobre Avances Integrados en Oncología, Radiocirugía y Física Médica: Innovación y Precisión en el tratamiento del cáncer

18:15 a 18:30 hs
SBRT en 1 fracción en tumores periféricos
Luis Larrea

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STEREOTACTIC BODY FRAME

Cordoba Argentina

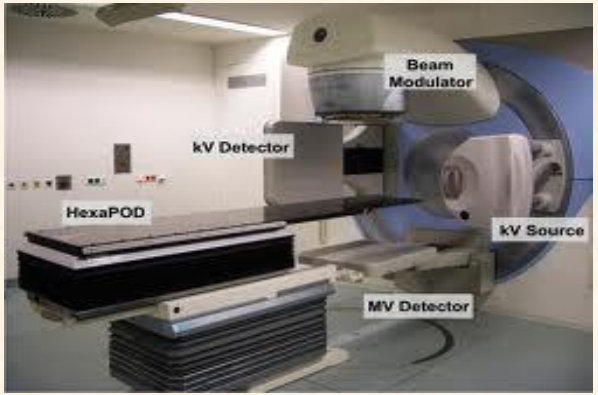
Agosto 2003

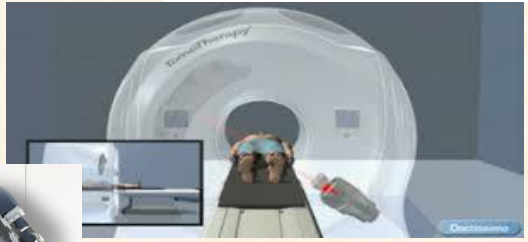
Dr Luis Larrea

E. López, J. Bea, M.C. Baños

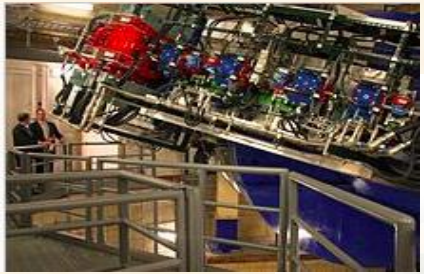
Grandes avances en el diseño de equipos de radioterapia

Acelerador lineal 1985-1990





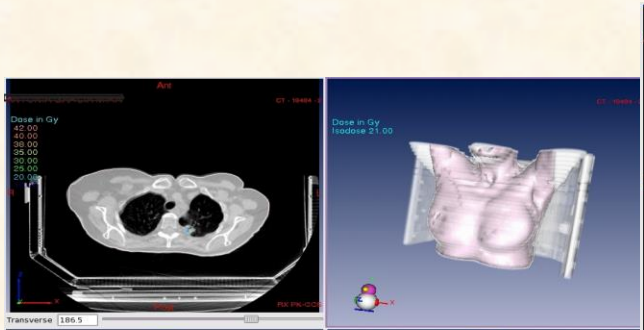
2005-2010-IGRT

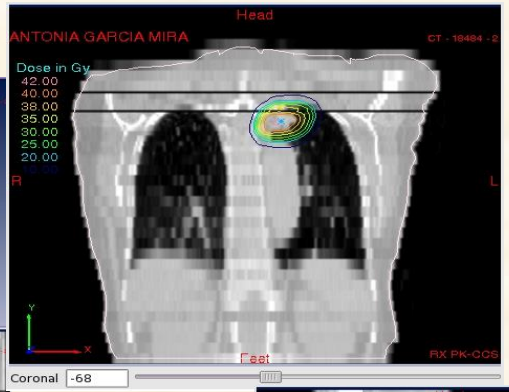


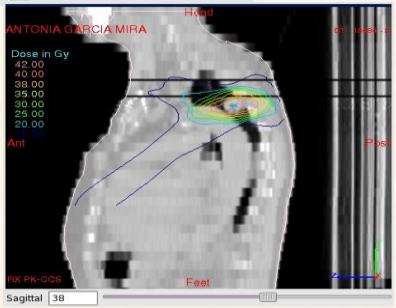
Protones

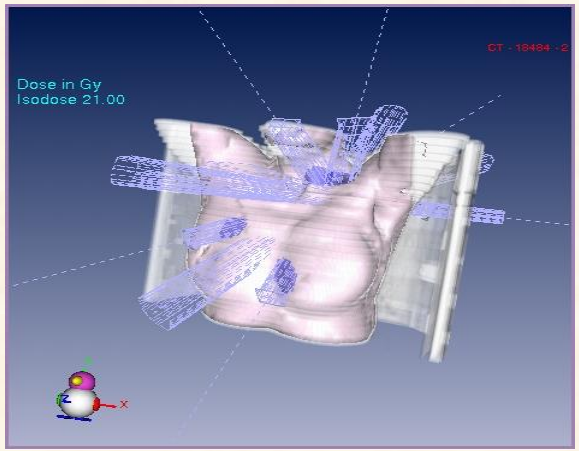
2017-IGRT con Resonancia

Radioterapia adaptativa









Julio 2002-78 años

14 Gy x3 fx

Dosis total 42 Gy

Seguimiento 4 años

Remisión Completa

(82 años-2006)

Fallecimiento por Parkinson y demencia senil

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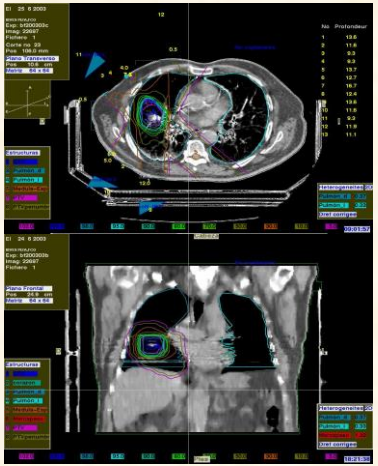
Cancer de pulmón no microcítico precoz Estadío I y IIA

SBRT: Cancer de Pulmón

- Lesiones pulmonares
  - T1, T2,…: 15 Gy x 3 en 1 semana
  - Metástasis: 15 Gy x 3 en 1 semana

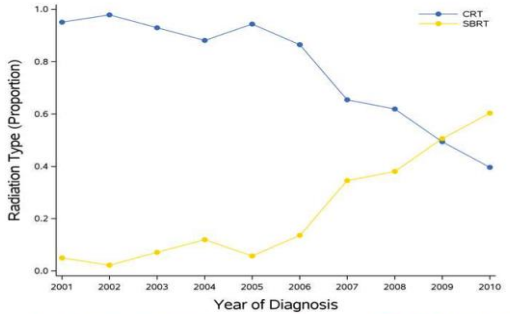
- ASTRO 2008
  - Pulmón es la primera indicación de SBRT.
  - SBRT es un tratamiento estandar
- Justificación
  - Rt, control/supervivencia a 1 año de 30-50%.
  - SBRT control/supervivencia a 1 año 80-100%



Cancer de pulmón no microcítico
EVOLUCIÓN DE RADIOTERAPIA

- **ASTRO 2016 – estadio inicial**

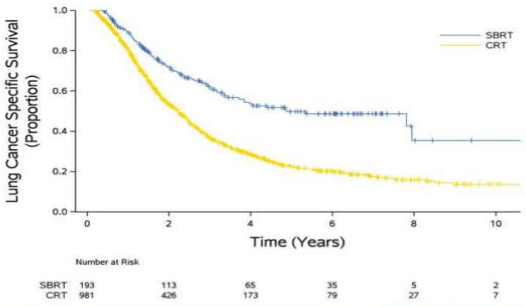
Increasing Use of SBRT



	Year of Diagnosis	
	2001	2010
CRT	95.1%	39.7%
SBRT	4.9%	60.3%

ASTRO 2016 ENHANCING VALUE IMPROVING OUTCOMES

Improved Lung Cancer Specific Survival with SBRT



	4 year LCSS
SBRT	53.2%
CRT	28.3%
HR 0.48 (95% CI 0.38-0.60)	

ASTRO 2016 ENHANCING VALUE IMPROVING OUTCOMES

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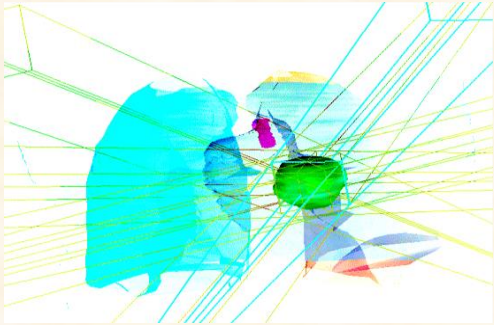
Cancer de pulmón no microcítico
AVANCES EN CALIDAD CLÍNICA

¿Volumen de tratamiento?

4 fronteras: GTV – CTV – ITV –PTV

Inmovilización e IGRT ayudan a disminuir ITV y PTV



¿DOSIS? HIPOFRACCIONAMIENTO

SBRT Deq>100 Gy (1 fx - <5fx – 10fx)

Rt convencional: Dosis radical- 70 Gy (>60 Gy)

¿Boost con SBRT?

postoperatorio – 45-54 Gy

Hipofraccionamiento: Dosis-55 Gy 20fx (275 cGy/fx)

Rt paliativa: ≈30 Gy

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SBRT en 1 fracción en tumores periféricos de pulmón

SBRT for Early-Stage NSCLC – Does Dose Matter?

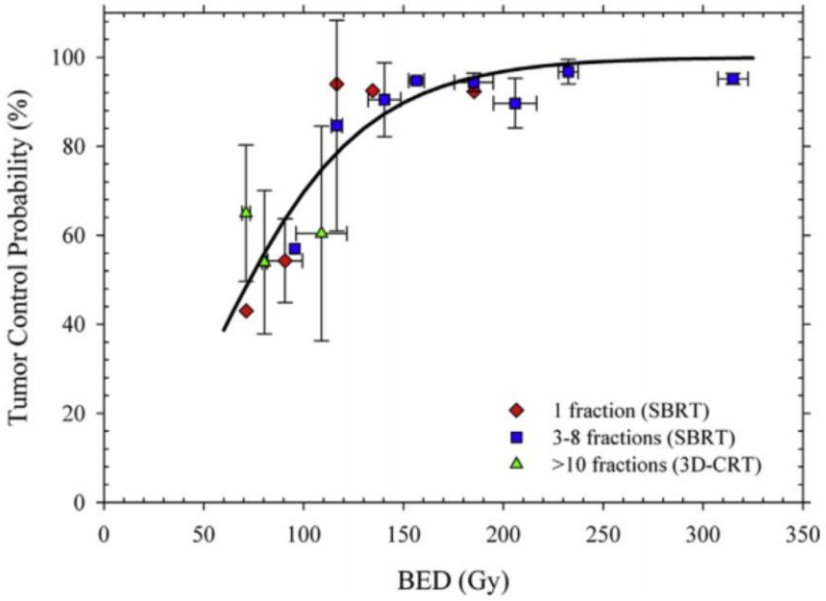


Table 1. Commonly Used Doses for SABR

	Total Dose	# Fractions	Example Indications
BED 88 to 150 Gy	25–34 Gy	1	Peripheral, small
BED 113 to 188 Gy	45–60 Gy	3	Peripheral tumors
BED 106 to 113 Gy	48–50 Gy	4	Central or peripheral tumors <4–5 cm
BED 100 to 116 Gy	50–55 Gy	5	Central tumors
BED 100 to 132 Gy	50–60 Gy	5	Peripheral tumors
BED 96 to 131 Gy	60–70 Gy	8–10	Central tumors

NUEVOS CONCEPTOS EN RADIOTERAPIA

SBRT – Hipofraccionamiento
Efecto Abscopal

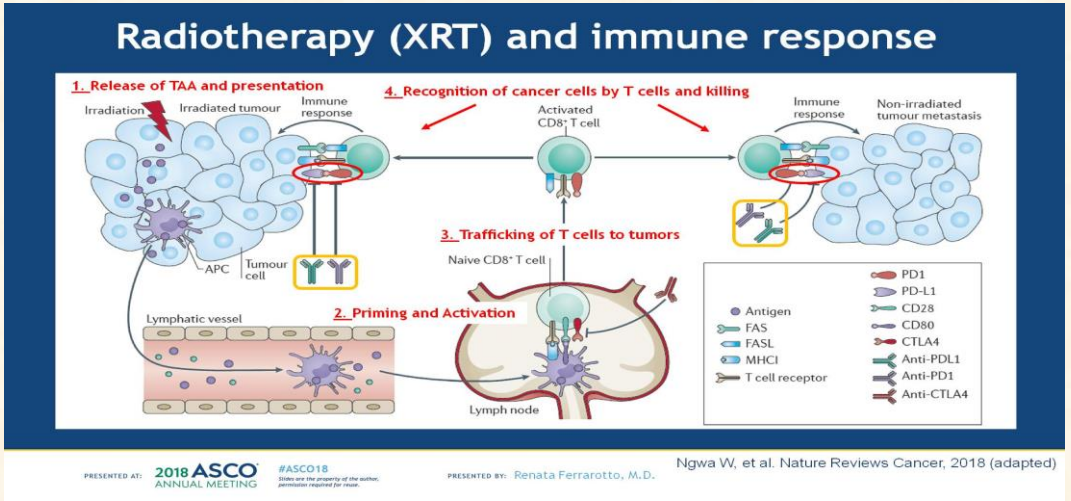
-Tras daño tumoral por alta dosis en SBRT se produce activación del sistema inmune

-Daño en Celulas Madre Cancerigenas –CSC- activa sistema inmune?

.

-Un efecto observado: SBRT-Inmunoterapia

- Nuevas indicaciones para Rt.
- ¿Como sincronizamos con Inmunoterapia?
- Hipofraccionamiento: SBRT
- Nuevos efectos secundarios
- Numerosos ensayos clínicos



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SBRT en 1 fracción en tumores periféricos de pulmón

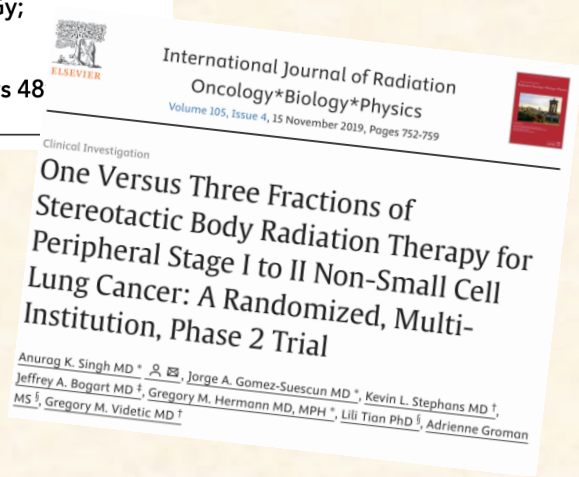
Table 1 Prospective Studies Examining Stereotactic Body Radiation Therapy in Lung Metastases

Study	Type	Number of Metastases Allowed	Site of Metastases	SBRT Dose Fractionation
Palma et al - SABR COMET[9]	Prospective Phase II	1-5	Lung and extrathoracic	30-60Gy/3-8 fr
Palma et al - SABR COMET 10[10]	Prospective Phase III	4-10	Lung and extrathoracic	Single fraction of 20Gy; 30Gy in 3 fr; 35Gy in 5 fr
Salama et al[11]	Prospective single arm	1-5	Lung and extrathoracic	Dose escalation from 24Gy in 3 fr to 48Gy in 3 fr
Nuyttens et al[12]	Prospective Phase II	1-5	Lung only	Single fraction of 30Gy; Central tumors - 60Gy in 3 fr; 60Gy in 5 fr, Peripheral tumors - 60Gy in 8 fr
Rusthoven et al[13]	Prospective Phase I/ II	1-3	Lung only	Ph I - 48 to 60Gy in 3 fr Ph II - 60Gy in 3 fr
Gomez et al[14]	Prospective Phase II	1-3	Lung and extrathoracic	SBRT or other Local Ablative therapies
Iyengar et al[15]	Prospective Phase II	1-5	Lung and extrathoracic	Single fraction 21-27Gy; 26.5-33Gy in 3 fr; 30-37.5Gy/5 fr
Siva et al - SAFRON II[16]	Prospective Phase II	1-3	Lung only	Single fraction 28Gy vs 48

Radiotherapy for Lung Metastases: Conventional to Stereotactic Body Radiation Therapy

Avipsa Das,* Meredith Giuliani,* and Andrea Bezjak*,†

Semin Radiat Oncol 33:172–180 Ó 2022 Published by Elsevier Inc.



International Journal of Radiation Oncology*Biology*Physics
Volume 105, Issue 4, 15 November 2019, Pages 752-759

Clinical Investigation

One Versus Three Fractions of Stereotactic Body Radiation Therapy for Peripheral Stage I to II Non-Small Cell Lung Cancer: A Randomized, Multi-Institution, Phase 2 Trial

Anurag K. Singh MD *, ✉, Jorge A. Gomez-Suescun MD *, Kevin L. Stephans MD †, Jeffrey A. Bogart MD ‡, Gregory M. Hermann MD, MPH *, Lili Tian PhD §, Adrienne Groman MS §, Gregory M. Videtic MD †

SBRT for Early-Stage NSCLC – Is Biopsy Required?

Empiric Radiotherapy for Lung Cancer Collaborative Group multi-institutional evidence-based guidelines for the use of empiric stereotactic body radiation therapy for non-small cell lung cancer without pathologic confirmation

- "We endorse the American Society for Radiation Oncology guidelines on SBRT for early-stage NSCLC recommending that a biopsy prior to SBRT be obtained whenever possible to confirm a histologic diagnosis of malignancy."
- "… if the pretest probability is >85% based on any calculator, then empiric SBRT is an acceptable option."

Transl **Lung Cancer** Res. 2019 Feb;8(1):5-14.

SBRT en 1 fracción en tumores periféricos de pulmón

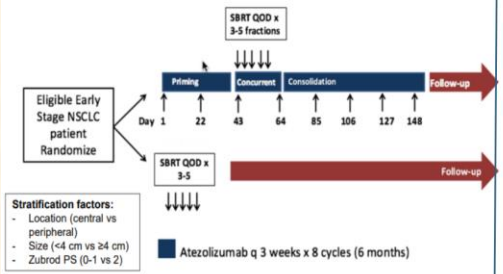
SBRT for Early-Stage NSCLC – Systemic Therapy?

- I-SABR results were promising, but positive phase III trial data are lacking:

Phase III Trials Combining Immunotherapy with SBRT

SWOG 1914 (Atezolizumab)

Primary Endpoint: OS

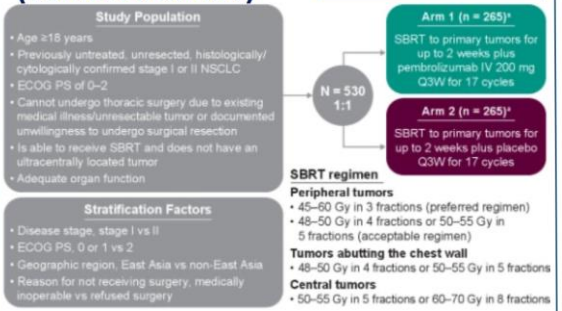


NCT04214262

Closed for futility

KEYNOTE 867 (Pembrolizumab)

Primary Endpoint: EFS+ OS

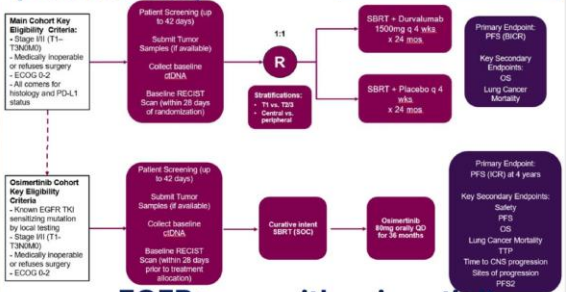


NCT03833154

Closed for futility

PACIFIC-4 (Durvalumab)

Primary Endpoint: PFS



EGFR+ arm with osimertinib

NCT03833154

Completed accrual

SBRT en 1 fracción en tumores periféricos de pulmón

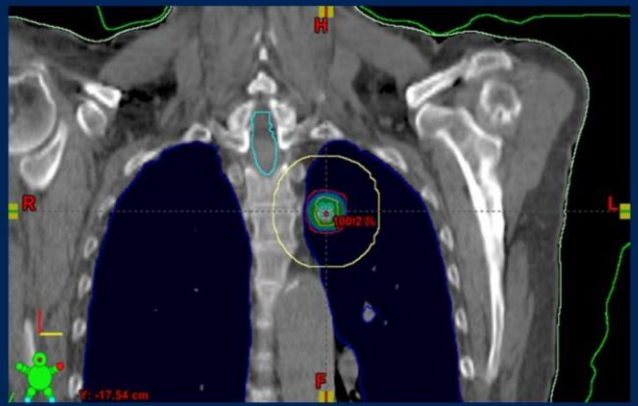
SABR - Background

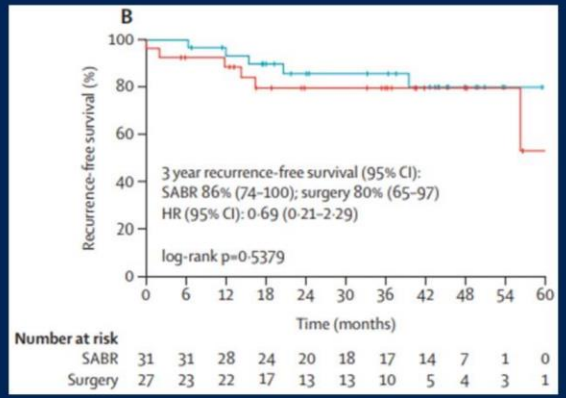
- Treatment outcomes with SABR in stage I NSCLC are comparable with those obtained with surgery.
- Today, SABR is a standard of care local modality in medically inoperable stage I NSCLC and is increasingly being used in high-risk surgical populations, including the elderly and patients with multiple comorbidities.
- With lung cancer screening programs, the number of patients treated with SBRT is expected to grow substantially in the next decade.
- SBRT is also studied in addition to surgery and immuno/chemotherapy in multimodality treatment of stage IB – III NSCLC.

SBRT en 1 fracción en tumores periféricos de pulmón

Results with SABR in Early NSCLC

Joint Analysis of Prematurely Closed STARS and ROSEL Randomized Trials





Chang JY et al., Lancet Oncol. 2015

SBRT en 1 fracción en tumores periféricos de pulmón

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Six Reasons to Combine Drugs and RT

Rationale	Basic idea	Primary endpoint	Example
Spatial cooperation	RT → LR disease CT → DM	LRC & distant progression, PFS	Adjuvant CT + RT for breast cancer
Cytotoxic enhancement	Enhance radiation cell killing	LRC	cDDP + RT in NSCLC
Biological cooperation	Different biological targets	LRC	Tirapazamine + RT
Temporal modulation	Modulate the 4Rs	LRC	Cetuximab + RT
Normal tissue protection	Reduce toxicity	Toxicity	KGF, amifostine
Enhance immune response	Improve antigen presentation with RT	distant progression, LRC, PFS	I/O + RT in stage III and IV NSCLC?

Bentzen, Harari, Bernier Nat Clin Pract Oncol 2007;4: 172-80, modified

SBRT en 1 fracción en tumores periféricos de pulmón

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Clinical Trials with Immunotherapy and SABR in Early NSCLC

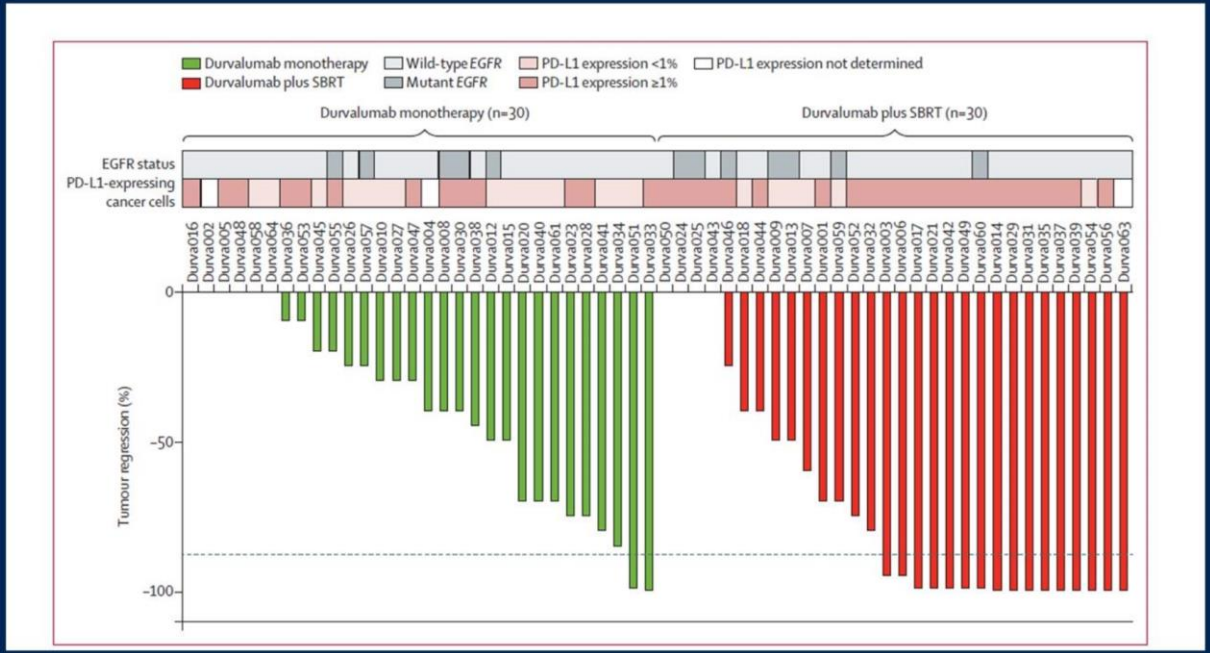
17

	Phase	Tumor Stage	Study Drug	Drug Schedule and Duration	Primary End Point
NCT02599454 (active, not recruiting)	I	cT1-2N0M0: ≥2 cm, or SUV_{max} ≥ 6.2, or Mod-poorly diff/undifferentiated	Atezolizumab	Neoadj, concurrent, and adj. × 6 cycles combined with SBRT (4–5 frx)	MTD
NCT03050554 (terminated)	I/II	cT1-T2aN0M0	Avelumab	Concurrent and adj. 6 cycles with SBRT (4–5 frx)	Safety and RFS
NCT03148327 (active, not recruiting)	I/II	cT1-3N0M0	Durvalumab	Phase II: SBRT vs. SBRT (3, 4, 10 frx) + neoadj. (5 days before), concurrent, and adj. ICI × 5 cycles	Safety and median PFS
NCT03383302 (was recruiting between 2017–2020)	Ib/II	cT1-3N0M0 (≤5 cm, AJCC 7th ed.)	Nivolumab	Adj. starting within 24 h from last frx of SBRT (3–5 frx) for 12 months	≥grade 3 pneumonitis at 6 months after SBRT
NCT04271384 (recruiting)	II	cT1-2aN0M0 (≤4 cm)	Nivolumab	Concurrent × 3 doses with SBRT (3, 5, or 8 frx) before surgery	pCR rate
NCT03110978 (recruiting)	II	cT1-3N0M0; Isolated recurrence	Nivolumab	Concurrent and adj. × 12 weeks (4 cycles) with SBRT (4 or 10 frx)	EFS
NCT04944173 (not yet recruiting)	II	cT1-2N0M0	Durvalumab	4 cycles of ICI, SBRT (4 frx) concurrent with 2nd cycle	Overall recurrence rate at 18 months
NCT03446547 (recruiting)	II	cT1-2N0M0	Durvalumab	SBRT (3–4 frx) vs. SBRT + adj. ICI × 12 months	TTP
NCT03833154 (recruiting)	III	cT1-3N0M0	Durvalumab	SBRT (3–5, 8 frx) vs. SBRT + adj. ICI × 24 months	PFS
NCT04214262 (recruiting)	III	cT1-T3N0M0	Atezolizumab	SBRT (3–5 frx) vs. SBRT + neoadj., concurrent, and adj. ICI for 8 cycles	OS
NCT03924869 (recruiting)	III	cT1-T3N0M0	Pembrolizumab	SBRT (3–5, 8 frx) vs. SBRT + concurrent and adj. ICI × 12 months	EFS, OS

Chi A. and Nguyen NP, Cancers, 2022

SBRT en 1 fracción en tumores periféricos de pulmón

Phase II of neoadjuvant durvalumab + SABR 3 x 8Gy followed by Surgery: waterfall plot of responses



Altorki N. et al., JAMA Oncol 2021

SBRT en 1 fracción en tumores periféricos de pulmón

TABLE 1. Selected Studies in Lung SBRT for Early-Stage Lung Cancer (continued)

Year	Reference	Design	No. of Patients	Population	Dose Schedule	F/U	LC	OS	Toxicity
2018	RTOG 0236[28]	Phase II	55	T1, T2, N0M0 Medically inoperable Peripheral	54 Gy in three fractions	Median: 48 months for all patients 86.4 months seven patients still living	LC, 5-year: 92.7%	OS, 5-year: 40.0%	G3/4: 30.9% (17 of 55)
2014	Videtic et al[29]	Institutional review	80	T1, T2, N0M0 Medically inoperable Peripheral	30 Gy in one fraction (69%) 34 Gy in one fraction (31%)	Median, 30 Gy: 18.7 months 34 Gy: 17.8 months	30 Gy, LC, 1 year: 98.0% 34 Gy, LC, 1-year: 86.2%	30 Gy, OS, 1 year: 75.0% 34 Gy, OS, 1 year: 64.0%	30 Gy, no toxicity: 92.7% 34 Gy, no toxicity: 84.0% No G3 or higher toxicity
2015	RTOG 0915[30]	Phase II	84	T1, T2, N0M0 Medically inoperable Peripheral	34 Gy in one fraction 48 Gy in four fractions	Median: 30.2 months	34 Gy, 1-year LC: 97.0% 48 Gy, 1-year LC: 92.7%	34 Gy, 2-year OS: 61.3% 48 Gy, 2-year OS: 77.7%	34 Gy, G3 or higher: 10.3% 48 Gy, G3 or higher: 13.3%
2019	RTOG 0915[31]	Phase II	84	T1/T2 N0M0 Medically inoperable Peripheral	34 Gy in one fraction 48 Gy in four fractions	Median: 4 years for all patients 6 years for those alive at analysis	34 Gy, 5-year LC: 89.4% 48 Gy, 5-year LC: 93.2%	34 Gy, 5-year OS: 29.6% 48 Gy, 5-year OS: 41.1%	34 Gy, G3 or higher: 2.6% 48 Gy, G3 or higher: 11.1%
2018	RTOG 0618[53]	Phase II	26	T1/T2 N0M0 Medically operable Peripheral	54 Gy in three fractions	Median: 48.1 months	4-Year LC: 96.0%	4-Year OS: 56.0%	G3 AEs: 7.7% No G4/G5 AEs
2019	RPCI[32]	Phase II	98	T1/T2 N0M0 Medically inoperable Peripheral	30 Gy in one fraction 60 Gy in three fractions	Median: 53.8 months	30 Gy, 2-year LC: 94.9% 60 Gy, 2-year LC: 97.1%	2-Year OS: 73.0% 2-Year OS: 62.0%	30 Gy, thoracic G3 AEs: 16.3% 60 Gy, thoracic G3 AEs G3: 12.2% No grade 4/5 AEs
2019	RTOG 0813[34]	Phase I/II	100	T1/T2 N0M0 Medically inoperable Central	Five fractions, dose escalating, 10-12 Gy per fraction	Median: 37.9 months	2-Year LC, 10 Gy per fraction: 87.5% 2-Year LC, 12 Gy per fraction: 87.9%	2-Year OS, 10 Gy per fraction: 75.0% 2-Year OS, 12 Gy per fraction: 72.7%	12 Gy per fraction probability of DLT: 7.2%
2021	Videtic et al[33]	RR	229	T1/T2 N0M0 Medically inoperable Peripheral	30 Gy in one fraction (27.9%) 34 Gy in one fraction (72.1%)	Median, 30 Gy: 36.7 months 34 Gy: 17.2 months	2-Year LC: 92.7%	Median OS: 44.1 months	G3 toxicity: 0.9% No G4/G5 AEs

Abbreviations: AE, adverse event; BED, biologic equivalent dose; DLT, dose-limiting toxicity; F/U, follow-up; G, grade; LC, local control; LF, local failure; MI, multi-institutional; NSCLC, non–small-cell lung cancer; OS, overall survival; PFTs, pulmonary function tests; RCPI, Roswell Park Cancer Institute; RR, retrospective review; RTOG, Radiation Therapy Oncology Group.

SBRT en 1 fracción en tumores periféricos de pulmón

Lung Cancer 170 (2022) 185–193

Contents lists available at ScienceDirect

Lung Cancer

journal homepage: www.elsevier.com/locate/lungcan

Practical considerations of single-fraction stereotactic ablative radiotherapy to the lung

Therese MJ. Kang [a], Nicholas Hardcastle [b,i,j], Anurag K. Singh [c], Ben J. Slotman [d], Gregory Matthias

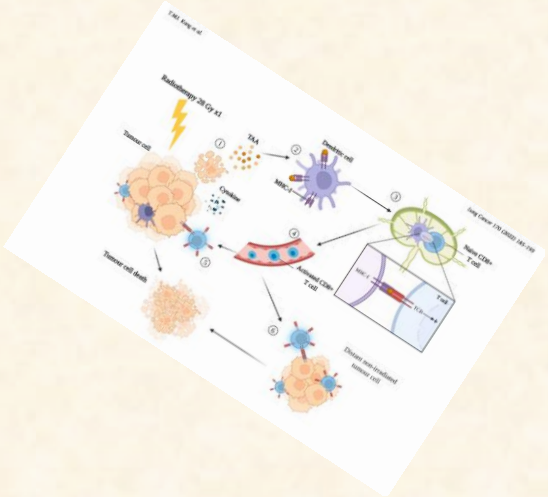


Table 1
Randomised trials in single-fraction SABR in peripheral lung cancer.

Study	Design	Arms	Pt No.	LC	PFS	OS	Any ≥G3 toxicity	Chest wall toxicity	Brachial plexopathy	Multiple lung targets
Videtic et al. 2019 (RTOG 0915) [2, 3]	Phase II T1-2 N0 NSCLC	Arm 1: 34Gy/1 fx	39	2y 97% 5y 89.4%	5y 19.1%	5y 29.6% 2y 61.3%	2.60%	CWP G1-2: 18% No G3	Not reported	Excluded
		Arm 2: 48Gy/4 fx	45	2y 92.7% 5y 93.2%	5y 33.3%	2y 77.7% 5y 41.1%	11.10%	CWP G1-2: 4.4% No G3		
Singh et al. 2019 (Roswell Park) [4]	Phase II T1-2 N0 NSCLC	Arm 1: 30Gy/1 fx	49	2y 94.9%	2y 65%	2y 73%	17%	Thoracic: G1-2: 22% G3: 16% CWP: No difference in QoL	Shoulder/ arm pain: no difference in QoL	Excluded
		Arm 2: 60Gy/3 fx	49	2y 97.1%	2y 50%	2y 62%	15%	Thoracic: G1-2: 20% G3: 12% CWP: No difference in QoL		
Siva et al. 2021 (TROG 13.01 SAFRON II) [5]	Phase II 1-3 lung oligometastases ≤5cm	Arm 1: 28Gy/1 fx	45	1y 93% 3y 64%	3y (DFS) 59%	1y 95% 3y 81%	5%	G1-2: 14% No G3	Not listed in the most frequently reported toxicities in either arm	Arm 1 (no. of lesions: pt no.) 01:27 02:12 03:06
		Arm 2: 48Gy/4 fx	45	1y 95% 3y 80%	3y (DFS) 60%	1y 93% 3y 67%	3% 1 G5 event	G1-2: 21% No G3		

ASTRO'S 67TH ANNUAL MEETING

REDISCOVERING RADIATION MEDICINE AND EXPLORING NEW INDICATIONS

Single-Fraction Lung SBRT for Primary and Metastatic Lung Tumors: Ten-Year Experience

L. Larrea1, E. Lopez2, M. C. Banos3, J. Lago2, and M. A. Berenguer Francés4
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INTRODUCTION

In the early twenty-first century, SBRT for lung cancer and lung metastasis saw significant changes, and now only one session was thought to be comfortable for patients.

AIM

The aim of this study is to review 10 years of single-fraction lung stereotactic body radiation therapy (SF- SBRT) evaluated in terms of survival, local control and toxicity.

METHOD

Between 2002 and 2023, 364 patients with 412 lung tumors were treated with SBRT at our institution. Of those,65 lesions in 57 patients were treated using a SF-SBRT 30 Gy fraction between 2013 to 2023

The main decision factors for selecting SF-SBRT include peripheral lung lesions and diameters less than 4 cm. The SBRT procedure involveds slow-scan CT simulation with immobilization devices, contouring the target volume in 3 sets of CT to define GTV, ITV and PTV, and dose calculation using heterogeneity correction. Radiation therapy plan and delivery was 3D, IMRT or VMAT. The prescribed dose was 30-Gy single fractionwith at least 95 % of the ITV covered by the 95% isodose volume. Dosimetric constraints were established for the surrounding organs at risk. Three cone-beam CT scans (2 previous and 1 after radiation administration) were performed to verify, adjust positioning and quality assurance. Toxicity and radiologic response wereassessed in follow- up visits, using standardized criteria (RTOG and RECIST) and analyzed retrospectively.Survival rates and toxicities were calculated using the Kaplan-Meier method.

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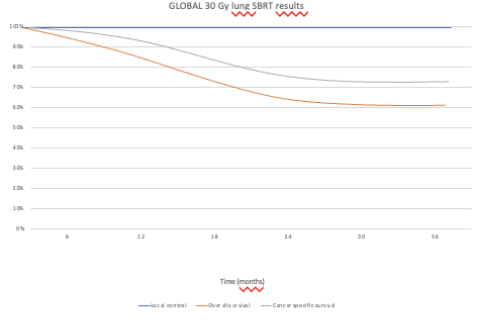
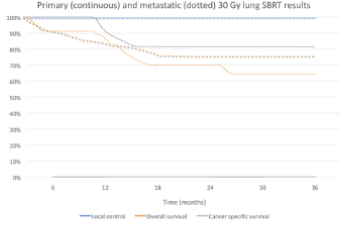
RESULTS

The median patient age was 71 years (51-87). All patients had a good performance status at the moment of treatment (ECOG PS 0-1). Because of the patient's comorbidities or preferences, none were surgical candidates. The FEV1 was over 30 % of the predicted value in all cases. 60 % of all patients also receivedsystemic treatment before or after SBRT. 89,3 % of the patients had 18- FDG PET-CT prior to SBRT. There were 23 primary tumors (T1N0M0: 7 adenocarcinoma, 4 epidermoid, 2 undi!erentiated non-small cell lungcancer and 12 PET positive tumors without histology determined) and 42 oligometastases from various origins(23 colo-rectal, 16 contralateral lung non-small cell cancer, 1 thyroid, 1 renal cell, 1 sarcoma). The tumor ITV was 3.4 cc (0.6-24.3). No acute toxicities grade III or more was identified. In the follow-up CT, 5 patients hadasymptomatic radiation neumonitis. The overall median follow-up was 61 months (9 - 130). The overallsurvival rates for the 1, 2 and 5-year were 93, 73 and 54%. The cancer- specific survival for the 1, 2 and 5-yearwere: 95%, 80% and 60%. Local control in the irradiated volume is 99,3 %, with 11 distant thoracic (outside irradiated volume) recurrences.





CONCLUSIONS

In selected patients with primary and metastatic lung tumors, SF-SBRT is an excellent treatment option in terms of survival, local control and toxicity. Outcomes from this analysis are comparable to published results and validate the use of this schedule in routine practice. In the absence of phase 3 trials, this study should encourage increased use of SF-SBRT for inoperable tumors.

CONTACT INFORMATION

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SBRT en 1 fracción en tumores periféricos de pulmón

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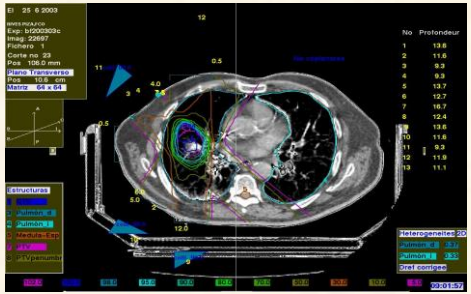
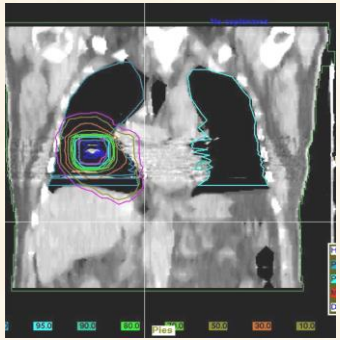
Introducción

Desde el inicio del sXXI la SBRT de pulmón, tanto para primarios como metástasis ha sufrido cambios de concepto, volumen, fraccionamiento, etc.
Ofrecer una sóla sesión es cómodo para los pacientes

Nuestra esperiencia en SBRT parte del 2001, inicalmente tratabamos a todos en 3 sesiones (42-45 Gy)



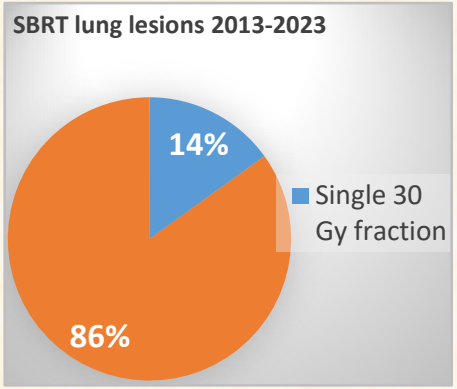


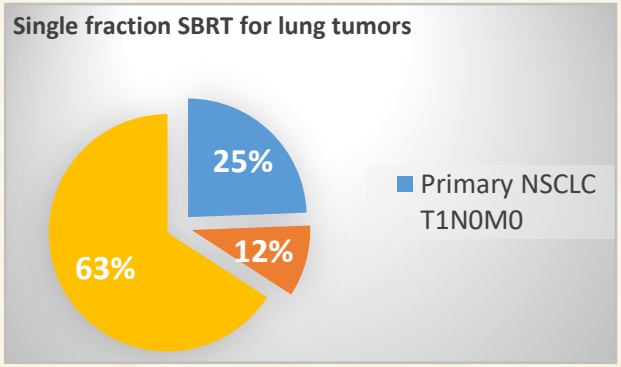
SBRT en 1 fracción en tumores periféricos de pulmón

Metodo

Entre 2002 and 2023, pacientes con más de 500 tumores de pulmón fueron tratados mediante SBRT en nuestro centro.
De estos, 65 tumores en 57 pacientes fueron tratados mediante una dosis única de 30 Gy, entre 2013 a Diciembre de 2020.
Desde 2008 se habían tratado con dosis única unos 20 pacientes más y 25 tumores más sin la sistemática actual, aunque con excelente resultado.

Un factor decisivo en la selección de pacientes para esta SBRT ha sido: **lesión periférica de menos de 4 cm**





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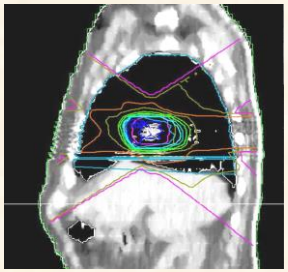

Metodo

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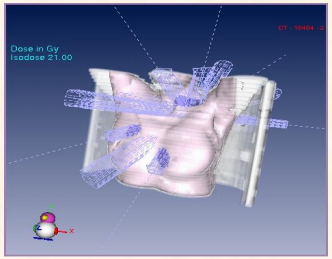
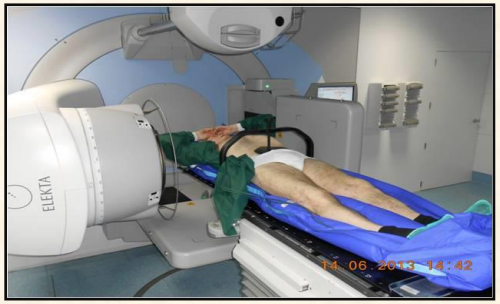
SBRT proceso clínico:

-Simulación con Slow-scan computed tomography (CT) con elementos de inmovilización, contorneo en 3 sets de CT, fusión de los volúmenes para obtener el ITV.

-Cálculo de dosis con corrección por la heterogeneidad pulmonar.

-Radiacion, con multiples haces estáticos planar o no coplanar o mediante arcos, asegurando la conformación de la dosis, su distribución y un gran gradiente de dosis fuera del tumor.





Metodo: dosimetría.

Dosis prescrita: 30-Gy (100%) en 1 sesión, al menos el 95 % del PTV cubierto por el 95% de la isodose.
Se respetaron constraints de órganos de riesgo.

Repitiendo el cone-beam CT (2 previos y 1 tras la iradiación) se han utilizado para ajustar la posición y verificación final.

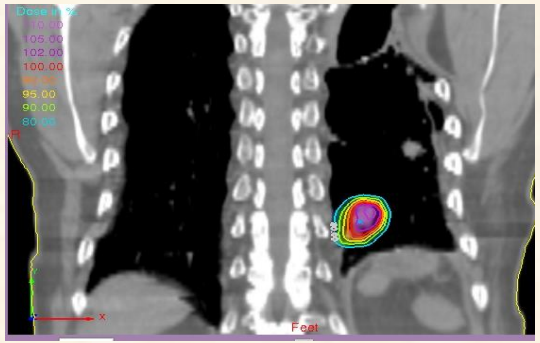
Treatment and dosimetry	
Tumor CT diameter PTV	 15.8 mm (5.5-50 mm) 8.23 cm^3 (1.9-26.9 cm^3)
Heterogenity index	0.13 (0.01-0.8)
% D_{max}	105% (100.4-126.6%)
Organs at risk Spinal cord D_{max} Lung V20	 4.1 Gy (0.04-9.2 Gy) 1.8% (0.05-8%)

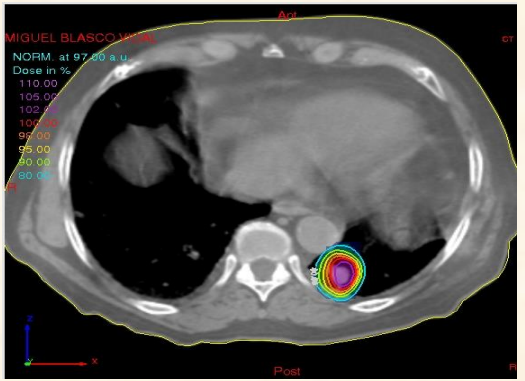
SBRT en 1 fracción en tumores periféricos de pulmón

Metodo

La respuesta y toxicidad se fueron valorando en el seguimiento, se utilizaron criterio estandar (RTOG and RECIST) y analisis retrospectivo.

Supervivencia y toxicidad han sido calculadas con el método Kaplan-Meier.





SBRT en 1 fracción en tumores periféricos de pulmón

Resultados

Edad media de 71 años (51-87).

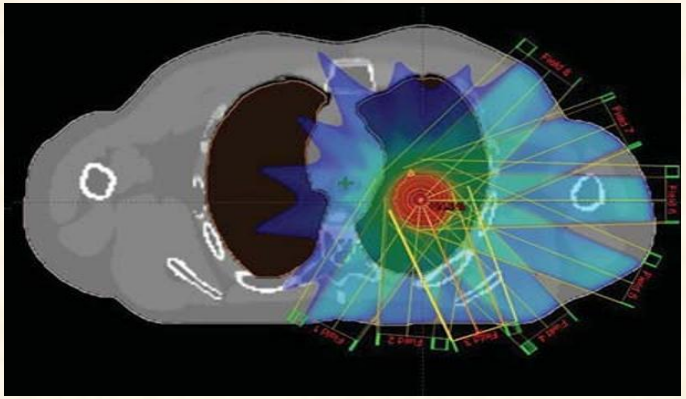
ECOG PS 0-1

-Ninguno era subsidiario de cirugía: condiciones clínicas o preferencias propias

FEV1 estaba sobre el 30 % en todos.

60 % de los pacientes recibieron tratamiento sistémico antes o después de SBRT.

89.3 % tenían 18-FDG PET-CT previo a SBRT.



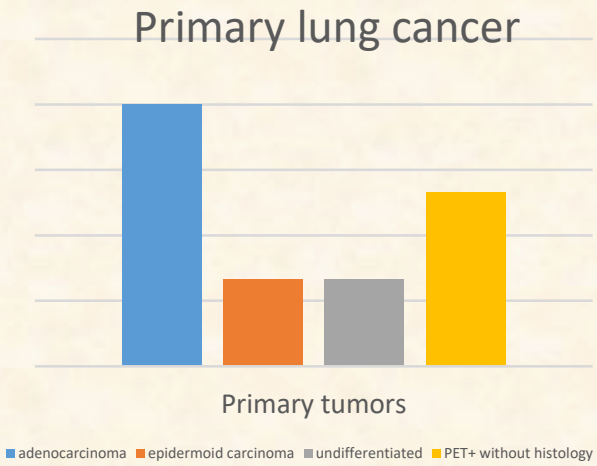
SBRT en 1 fracción en tumores periféricos de pulmón

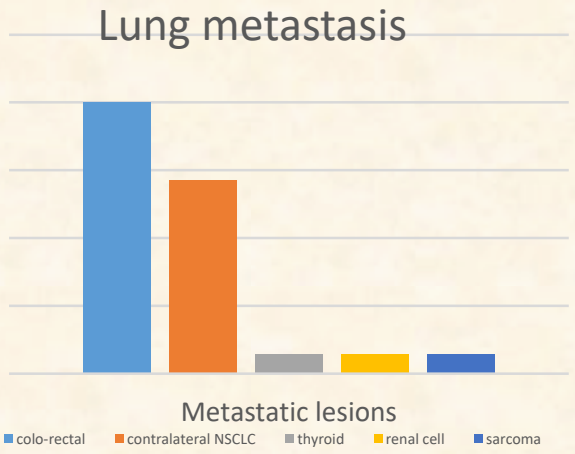
Resultados

23 pacientes tenían un tumor primario (T1-2 N0 M0) y 35 pacientes SBRT: 7 adenocarcinoma, 4 squamous cell carcinoma, 2 undifferentiated non small cell lung cancer and 12 PET positive tumors without histology determined)

42 oligometastasis de varios orígenes (23 colo-rectal, 16 contralateral lung non small cell cancer, 1 thyroid, 1 renal cell, 1 sarcoma).

Volumen medio (ITV) fue de 3.4 cm^3.





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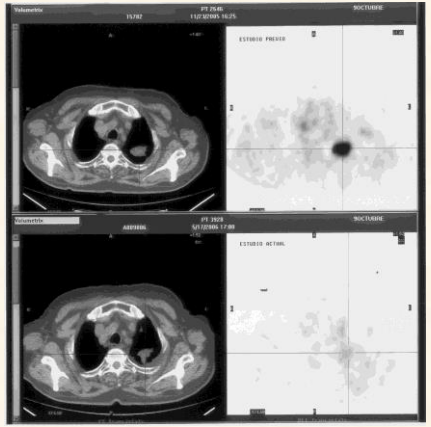
Resultados

Seguimiento mediano de 61 meses (9-130)



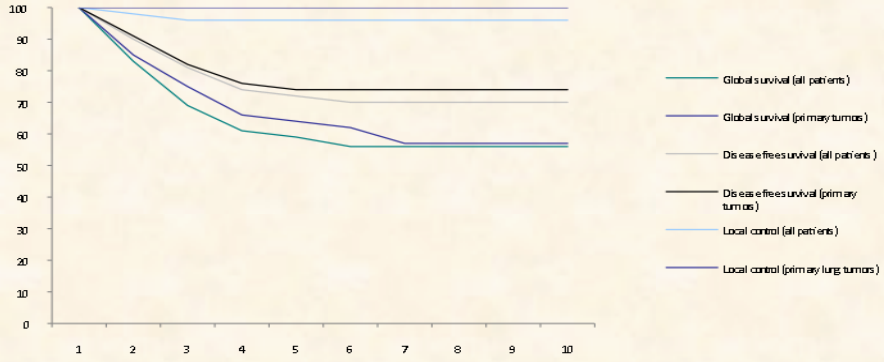
No toxicidad aguda >GIII.

5 pacientes con neumonitis asintomática en TAC.

- Supervivencia global a los 1, 2 and 5 años: 93%, 73% y 54 %.
- Supervivencia cancer-específica a los 1, 2 and 5 años: 95%, 80% y 60%.
- Control local en el volumen irradiado: 99.3 %

11 recidivas pulmonares distantes

(fuera del volumen irradiado).

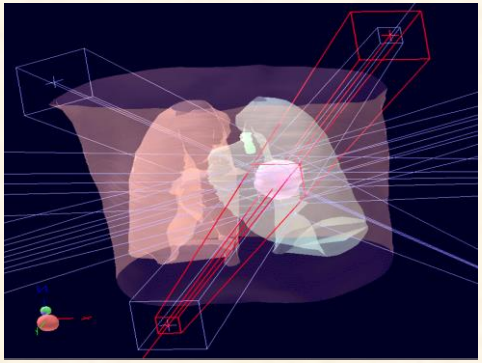


Conclusiones

En pacientes seleccionados con tumores de pulmón primario o metastásico la SBRT en 1 fracción puede ser una excelente opción de tratamiento, evaluando la supervivencia, el control local y la toxicidad.

Los resultados de este análisis apoyan el uso de esta modalidad ya que son comparables a los de SBRT con 3-5 fracciones de uso rutinario. No hay estudios en Fase III.

SBRT de pulmón en 1 fracción es costo-eficiente



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REDISCOVERING RADIATION MEDICINE AND EXPLORING NEW INDICATIONS

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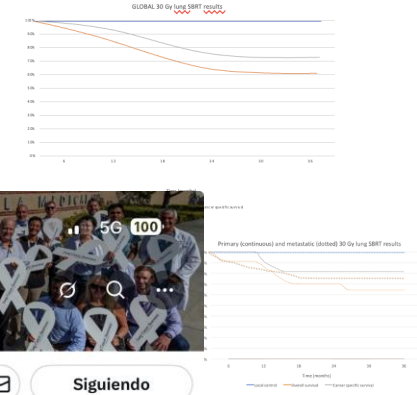

CONCLUSIO

In selected patie excellent treatme Outcomes from th use of this sched study should enco

ONTACT INFORMATION

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Cancer de pulmón
ESTADO DE LA RADIOTERAPIA

- CONSIDERACIONES GENERALES 2025
  - Objetivos: máximo control local y mínimos efectos secundarios
  - Coste/eficiencia real con equipos y protocolos actuales

HIPOFRACCIONAMIENTO

- Tiempo corto de tratamiento = menos costo
- Volumenes más restringidos = menos toxicidad
- Mayor control local con mayor dosis = mayor supervivencia
- Efecto Inmunopotenciador – Efecto abscopal

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SBRT en 1 fracción en tumores periféricos de pulmón

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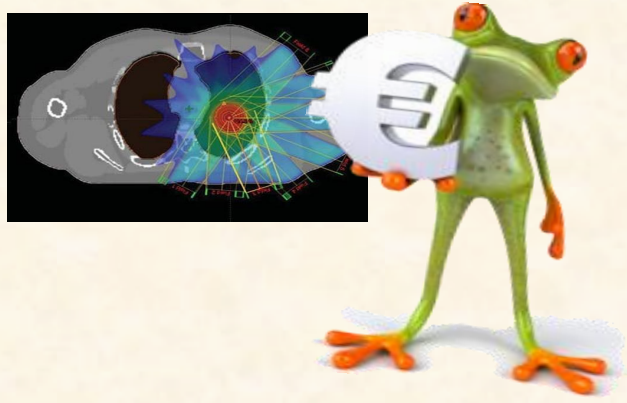

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18:15 a 18:30 hs
SBRT en 1 fracción en tumores periféricos
Luis Larrea

Muchas gracias

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