UPMC San Pietro FBF

ADVANCED RADIOTHERAPY CENTER

CENTRO DI RADIOTERAPIA AD ALTA SPECIALIZZAZIONE

«Esperienza mono-istituzionale di Stereotactic Body Radiation Therapy (SBRT) nelle lesioni polmonari: analisi clinico-dosimetrica"

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IL NOSTRO CENTRO

- **UPMC San Pietro FBF**
- **TrueBeam sTx**
- **Inaugurazione Gennaio 2013**

Dati della nostra esperienza nei trattamenti SBRT in pazienti affetti da LESIONI POLMONARI, PRIMITIVE/SECONDARIE, non candidabili alla chirurgia.

QUALI DOSI, FRAZIONAMENTI, LC e OS?

RETROSPECTIVE STUDIES ON SBRT IN INOPERABLE NSCLC

		Number of Patients	Median Fup (Months)	Dose Gy/fx	Local control	OS
Uematsu et al 2001		50	36	50-60 Gy / 5-10 fx	94%	3-yr 66%
Wulf et al. 2004		20	11	26-37.5 Gy / 1-3 fx	92%	2-yr 32%
Onishi et al. 2004		35	13	60 Gy / 10 fx	88%	2-yr 64%
Onimaru et al. 2008		28	27	48 Gy / 4 fx	64%	IA 3-yr 82% IB 3-yr 32%
Takeda et al. 2009		63	31	50 Gy / 5 fx	95%	IA 3-yr 90% IB 3-yr 63%

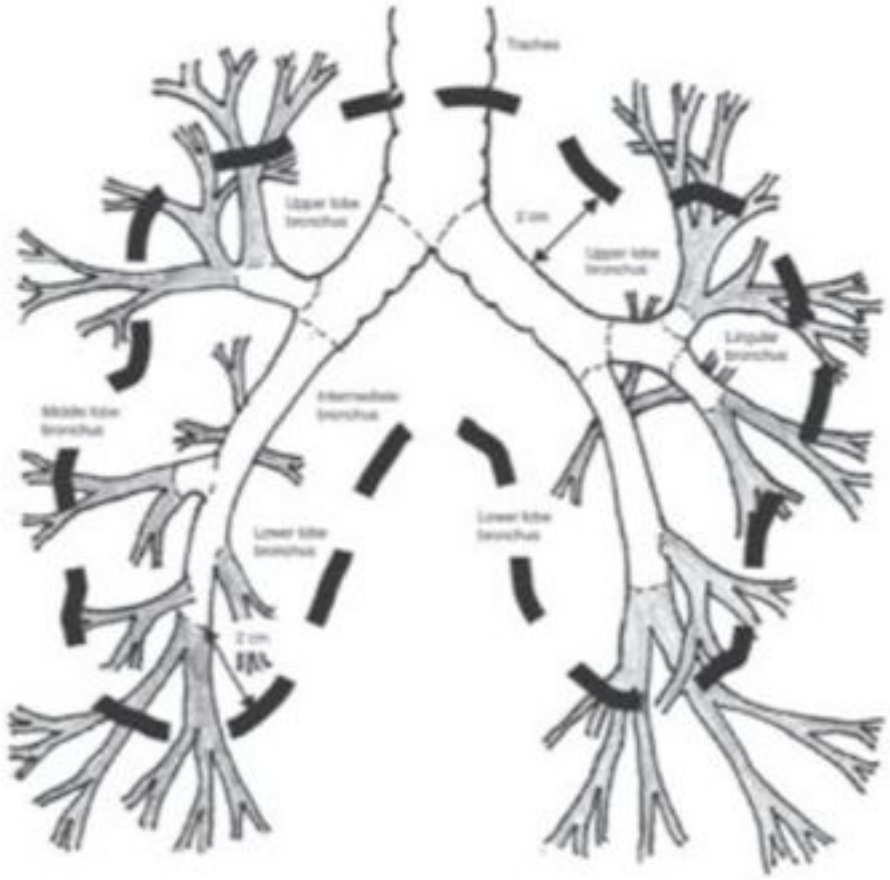
PROSPECTIVE PHASE II STUDIES ON SBRT IN NSCLC

		Number of Patients	Median Fup (Months)	SABR dose	Local control	OS
Nagata et al 2005		45	30	48 Gy/4 fx	30mo 98%	3-yr 75%
Baumann et al. 2009		57	35	45 Gy/3 fx	3-yr 92%	3-yr 60%
Fakiris et al. 2009		70	50	60 Gy/3 fx	3-yr 88%	3-yr 43%
Ricardi et al. 2010		62	28	45 Gy/3 fx	3-yr 88%	3-yr 51%
Timmerman et al. 2010		54	34	54 Gy/3 fx	3-yr 98%	3-yr 38%
Bral et al. 2011		40	16	60Gy/3 fx	2-yr 84%	2-yr 52%

TRIALS DI SBRT PER M+ POLMONARI

	Number of Patients	Median dose / no fractions	Median FU (range)	Local control rate	OS
Okunieff et al. 2006	50	50Gy/10 fx	18.7(3.7-60.9)	3-yr 91%	2-yr 50%
		48Gy/6 fx			
		54Gy/3 fx			
Norihisa et al 2008	34	48Gy/4 fx	27(10-80)	2-yr 90%	2-yr 84%
		60Gy/5 fx			
Le et al 2006	32	15Gy/1 fx	-	1-yr 54%	
		20Gy/1 fx		1-yr 54%	
		25Gy/1 fx		1-yr 91%	
		30Gy/1 fx		1-yr 91%	
				2-yr 67%	
Salama et al 2011	61	24Gy/3 fx	20.9(3-60.5)	1-yr 67.2%	2-yr 56.7%
		48Gy/3 fx		2-yr 52.7%	
Rushoven et al 2009	38	60Gy/3 fx	15.4(6-48)	2-yr 96%	2-yr 39%
Ricardi et al 2012	61	45Gy/3 fx	20.4(3-77)	2-yr 89%	2-yr 66.5%
		26Gy/1 fx			

FRAZIONAMENTI MAGGIORMENTE UTILIZZATI

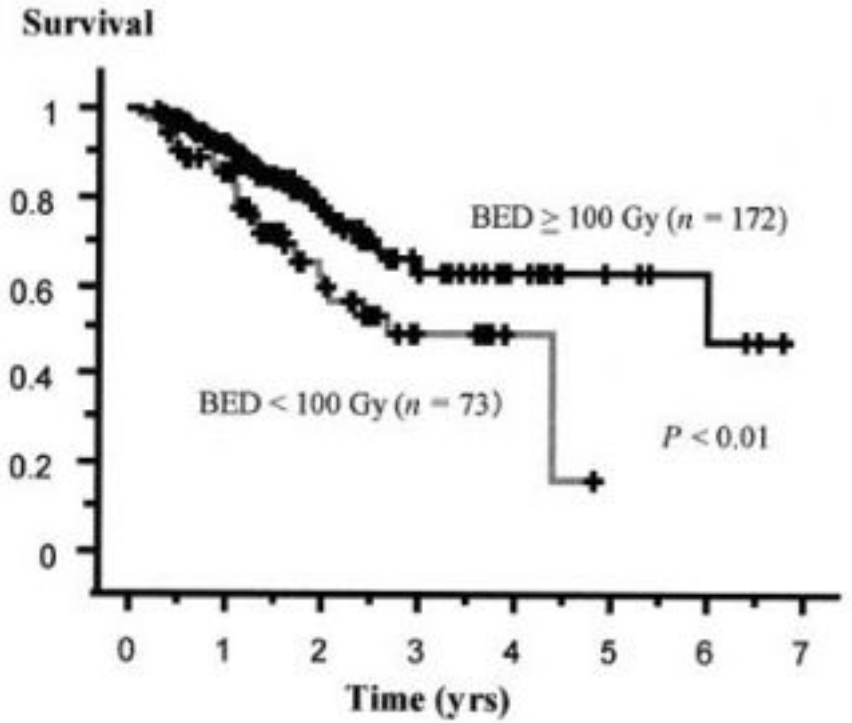


- Lesioni periferiche ≤ 2-3 cm:
  DOSE 18-20 Gy X 3 fx
  (BED 10: 151-180 Gy)

- Lesioni in prossimità della parete toracica:
  DOSE 11-12 Gy X 5 fx
  (BED 10: 115-132 Gy)

- Lesioni adiacenti l'ilo, il mediastino, il cuore:
  DOSE 7,5-8 Gy X 8 fx
  DOSE 12 Gy X 4 fx
  DOSE 10 Gy x 5 fx
  (BED 10: 100-105Gy)

IL NUMERO MAGICO



ONISHI, JTO 2007

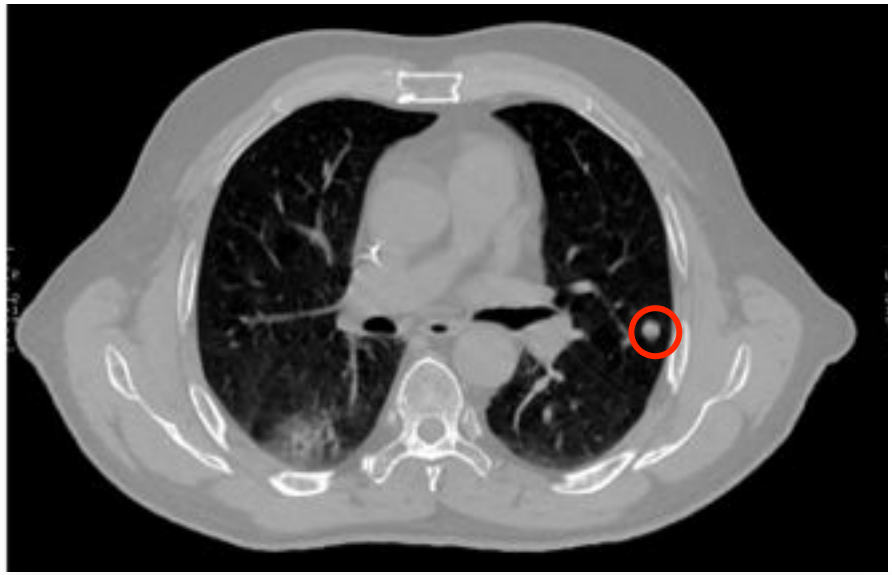
- Non esiste consenso su quale sia il frazionamento migliore
- Consenso su BED > 100 o di poco inferiore

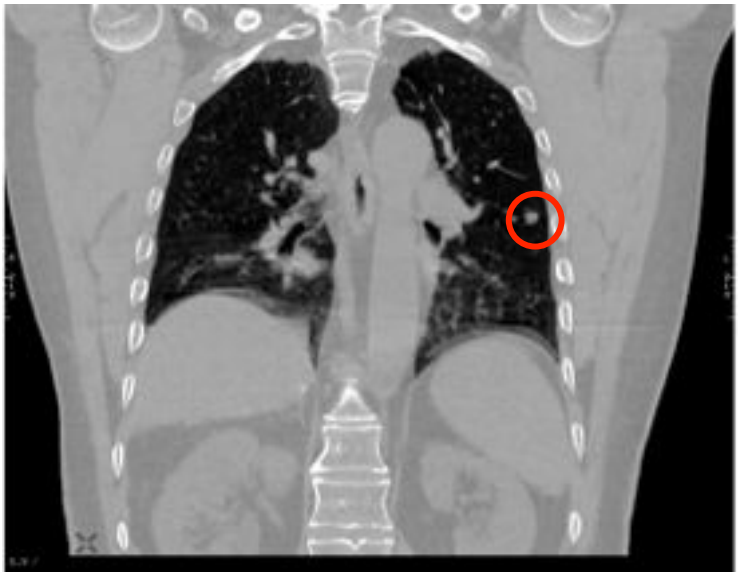
CARATTERISTICHE DEI PAZIENTI E DEI TRATTAMENTI

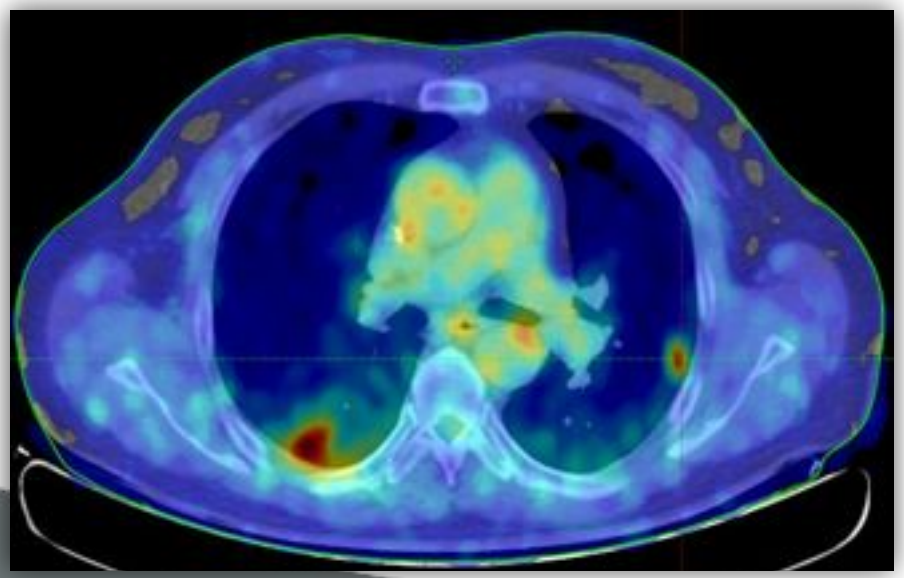
Patients		26	
Median age (y)		71	(32 - 86)
Gender			
Male		21	81%
Female		5	19%
Lesions		43	
Primary Tumor			
NSCLC		20	46%
Rectum		15	35%
Colon		3	7%
Anus		3	7%
H&N		2	5%
Tumor diameter (cm)			
Lesioni periferiche ≤ 2.0 cm	60 Gy/3 fz	3	7%
Lesioni periferiche 2.0 – 3.0	54 Gy/3 fz	18	43%
Lesioni centrali	50 Gy/5 fz	11	25%
Lesioni > 5cm	40 Gy/5 fz	11	25%
Prescription dose			
BED 10 ≥ 100 Gy		32	75%
BED 10 < 100 Gy		11	25%
FUP median (months)	11 (2.10- 21.07)		

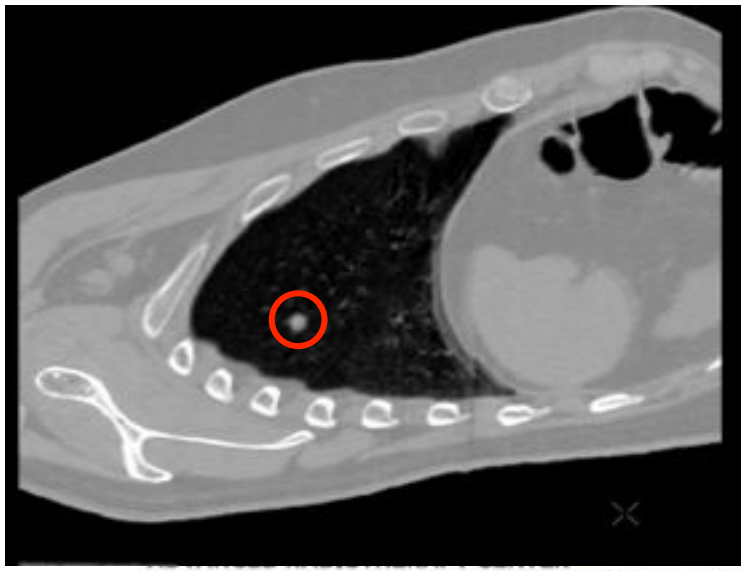
METODI

Gating respiratorio e PET/TC pre- e post- (6 mesi)





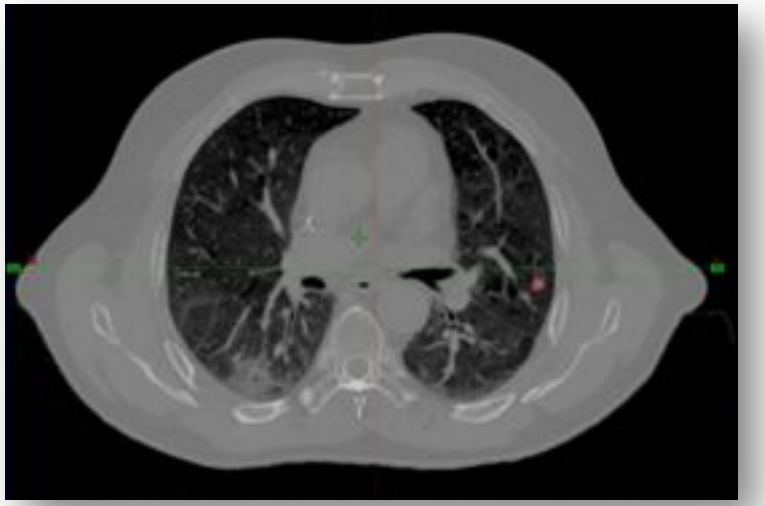




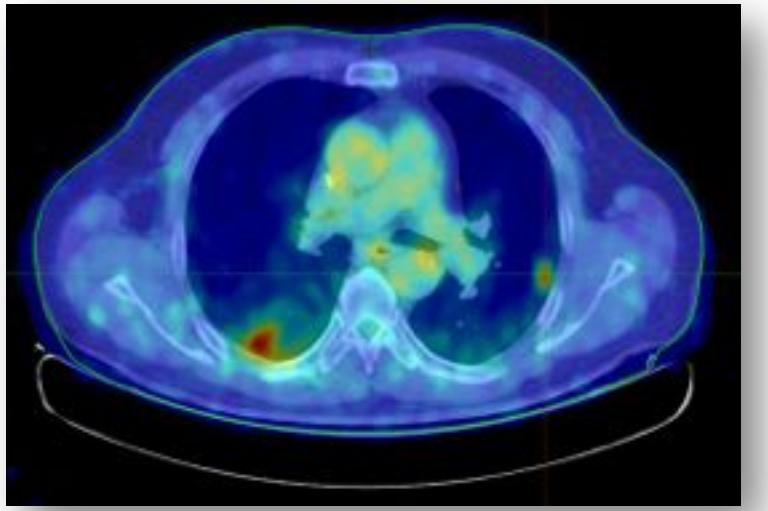
RISULTATI

54Gy/3fr

TC Centraggio

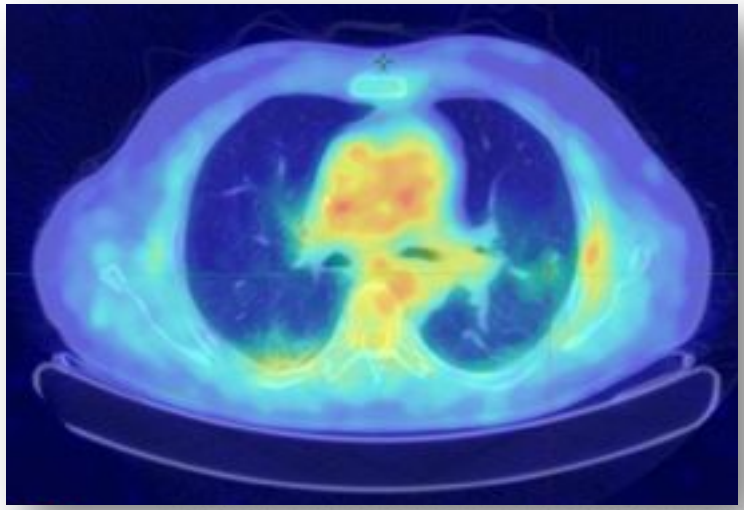


PET/TC pre-trattamento



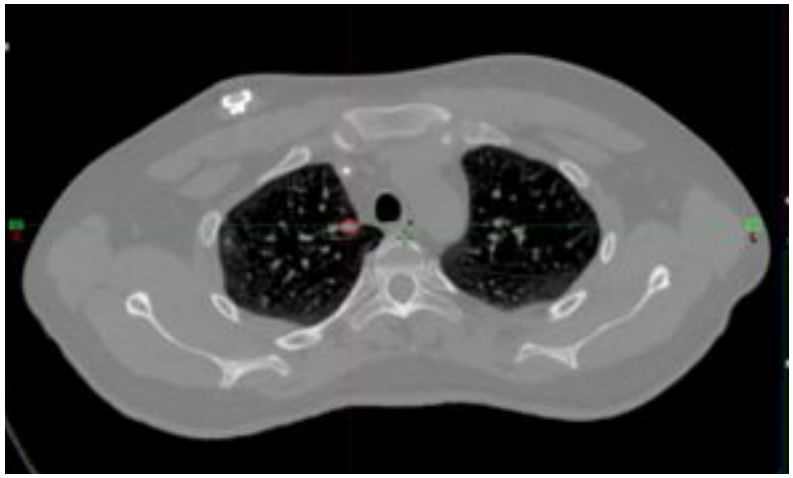
TC a 6 mesi

PET/TC a sei mesi

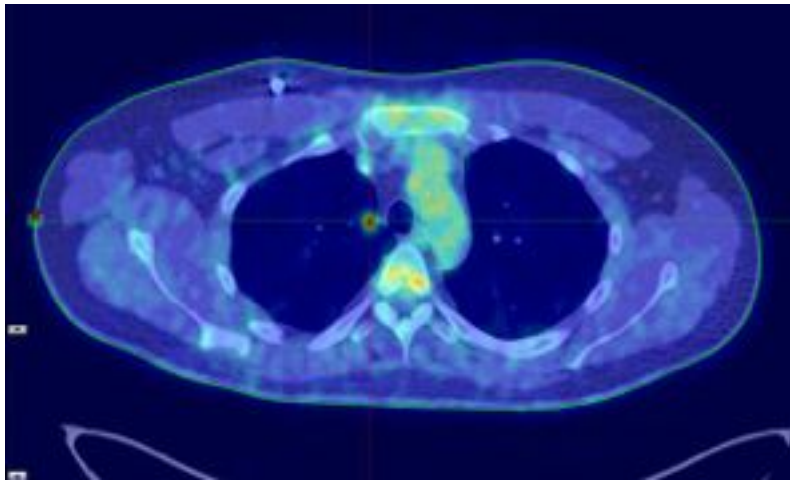


50Gy/5fr

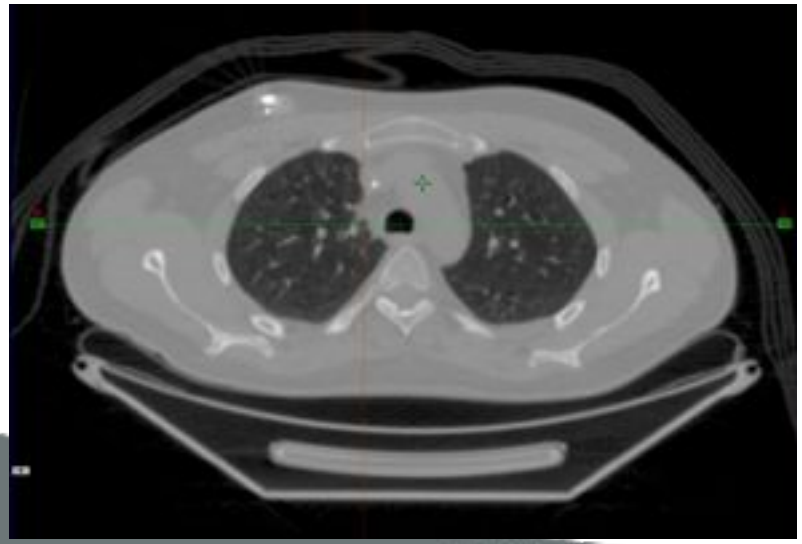
TC Centraggio



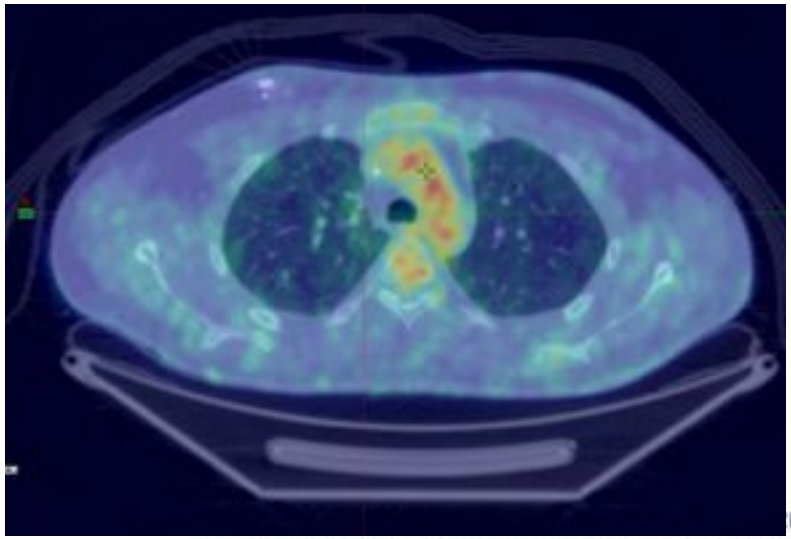
PET/TC pre-trattamento



TC a 6 mesi

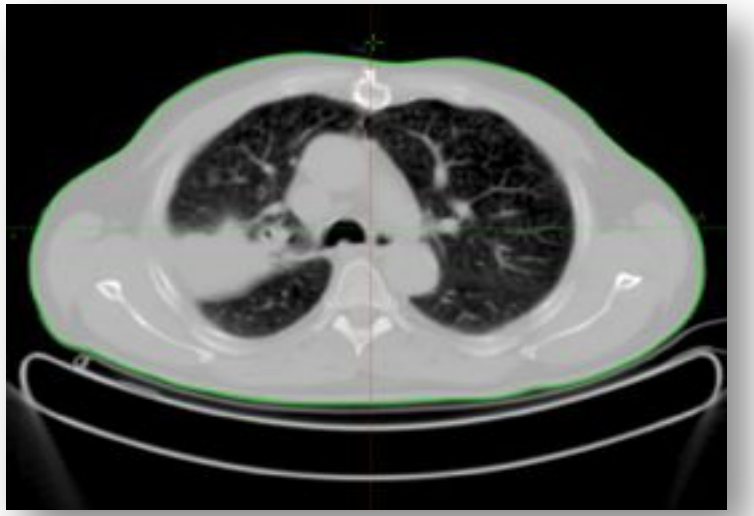


PET/TC a 6 mesi

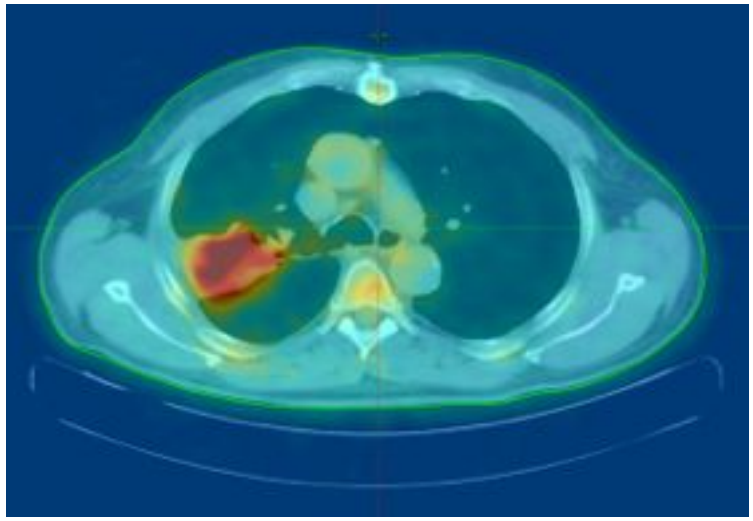


40Gy/5fr

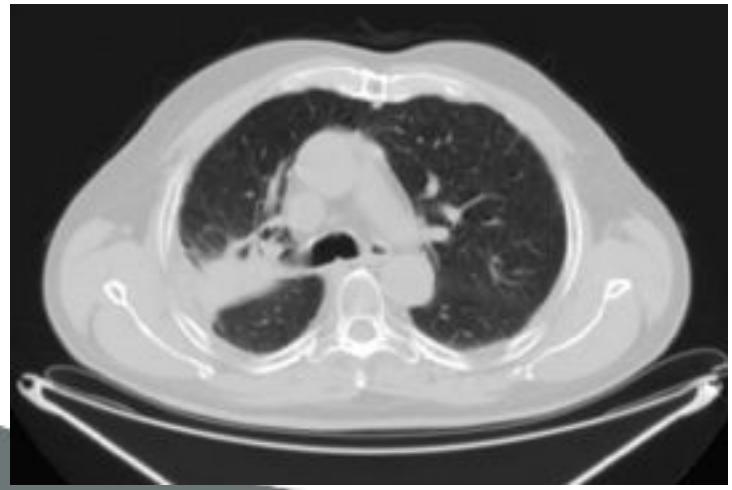
TC Pre-trattamento



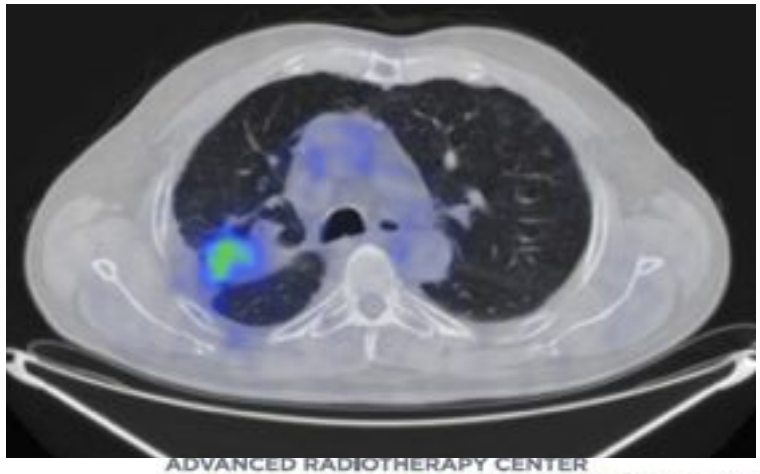
PET/TC pre-trattamento



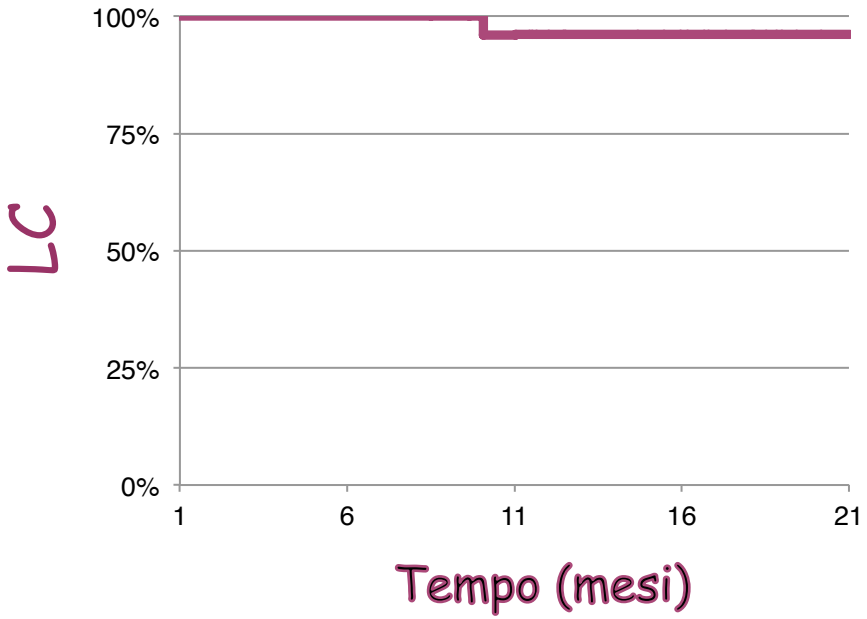
TC a 6 mesi

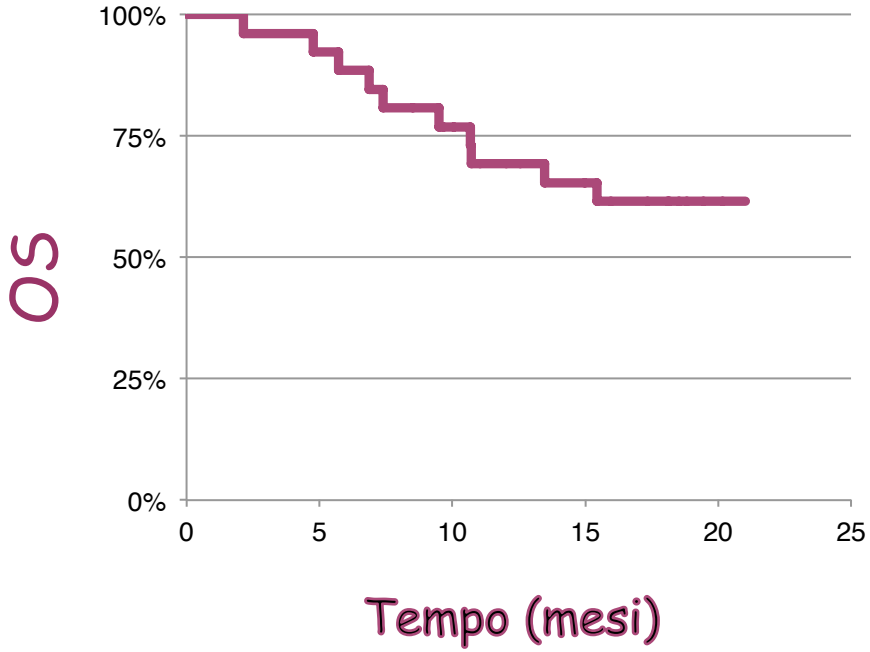


PET/TC a sei mesi



Risultati…





LC 12 MESI
95%

OS 12 MESI
62%

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TOSSICITA'

	Number of Patients	Median Fup (Months)	Dose/fr	G2	G3	G4	G5
Onishi et al 2004	245	24	18-75Gy / 1-25 fr	6.50%	1.20%	1.20%	0%
Baumann et al 2008	60	23	45Gy / 3fr	NA	21%	0%	0%
Ricardi et al 2009	60	30.9	45Gy/3fr or 26Gy/1fr	14.30%	3.20%	0%	0%
Stephans et al 2009	86	15.3	60Gy/3 fr or 50 Gy 5fr	2.30%	0%	0%	0%
Timmerman et al 2010	55	34.4	60Gy/3fr or 54Gy/3fr	NA	12.70%	3.60%	0%
Yamashita et al 2010	117	14.7	48Gy/4fr	NA	1.70%	1.70%	6%
Nagata et al 2010	104	46.8	48Gy/4fr	NA	6.20%	0%	0%
Guckenberger et al 2010	59	13	26Gy/1fr or 37.5 Gy/3fr	18.60%	0%	0%	0%
Matsuo et al 2012	74	31.4	48Gy/4fr	20.30%	1.40%	0%	0%
Barringer et al 2012	84	17	24-66Gy/3-5 fr	9.40%	2%	0.40%	0%
Baker et al 2013	240	15.6	Multiple	11%	1.10%	0%	0%
				8%	**0%**		

CONCLUSIONI

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- Conferma dei dati della letteratura per LC e tossicità
- Anche nei casi palliativi è possibile utilizzare un frazionamento ablativo con risultati incoraggianti

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- Nelle lesioni polmonari primitive o secondarie l'ipofrazionamento ablativo può essere una valida opzione terapeutica per i centri che dispongono di sistemi tecnologicamente avanzati.

GRAZIE !