XXXIII CONGRESSO NAZIONALE AIRO

AIRO2023

BOLOGNA,
27-29 OTTOBRE 2023
PALAZZO DEI CONGRESSI

Radioterapia Oncologica: l'evoluzione al servizio dei pazienti

La caratterizzazione della malattia oligometastatica: numero di lesioni o volume di malattia?

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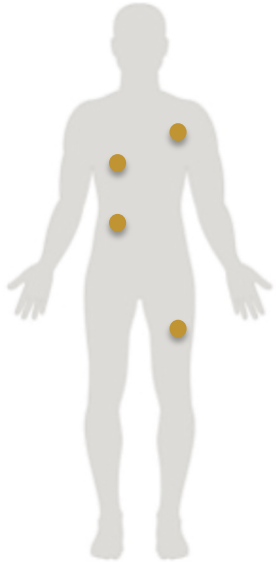
DICHIARAZIONE

Relatore: Ciro Franzese

Come da nuova regolamentazione della Commissione Nazionale per la Formazione Continua del Ministero della Salute, è richiesta la trasparenza delle fonti di finanziamento e dei rapporti con soggetti portatori di interessi commerciali in campo sanitario.

- Posizione di dipendente in aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Consulenza ad aziende con interessi commerciali in campo sanitario **(IPSEN, ASTELLAS, JANSSEN)**
- Fondi per la ricerca da aziende con interessi commerciali in campo sanitario **(IPSEN)**
- Partecipazione ad Advisory Board **(NIENTE DA DICHIARARE)**
- Titolarità di brevetti in compartecipazione ad aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Partecipazioni azionarie in aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Altro

Introduction

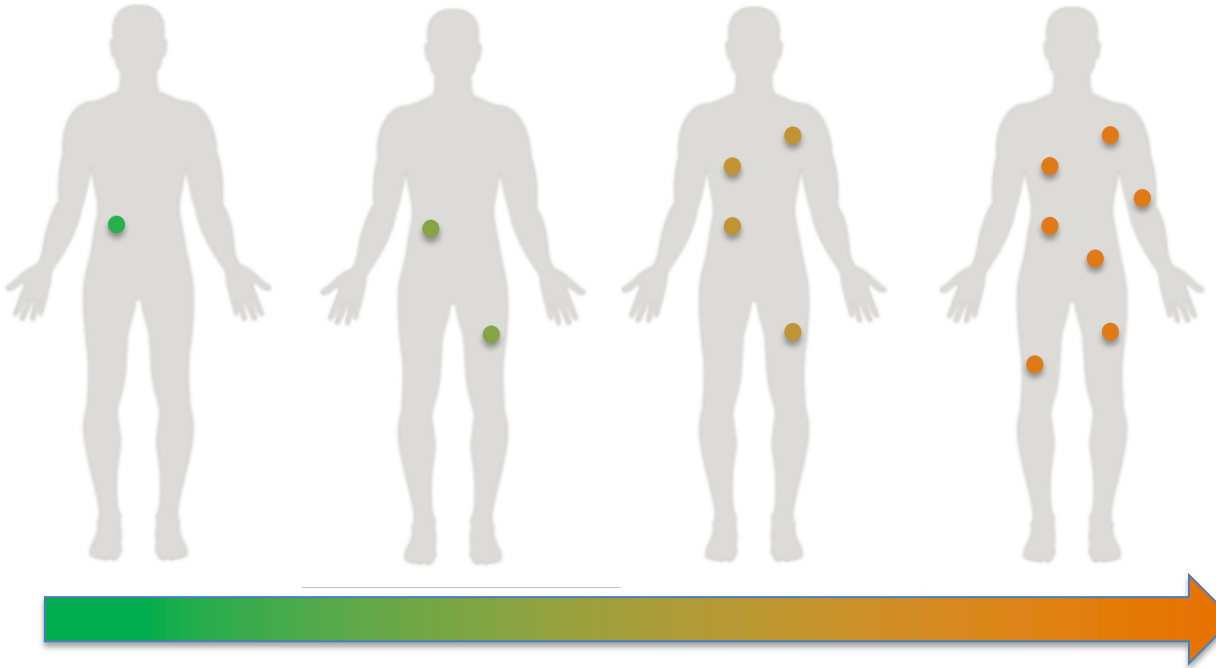


The **oligometatatic setting** is an intermediate stage between localized cancer and widespread metastatic disease

It is a state in cancer progression where a **limited number of metastatic lesions** are present in **one or a few distant organs or sites**, and the disease has not spread extensively throughout the body

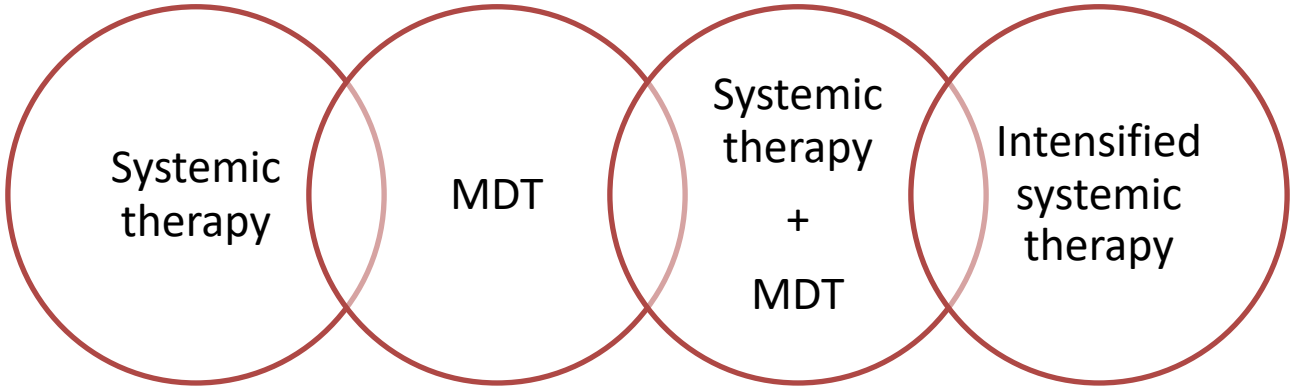
Hellman and Weichselbaum, J Clin Oncol. 1995

The spectrum of oligometastatic disease

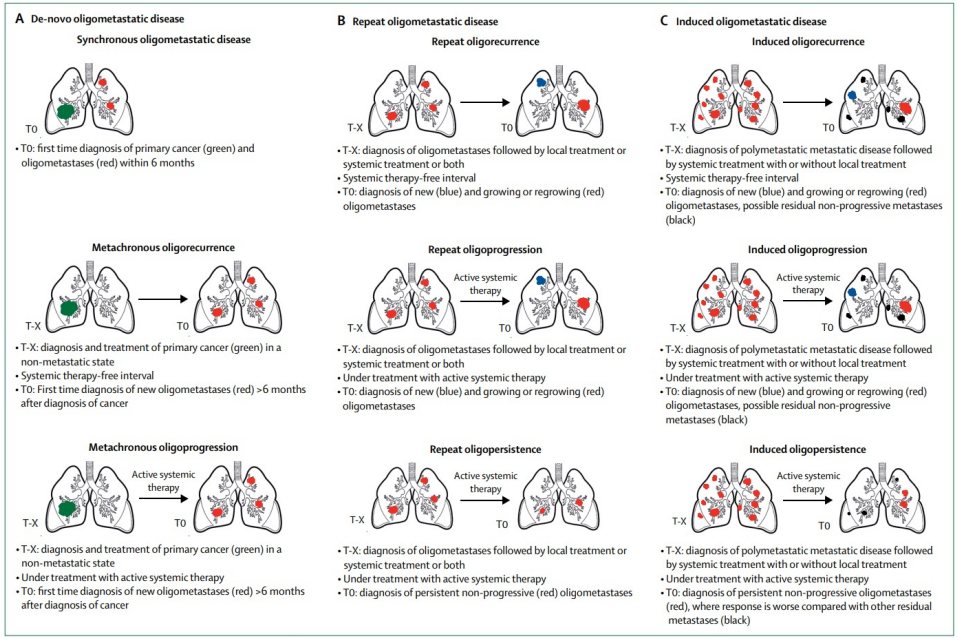


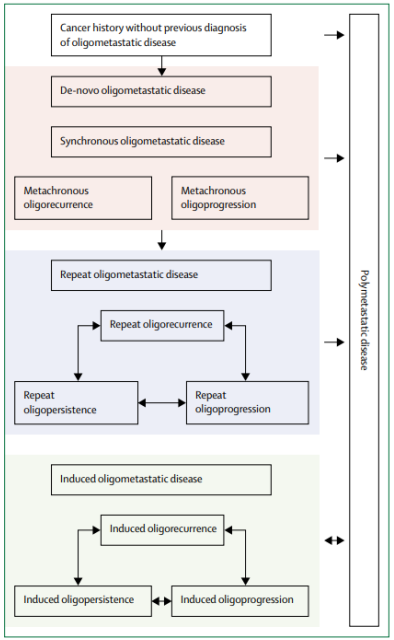
Importance of characterization

Reliable identification of patients who derive the **greatest benefit from MDT** and identification of those patients in **need of systemic therapy intensification** would be helpful to guide **personalised treatment decisions**



Characterization of OMD





Guckenberger et al. Lancet Oncol 2020 Jan;21(1):e18-e28

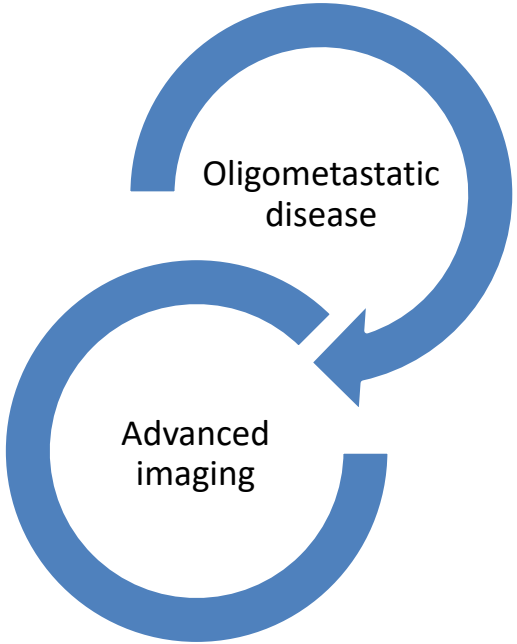
Characterization of OMD

- Q1: Does the patient have a **history of polymetastatic disease** before current diagnosis of oligometastatic disease?
- Q2: Does the patient have a **history of oligometastatic disease** before current diagnosis of oligometastatic disease?
- Q3: Has oligometastatic disease been first diagnosed more than **6 months after the primary cancer diagnosis**?
- Q4: Is the patient **under active systemic therapy** at the time of oligometastatic disease diagnosis?
- Q5: Are any oligometastatic lesions **progressive on current imaging**?

Guckenberger et al. Lancet Oncol 2020 Jan;21(1):e18-e28

OMD and imaging

Numeric definition of oligometastatic disease is heavily dependent on the sensitivity of the imaging modality



Definition of OMD

Defining oligometastatic disease from a radiation oncology perspective:
An ESTRO-ASTRO consensus document

"Reviewing the literature, **'up to 5' and 'up to 3'** oligometastatic lesions are the **most commonly-used** quantitative definitions

At present, there is **no biological evidence supporting the maximal number of metastases**, or the maximal lesion size, that can be treated to provide clinical benefit"

Lievens et al. Radiotherapy and Oncology 2020

Definition of OMD

Defining oligometastatic disease from a radiation oncology perspective:
An ESTRO-ASTRO consensus document

Maximum disease burden	
KQ 5: Is OMD defined by a maximum number of lesions and/or sites?	
No, the possibility to safely deliver curative intent metastasis-directed radiotherapy determines the maximum number	82% (9/11)
KQ 6: Is maximum disease burden defined by technically safe treatment with curative intent?	
Yes, but it is recognized that the ability to treat safely does not mean that one should treat.	90% (9/10)
Regardless of the number of metastases the patient should not be treated if not safe	100% (10/10)

Lievens et al. Radiotherapy and Oncology 2020

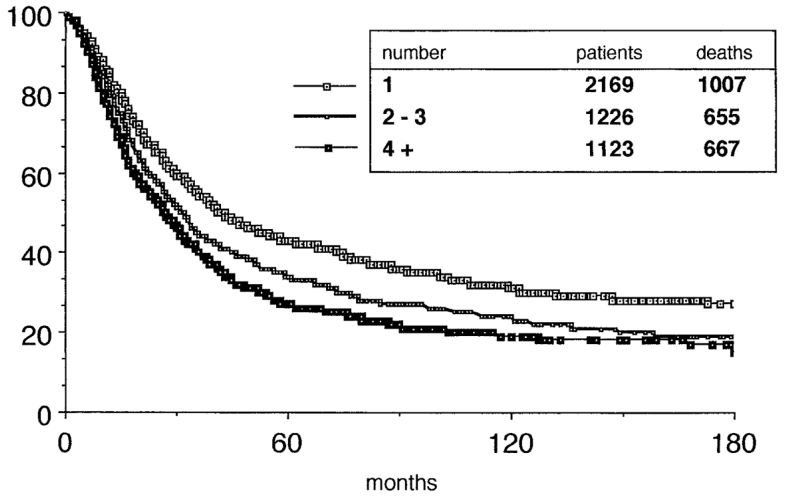
The numeric definition

LONG-TERM RESULTS OF LUNG METASTASECTOMY: PROGNOSTIC ANALYSES BASED ON 5206 CASES

5206 cases of lung Metastasectomy

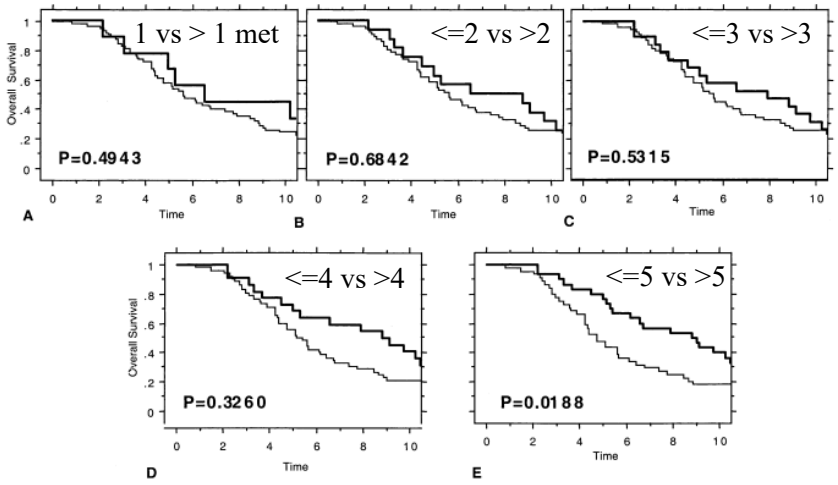
The actuarial survival was 36% at 5 years, 26% at 10 years, and 22% at 15 years

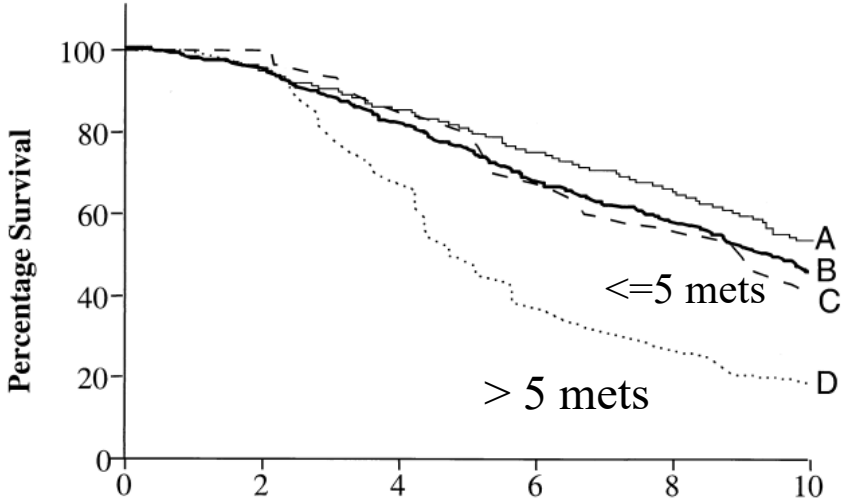
5-year survival was 43% for single lesions and 27% for 4 or more lesions



Pastorino et al. J Thorac Cardiovasc Surg 1997

Limitations of the numeric definition





Singh et al. IJROBP 2004

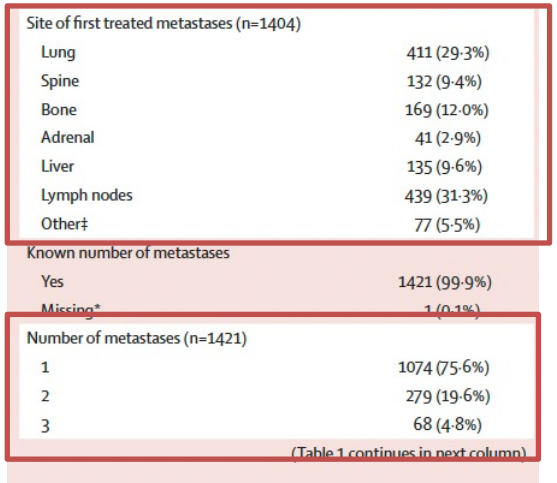
Number of metastases in prospective studies

Stereotactic ablative body radiotherapy in patients with oligometastatic cancers: a prospective, registry-based, single-arm, observational, evaluation study

Between 2015 and 2019, **1422 patients** were recruited from 17 hospitals in England.

The most common primary tumour was prostate cancer (28·6% patients)

About 75% of patients treated on 1 metastasis, less than 5% on 3 metastases

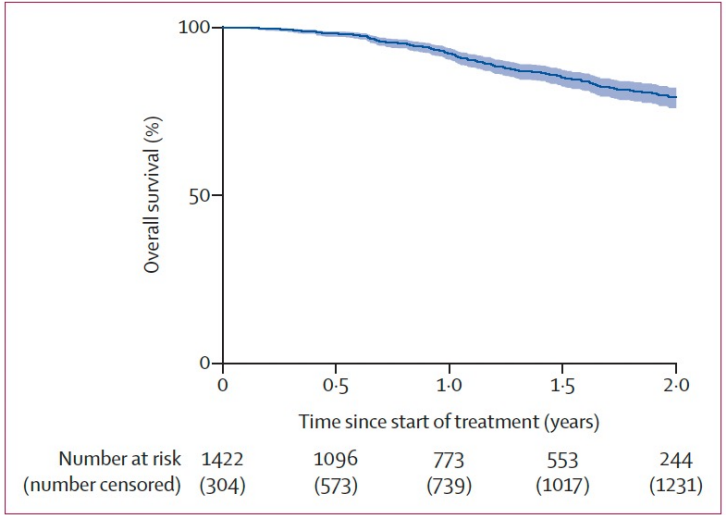


Site of first treated metastases (n=1404)	
Lung	411 (29·3%)
Spine	132 (9·4%)
Bone	169 (12·0%)
Adrenal	41 (2·9%)
Liver	135 (9·6%)
Lymph nodes	439 (31·3%)
Other‡	77 (5·5%)
Known number of metastases	
Yes	1421 (99·9%)
Missing*	1 (0·1%)
Number of metastases (n=1421)	
1	1074 (75·6%)
2	279 (19·6%)
3	68 (4·8%)

(Table 1 continues in next column)

Chalkidou et al. Lancet Oncol 2021

Number of metastases in prospective studies



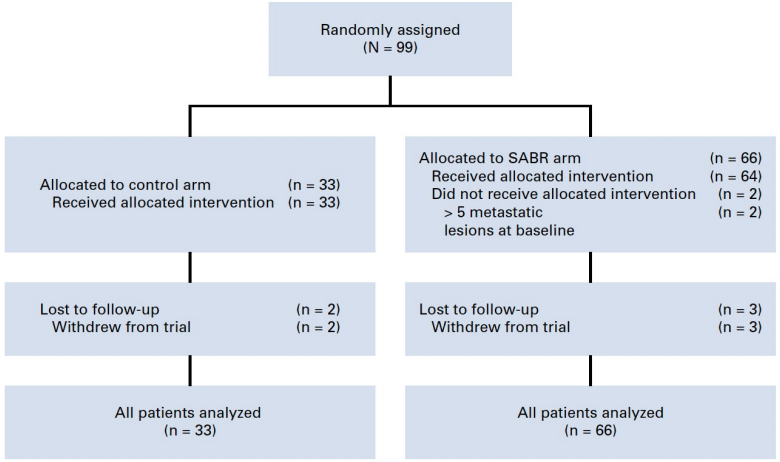
Number of metastases had no effect on
Overall survival

Number of metastases					
1	1,068 (75.1%)	144	2.453	0.113	0.751
2	278 (19.6%)	41	2.576	0.128	
3	68 (4.8%)	6	2.428	0.078	
No of subjects used in analysis	1422				

Chalkidou et al. Lancet Oncol 2021

Number of metastases in prospective studies

Stereotactic Ablative Radiotherapy for the Comprehensive Treatment of Oligometastatic Cancers: Long-Term Results of the SABR-COMET Phase II Randomized Trial

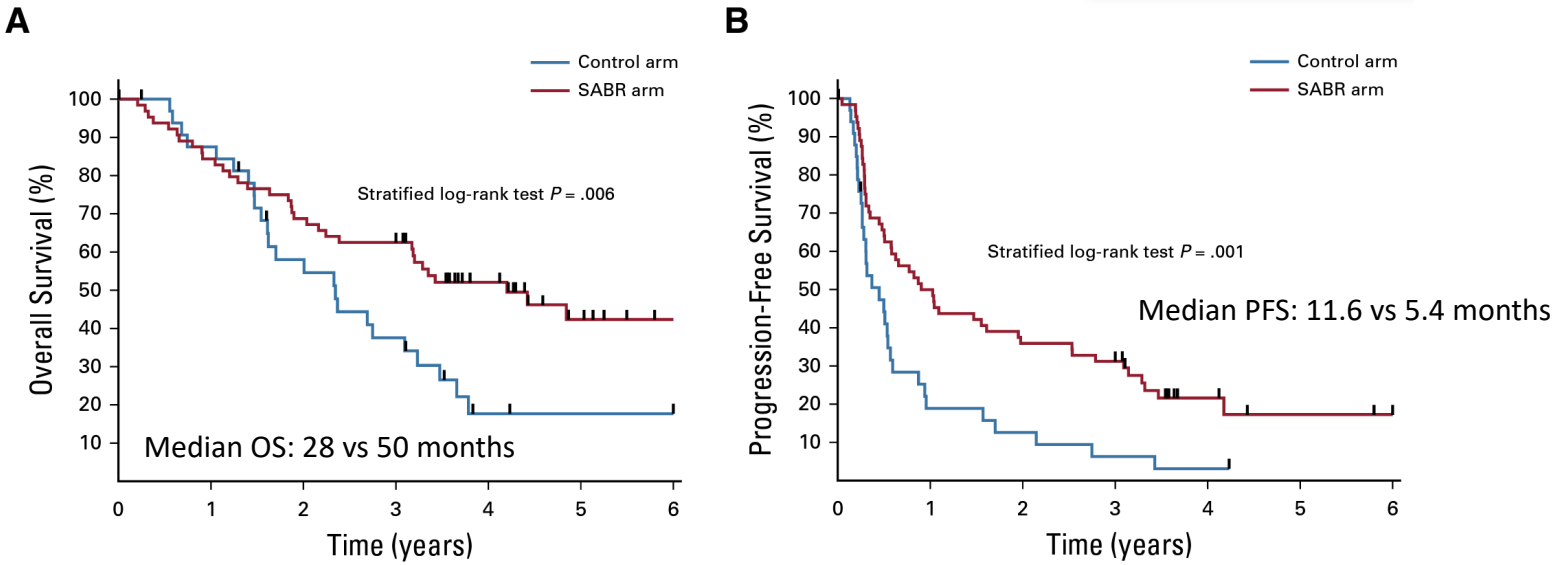


stratified by the number of metastases (1-3 vs 4-5)

	Arm, No. (%)	
	Control	SABR
No. of metastases		
1	12 (36)	30 (46)
2	13 (40)	19 (29)
3	6 (18)	12 (18)
4	2 (6)	2 (3)
5	0 (0)	3 (5)
Location of metastases (n = 191 lesions)		
Adrenal	2 (3)	7 (6)
Bone	20 (31)	45 (35)
Liver	3 (5)	16 (13)
Lung	34 (53)	55 (43)
Other[a]	5 (8)	4 (3)

Palma et al. JCO 2020

Number of metastases in prospective studies



No reported difference according to number of oligomets

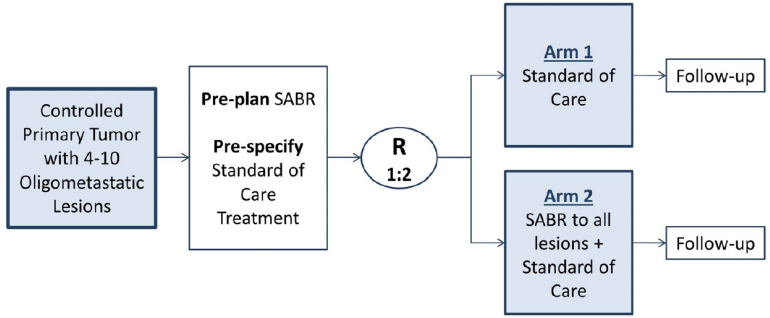
Palma et al. JCO 2020

MDT in polymetastatic disease

STUDY PROTOCOL Open Access

Stereotactic ablative radiotherapy for the comprehensive treatment of 4–10 oligometastatic tumors (SABR-COMET-10): study protocol for a randomized phase III trial

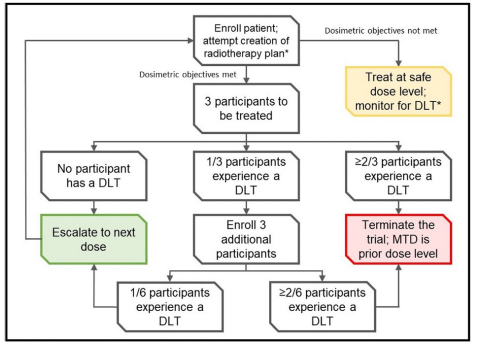
David A. Palma[1*], Robert Olson[2], Stephen Harrow[3], Rohann J. M. Correa[1], Famke Schneiders[4], Cornelis J. A. Haasbeek[4], George B. Rodrigues[1], Michael Lock[1], Brian P. Yaremko[1], Glenn S. Bauman[1], Belal Ahmad[1], Devin Schellenberg[2], Mitchell Liu[2], Stewart Gaede[1], Joanna Laba[1], Liam Mulroy[5], Sashendra Senthi[6], Alexander V. Louie[7], Anand Swaminath[8], Anthony Chalmers[9], Andrew Warner[1], Ben J. Slotman[4], Tanja D. de Gruijl[4],



STUDY PROTOCOL Open Access

Ablative radiation therapy to restrain everything safely treatable (ARREST): study protocol for a phase I trial treating polymetastatic cancer with stereotactic radiotherapy

Glenn S. Bauman[1*], Mark T. Corkum[1], Hatim Fakir[2], Timothy K. Nguyen[1] and David A. Palma[1]



Oligo vs polymetastatic disease

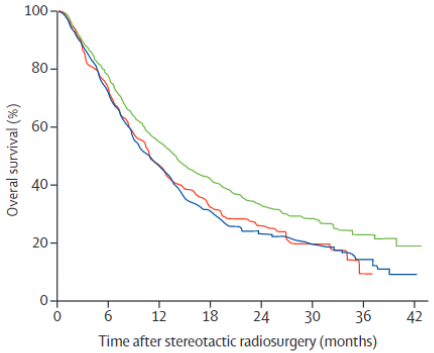
Stereotactic radiosurgery for patients with multiple brain metastases (JLGK0901): a multi-institutional prospective observational study

	Univariable		Multivariable	
	HR (95% CI)	p value	HR (95% CI)*	p value
Age, years (≥65 vs <65)	1·412 (1·229–1·622)	<0·0001	1·351 (1·174–1·554)	<0·0001
Sex (male vs female)	1·427 (1·242–1·655)	<0·0001	1·377 (1·179–1·608)	<0·0001
KPS (≤70 vs ≥80)	2·079 (1·729–2·500)	<0·0001	1·529 (1·240–1·886)	<0·0001
Number of tumours				
2–4 vs 1	1·313 (1·131–1·525)	0·0001	1·328 (1·141–1·546)	0·0003
5–10 vs 2–4	0·974 (0·806–1·177)	0·78	0·993 (0·819–1·204)	0·94
Maximum diameter of largest tumour (≥1·6 cm vs <1·6 cm)	1·431 (1·249–1·638)	<0·0001	1·006 (0·771–1·314)	0·92
Cumulative tumour volume (≥1·9 mL vs <1·9 mL)	1·503 (1·313–1·721)	<0·0001	1·172 (0·899–1·530)	0·24
Primary tumour category				
Breast vs lung	0·743 (0·584–0·945)	0·014	0·881 (0·673–1·153)	0·36
GI vs lung	1·750 (1·373–2·231)	<0·0001	1·407 (1·087–1·822)	0·0094
Renal cell vs lung	1·063 (0·718–1·573)	0·76	0·964 (0·648–1·434)	0·13
Others vs lung	1·572 (1·096–2·255)	0·021	1·333 (0·922–1·927)	0·86
Extracerebral disease status (not controlled vs controlled)	1·385 (1·200–1·589)	<0·0001	1·272 (1·101–1·469)	0·0011
Neurological symptoms (yes vs no)	1·779 (1·541–2·053)	<0·0001	1·334 (1·117–1·594)	0·0013

Clinical factors were measured before stereotactic surgery. HR=hazard ratio. KPS=Karnofsky performance status. GI=gastrointestinal. *HR adjusted for all clinical factors listed in this table.

Table 2: **Clinical factors affecting survival after stereotactic radiosurgery**

Group	Median overall survival, months (95% CI)	HR (95% CI)	p value
1 tumour	13·9 (12·0–15·6)	0·76 (0·66–0·88)	0·0004
2–4 tumours	10·8 (9·4–12·4)	Reference	
5–10 tumours	10·8 (9·1–12·7)	0·97 (0·81–1·18)	0·78



Yamamoto et al. Lancet Oncol 2014; 15: 387–95

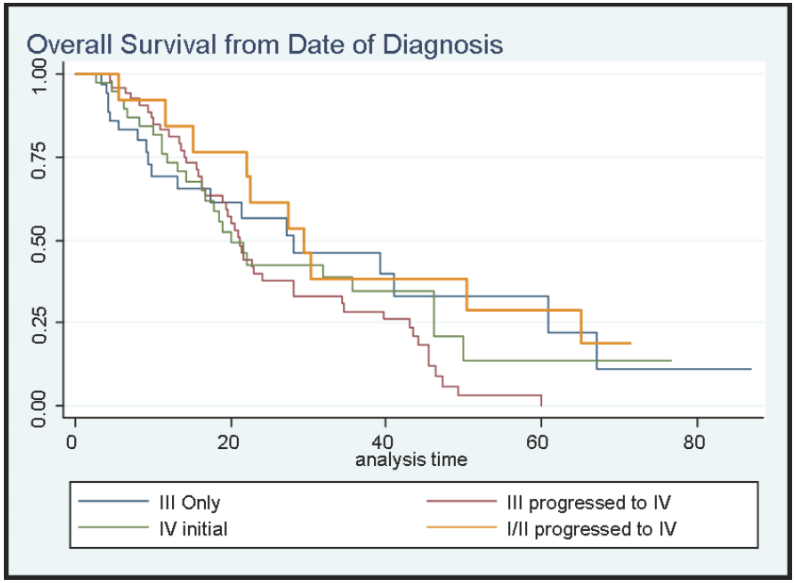
Oligo vs polymetastatic disease

146 NSCLC patients (stage III and IV) treated with **curative-intent radiotherapy**

All stage IV NSCLC patients treated with SBRT had **≤ 8 lesions.**

5-year OS was superior ($p < 0.01$) for those with limited metastases (≤ 8 lesions) versus stage III patients who developed extensive metastases not amenable to SBRT (14% vs 0%)

No significant difference among patients with ≤ 5 metastases versus 6-8 ($p = 0.94$)

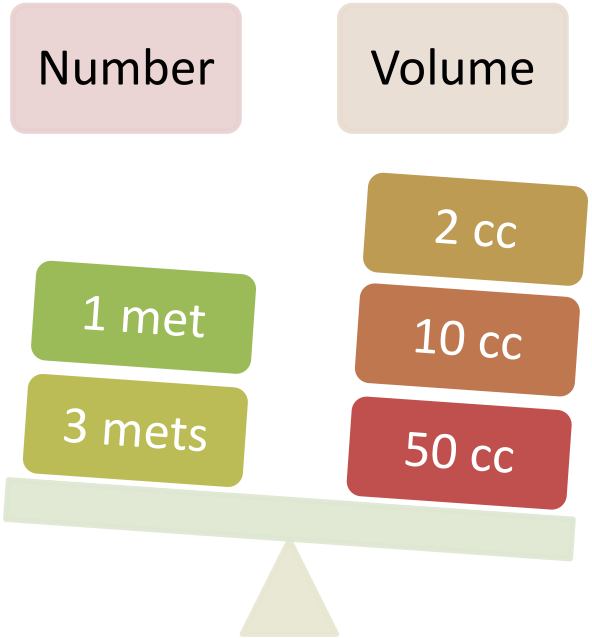


Cheruvu et al. Radiation Oncology 2011, 6:80

Limitations of the numeric definition

- **inconsistency** in the specific number of lesions in the existing literature (3 ? 5 ? more?)
- absence of additional clinical or molecular **biomarkers**
- arbitrary number with **limited biological basis**

Role of metastatic tumor volume ?



Influence of primary tumor size

Tumor size predicts long-term survival in colon cancer: an analysis of the National Cancer Data Base

300.386 included patients

Tumor size positively correlated with **grade, T stage, and nodal stage**

Tumor size was **inversely associated with survival**

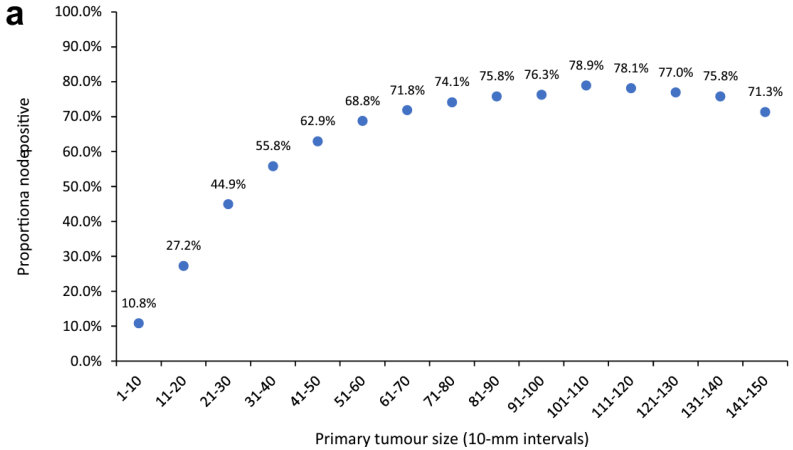
Variable	0–2 cm	>2–4 cm	>4–6 cm	>6 cm	Median size (cm)	γ (ASE)*
TNM stage						
I	27,763 (32%)	39,902 (46%)	14,866 (17%)	5,130 (6%)	3	.37 (.0019)
II	4,657 (6%)	27,992 (36%)	26,250 (34%)	18,053 (23%)	4.5	
III	4,512 (7%)	25,547 (40%)	20,579 (32%)	12,931 (20%)	4.5	
IV	2,880 (4%)	23,663 (33%)	27,038 (38%)	18,623 (26%)	5	
Grade						
G1	6,355 (24%)	10,389 (39%)	6,484 (25%)	3,185 (12%)	3.5	.26 (.0028)
G2	28,747 (13%)	87,393 (41%)	63,278 (30%)	33,839 (16%)	4	
G3	4,530 (8%)	18,644 (32%)	18,210 (31%)	16,843 (29%)	5	
G4	180 (7%)	679 (27%)	761 (31%)	870 (35%)	5.2	
Location						
R	16,835 (12%)	53,579 (37%)	43,792 (30%)	31,292 (22%)	4.3	N/A
T	4,672 (16%)	11,437 (39%)	7,852 (27%)	5,322 (18%)	4	
D	4,205 (14%)	12,297 (41%)	8,554 (29%)	4,707 (16%)	4	
S	12,972 (15%)	36,987 (42%)	26,031 (30%)	11,425 (13%)	4	
T stage						
T1	16,425 (61%)	8,166 (30%)	1,699 (6%)	794 (3%)	1.9	.54 (.0019)
T2	13,247 (19%)	36,173 (52%)	15,369 (22%)	5,187 (7%)	3.3	
T3	8,582 (5%)	62,236 (38%)	58,233 (36%)	34,803 (21%)	4.5	
T4	1,354 (4%)	9,916 (26%)	12,937 (34%)	13,527 (36%)	5.5	
Nodal status						
N0	31,454 (18%)	70,604 (41%)	45,235 (26%)	26,401 (15%)	3.5	.25 (.0024)
N1	4,599 (7%)	26,503 (40%)	22,154 (33%)	13,117 (20%)	4.5	
N2	3,759 (6%)	19,997 (33%)	21,344 (35%)	15,219 (25%)	4.8	
5-Year overall survival	66%	52%	46%	41%	4	

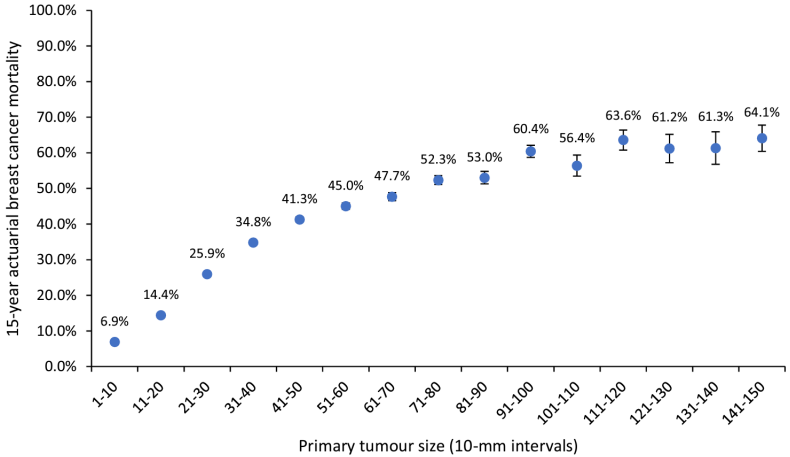
Saha et al. The American Journal of Surgery 2015

Influence of primary tumor size

The relationship between tumour size, nodal status and distant metastases: on the origins of breast cancer

819.647 women diagnosed with first primary invasive breast cancer





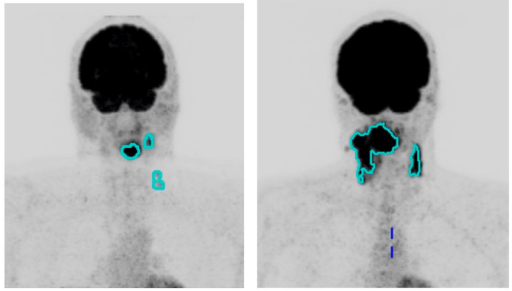
Sopik et al. Breast Cancer Research and Treatment 2018

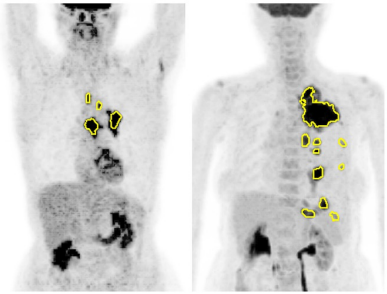
Influence of primary tumor volume

Int J Radiat Oncol Biol Phys. 2009 August 1; 74(5): 1335–1341. doi:10.1016/j.ijrobp.2008.10.060.

Metabolic Tumor Volume Predicts for Recurrence and Death in Head and Neck Cancer

Trang H. La, MD[1], Edith J. Filion, MD[1], Brit B. Turnbull, PhD[2], Jackie N. Chu[1], Percy Lee, MD[1], Khoa Nguyen, BS[1], Peter Maxim, PhD[1], Andy Quon, MD[3], Edward E. Graves, PhD[1], Billy W. Loo Jr., MD PhD[1], and Quynh-Thu Le, MD[1]





Int. J. Radiation Oncology Biol. Phys., Vol. 69, No. 2, pp. 328–333, 2007

METABOLIC TUMOR BURDEN PREDICTS FOR DISEASE PROGRESSION AND DEATH IN LUNG CANCER

PERCY LEE, M.D.,* DILANI K. WEERASURIYA, B.S.,* PHILIP W. LAVORI, PH.D.,† ANDREW QUON, M.D.,‡ WENDY HARA, M.D.,* PETER G. MAXIM, PH.D.,* QUYNH-THU LE, M.D.,* HEATHER A. WAKELEE, M.D.,§ JESSICA S. DONINGTON, M.D,‖ EDWARD E. GRAVES, PH.D.,* AND BILLY W. LOO, JR., M.D., PH.D.*

Role of tumor volume

Larger primary tumors have higher metastatic potential

Larger metastases have higher metastatic potential ?

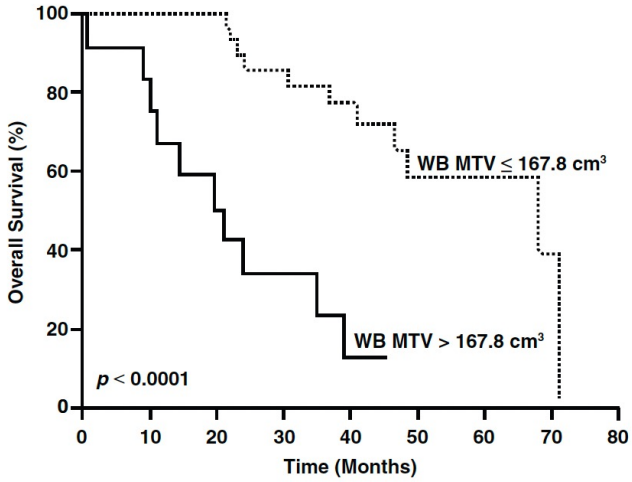
Evidences on tumor volume

Whole-Body Metabolic Tumor Volume, as Determined by ^{18}F-FDG PET/CT, as a Prognostic Factor of Outcome for Patients With Breast Cancer Who Have Distant Metastasis

40 women with IDC who had distant metastasis at the time of initial diagnosis and who underwent FDG PET/CT before receiving treatment

21 of 40 patients (52.5%) died during follow-up. **Non-survivors had a statistically significantly higher WB MTV than did survivors** (424.0 vs 92.1 cm3; p = 0.0430)

At multivariate analysis **only WB MTV independently predicted OS** (HR, 4.10; 95% CI, 1.17–14.31; p = 0.0280)



Son et al. AJR 2015

Intracranial tumor volume and RT

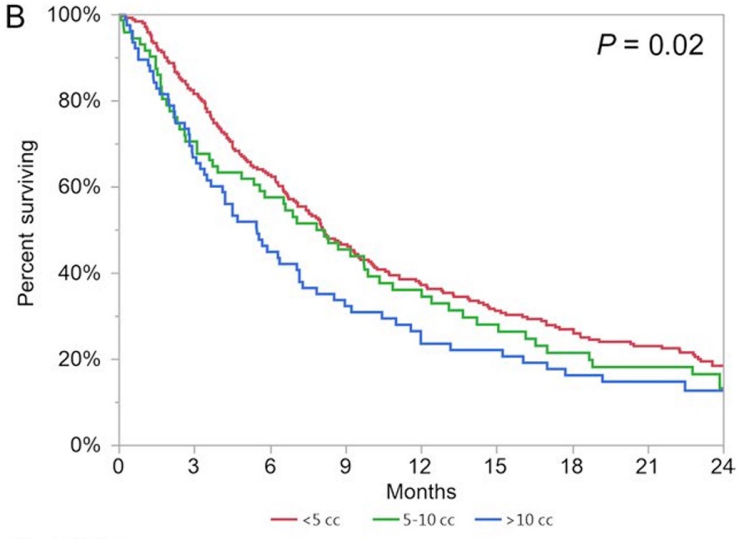
The growing importance of lesion volume as a prognostic factor in patients with multiple brain metastases treated with stereotactic radiosurgery

391 patients treated with SRS for 2–4 vs 5+ BM

Median follow- up 7.1 months, and most common histologies were melanoma and lung

Median tumor volume was 3.41 cc

Tumor volume, KPS, and histology were significant for OS, whereas lesion number did not



Routman et al. Cancer Medicine 2017

Intracranial tumor volume and RT

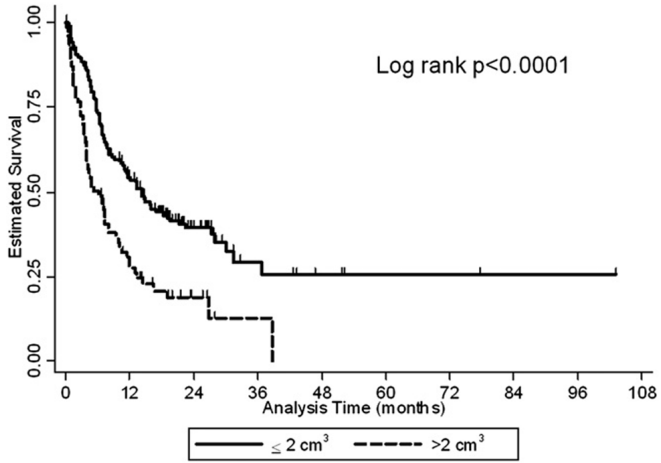
Predictors of Survival in Contemporary Practice After Initial Radiosurgery for Brain Metastases

251 patients treated with **SRS for brain mets**

Median OS was 11.1 months

Significant predictors of OS were:

- presence of extracranial disease (p < .001)
- **total tumor volume > 2 cm3 (p <.001)**
- age 60 years(p= .002)
- prognostic assessment (p < .001)



Overall survival by treatment volume (cut point, 2 cm^3).

Likhacheva et al. IJROBP 2013

Intracranial tumor volume and RT

Table 4 Multivariate analysis for overall survival, local control, and distant brain control

Variable	Overall survival			Local control			Distant brain control			Comparison group
	HR	*P* value	95% CI	HR	*P* value	95% CI	HR	*P* value	95% CI	
Total lesion volume >2	1.98	<.001	(1.4-2.81)	4.56	.016	(1.32-15.74)	0.67	.10	(0.42-1.08)	Total treatment volume ≤2
Age ≥60 (y)	1.67	.002	(1.2-2.33)	0.89	.85	(0.26-3.06)	1.25	.25	(0.86-1.83)	<60 y
Baseline DS-GPA	0.71	<.001	(0.59-0.85)	2.33	.05	(1.02-5.30)	1.01	.90	(0.82-1.24)	Continuous
≥4 lesions	1.41	.17	(0.86-2.32)	4.01	.13	(0.66-24.42)	1.02	.97	(0.5-2.08)	1-3 sites
Extracranial disease	4.20	<.001	(2.04-8.68)	0.80	.72	(0.24-2.71)	2.15	.011	(1.19-3.9)	No

Abbreviations: CI = confidence interval; DS-GPA = diagnosis-specific graded prognostic assessment; HR = hazard ratio.

Likhacheva et al. IJROBP 2013

Extracranial volume of disease

Volumetric burden of metastatic lesions drives outcomes in patients with extracranial oligometastatic disease

961 patients with median follow-up of 24.4 months. Most common primaries were NSCLC (25.9%), colorectal cancer (22.0%), prostate (13.3%), breast (7.9%), and RCC (6.2%)

Most patients (72.9%) had **metachronous oligometastatic disease**

Majority of patients (91.6%) had **3 or fewer lesions**

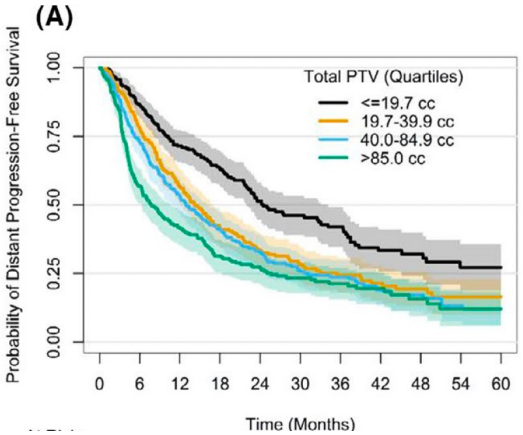
Mean total PTV was 66.2 cc, while the median was 40 cc (IQR 19.7 – 85.0)

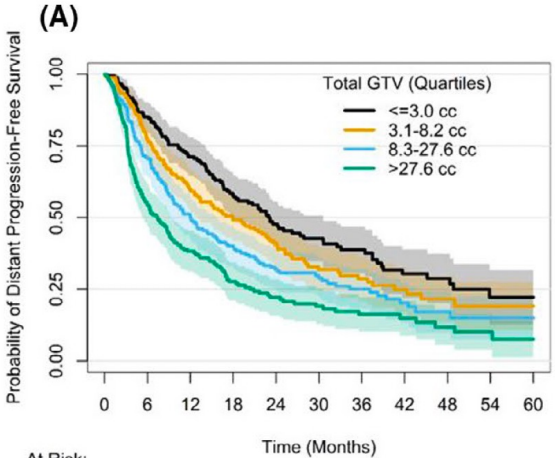
Cao et al. Cancer Medicine. 2021

Metastatic volume and distant progression

Total volume had a significant effect on DPFS

Each twofold increase in TV conferred a 40.6% increased risk of distant progression ($p < 0.001$)



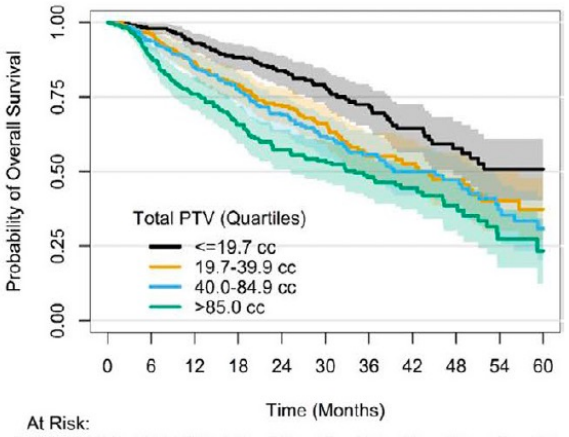


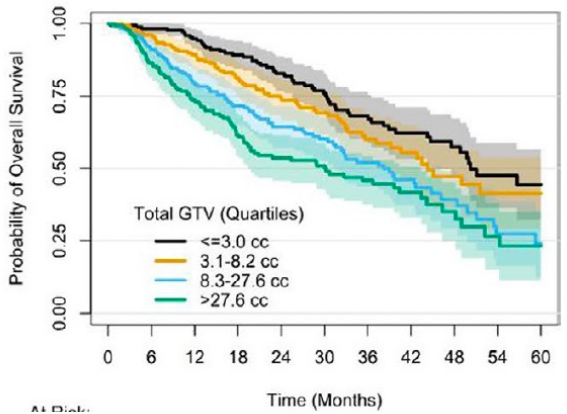
Cao et al. Cancer Medicine. 2021

Metastatic volume and survival

Relationship between total PTV and OS was significant

Each twofold increase in TV increased the risk of death by 60.7% in the first 6 months ($p < 0.01$), and by 34% within each 6-month period over the next 18 months ($p < 0.01$)





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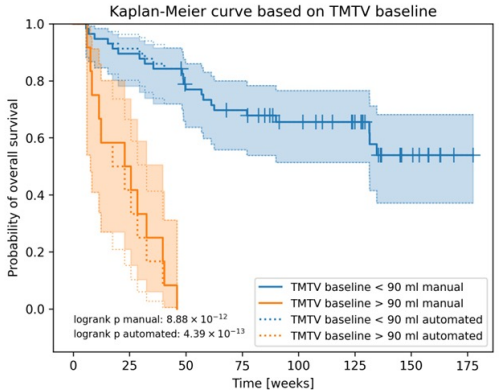
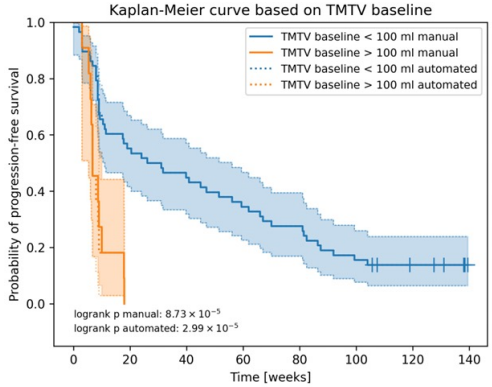
Disease volume by site

Development and Validation of a Predictive Model for Metastatic Melanoma Patients Treated with Pembrolizumab Based on Automated Analysis of Whole-Body [^{18}F]FDG PET/CT Imaging and Clinical Features



Overall survival



Progression free survival

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Disease volume by site

Baseline Feature	Overall Survival			Progression-Free Survival		
	Threshold	Hazard Ratio (95% CI)		Threshold	Hazard Ratio (95% CI)	
		Manual	Automated		Manual	Automated
TMTV [mL]	90	12.2 (4.95–29.8)	14.3 (5.72–35.8)	100	3.85 (1.87–7.94)	4.23 (2.04–8.77)
TLG [SUV_{bw}·mL]	400	7.77 (3.62–16.7)	7.77 (3.62–16.7)	700	3.18 (1.48–6.82)	3.43 (1.59–7.38)
V liver metastases [mL]	30	11.0 (4.52–26.6)	8.21 (3.46–19.5)	30	4.70 (2.17–10.2)	5.12 (2.29–11.4)
V bone metastases [mL]	5	2.81 (1.38–5.72)	3.25 (1.59–6.63)	35	3.22 (0.969–10.7)	3.22 (0.969–10.7)
V lung metastases [mL]	5	3.12 (1.07–9.08)	2.56 (1.05–6.27)	5	2.62 (1.02–6.74)	1.56 (0.706–3.45)
V metastases in GI tract [mL]	10	3.00 (1.04–8.67)	7.20 (2.63–19.7)	-	-	-
V spleen metastases [mL]	5	32.6 (2.26–470)	8.26 (1.72–39.7)	5	7.19 (0.827–62.4)	7.57 (1.65–34.8)
V metastases in adrenal glands [mL]	1	3.98 (1.36–11.6)	5.36 (1.55–18.6)	-	-	-

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Metastatic burden volume in PCa

Oligometastatic Prostate Cancer Treated with Stereotactic Body Radiation Therapy: The Role of Three-Dimensional Tumour Volume in Patient Survival

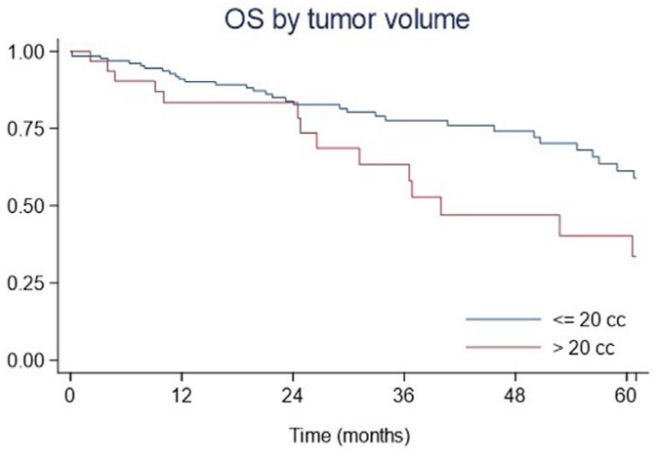
163 patients and 320 metastases were treated with 226 SBRT

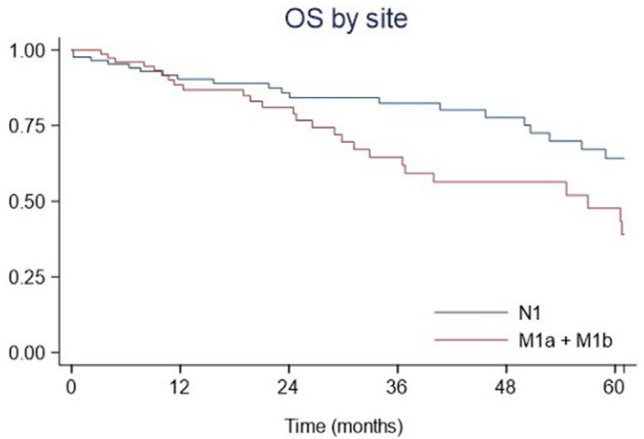
The median 3D metastatic tumour volume was 4.1 cm3 (0.01 - 233.4 cm3)

87 (53.4%) cN1, 21 (12.9%) cM1a and 55 (33.7%) cM1b metastases

Franzese et al. Clin Oncol 2023

Metastatic burden volume in PCa





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Metastatic burden volume in PCa

Univariate analysis	Overall survival		
	HR	95% CI	*P*-value
Age, years	1.02	0.98–1.05	0.213
Performance status, continuous	1.08	0.69–1.67	0.730
ISUP grade group, continuous	1.15	0.92–1.44	0.206
Time to metastases, continuous	0.99	0.98–1.00	0.095
Number of metastases			
Continuous	1.38	0.94–2.04	0.096
1 versus 2–4	1.38	0.79–2.43	0.251
1–2 versus 3–4	1.97	0.83–4.67	0.123
Site of metastases, cN1 versus cM1a+cM1b	**2.15**	**1.24–3.74**	**0.006**
PSA at SBRT, continuous	1.01	0.98–1.04	0.454
PSA doubling time, continuous	0.98	0.93–1.03	0.536
Imaging before SBRT, PSMA- versus choline-PET	0.76	0.34–1.68	0.507
Tumour volume			
Continuous	**1.14**	**1.04–1.26**	**0.004**
>5 cm^3	**1.81**	**1.05–3.12**	**0.031**
>10 cm^3	**2.16**	**1.26–3.69**	**0.005**
>20 cm^3	**2.37**	**1.34–4.18**	**0.003**
Multivariable analysis			
Time to metastases, continuous	-	-	-
Site of metastases, cN1 versus cM1a+cM1b	**1.81**	**1.01–3.25**	**0.046**
Tumour volume >20 cm^3	**1.93**	**1.06–3.52**	**0.030**

Franzese et al. Clin Oncol 2023

Metastatic burden volume in CRC

Survival outcomes and predictors of response in oligometastatic colorectal cancer treated with SBRT: the significance of tumor volume.

347 patients who underwent 516 SBRT treatment on 820 oligometastases. The median follow-up duration was 32.4 months

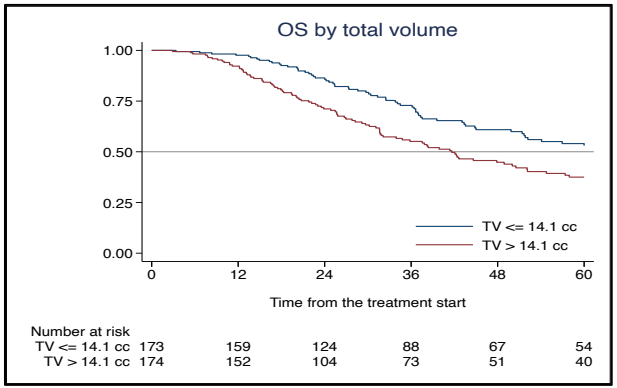
The study demonstrated 1-year, 3-year, and 5-year OS rates of 94.9%, 63.8%, and 45.1%, respectively

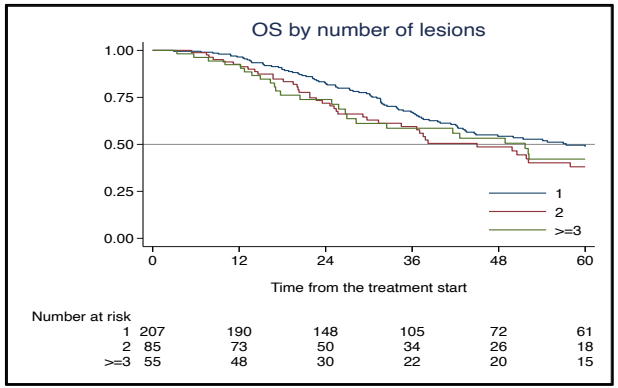
Tumor volume emerged as a **significant predictor of OS:**

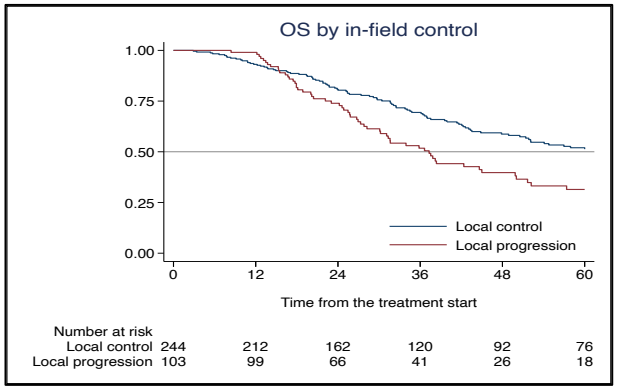
- Median OS was 41.6 months for > 14.1 cc
- Median OS was 68.5 months for ≤ 14.1 cc

Franzese et al. Under review, Cancers 2023

Metastatic burden volume in CRC







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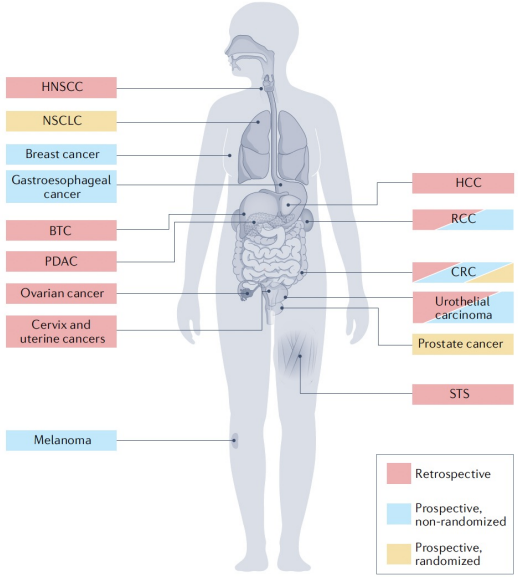
Re-definition of the OMD

The oligometastatic spectrum in the era of improved detection and modern systemic therapy

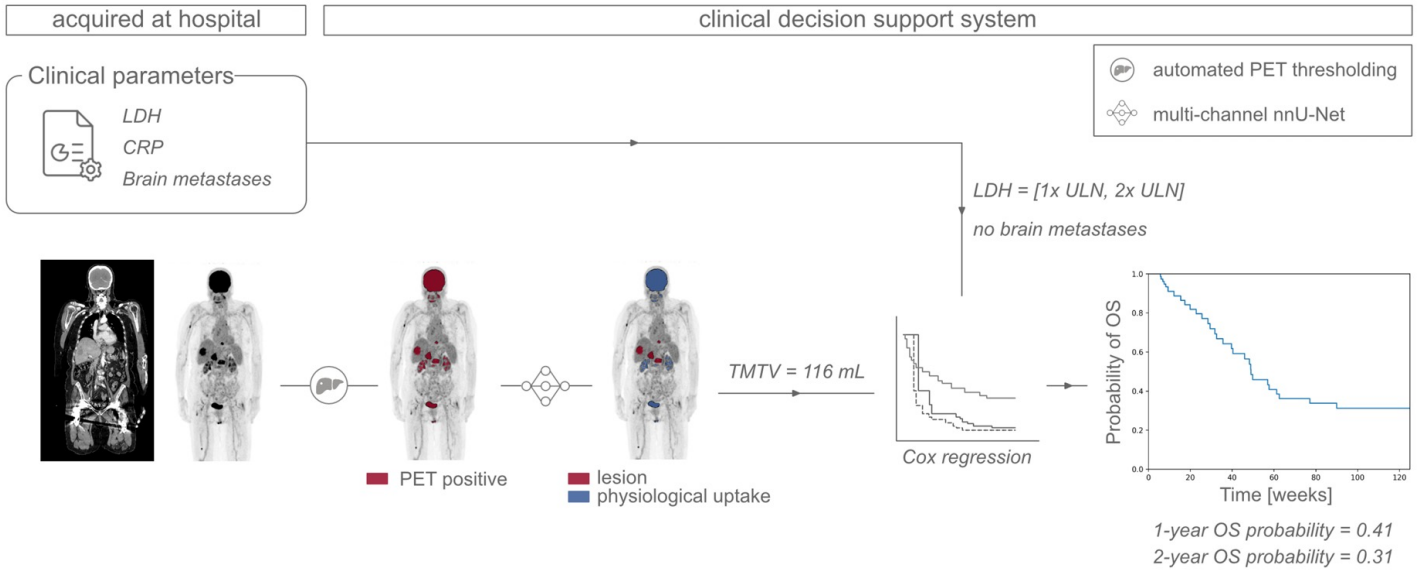
Rohan R. Katipally, Sean P. Pitroda, Aditya Juloori, Steven J. Chmura and Ralph R. Weichselbaum

- In the context of modern systemic therapies and improved cancer detection, the oligometastatic phenotype is framed as a dynamic state within which local ablative therapies improve clinical outcome, including prolonging survival and achieving cure.
- The definition of the oligometastatic state should be expanded beyond the number or size of metastases, and incorporate clinical risk factors, tumour biology, host biology and novel biomarkers that intersect to define the metastatic spectrum.



Katipally et al. Nature Reviews Clinical Oncology 2022

How to better characterize?



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Conclusions

- Oligometastatic setting includes a wide **spectrum of disease**, with a common consensus on a maximum number of 5 metastases
- **Numerical definition** of oligometastatic disease has several **limitations**, including biological basis
- Recent evidences highlighted the **importance of metastatic tumor volume** as a predictor of patients survival for both intracranial and extracranial disease
- Larger volume may be a **surrogate marker** for more aggressive biology or higher **risk of occult disseminated micrometastases** even when the oligometastatic definition is satisfied by the number of macroscopic lesions
- **Volumetric metastatic burden** should be considered as an important independent clinical factor for **treatment personalization**

Thank you

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