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Glasgow, UK

ESTRO
2024



Integration of Systemic and Targeted Therapies in the Management of Oligometastatic SBRT

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DI MILANO



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— per il progresso
delle scienze



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DISCLOSURES

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ALL OUTSIDE THE CURRENT LECTURE:

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Accuray (institutional grant)

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Travel expenses or speaker fees:

Janssen, Ferring, Bayer, Roche, Astellas, Elekta, Carl Zeiss, Ipsen, Accuray, IBA

AGENDA

1. Combine or not to combine?

2. Toxicity of a combination

3. Play safe:

Pausing and balancing

Safe SBRT

Safe targeted therapy administration



This image is available from the United States [Library of Congress's Prints and Photographs division](#) under the digital ID [cph.3g06529](#)

AGENDA

1. Combine or not to combine?

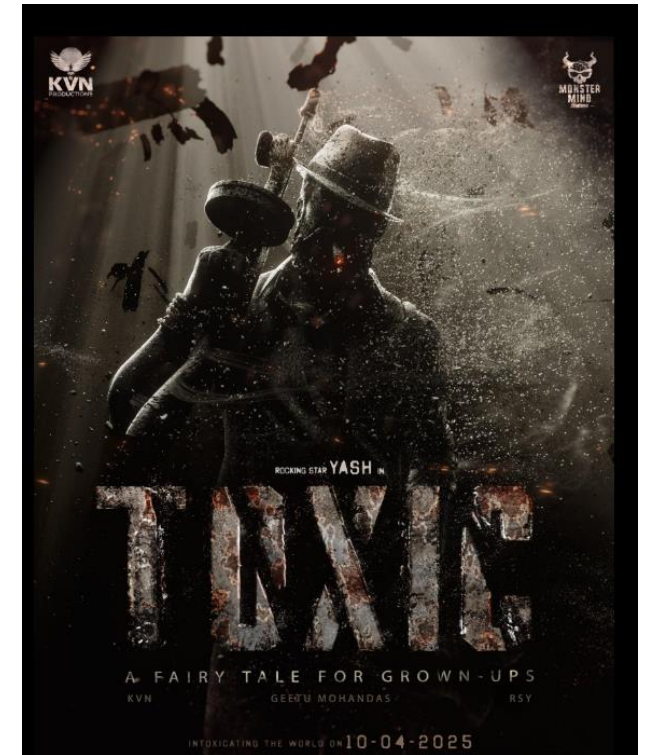
2. Toxicity of a combination

3. Play safe:

Pausing and balancing

Safe SBRT

Safe targeted therapy administration



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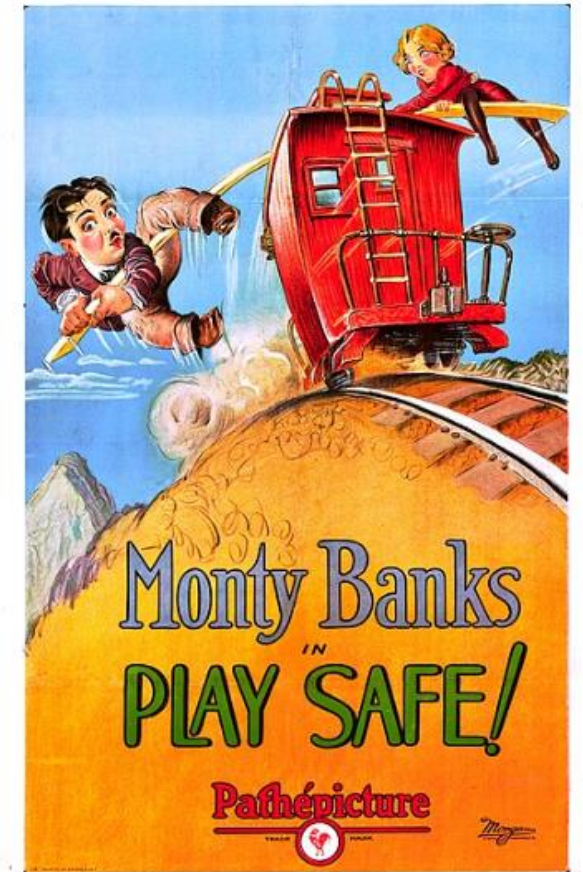
AGENDA

1. Combine or not to combine?
2. Toxicity of a combination
3. **Play safe:**

Pausing and balancing

Safe SBRT

Safe targeted therapy administration



https://en.wikipedia.org/wiki/Play_Safe

Metastasis-directed therapy (MDT) trials evolution

1. SBRT alone to postpone systemic therapy



versus

Metastasis-directed therapy (MDT) trials evolution

1. SBRT alone to postpone systemic therapy



versus

2. SBRT vs systemic therapy



versus



Metastasis-directed therapy (MDT) trials evolution

1. SBRT alone to postpone systemic therapy



versus

2. SBRT vs systemic therapy



versus



3. SBRT vs SBRT + systemic therapy



versus



Metastasis-directed therapy (MDT) trials evolution

1. SBRT alone to postpone systemic therapy



versus

2. SBRT vs systemic therapy



versus



3. SBRT vs SBRT + systemic therapy



versus



4. Systemic therapy vs SBRT + systemic therapy



versus



The winner is

1. SBRT alone to postpone systemic therapy



versus

2. SBRT vs systemic therapy



versus



3. SBRT vs SBRT + systemic therapy



versus



4. Systemic therapy vs SBRT + systemic therapy



versus

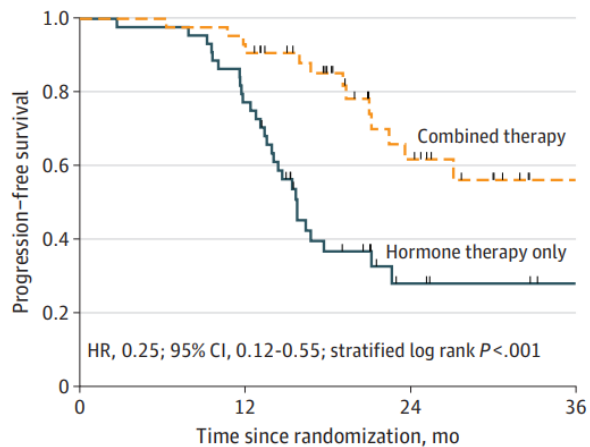


Combination is superior to SBRT or systemic therapy alone

JAMA Oncology | Original Investigation

Addition of Metastasis-Directed Therapy to Intermittent Hormone Therapy for Oligometastatic Prostate Cancer The EXTEND Phase 2 Randomized Clinical Trial

Chad Tang, MD; Alexander D. Sherry, MD; Cara Haymaker, PhD; Tharakeswara Bathala, MD; Suyu Liu, PhD; Bryan Fellman, MS; Lorenzo Cohen, PhD; Ana Aparicio, MD; Amado J. Zurita, MD; Alexandre Reuben, PhD; Enrica Marmonti, PhD; Stephen G. Chun, MD; Jay P. Reddy, MD, PhD; Amol Ghia, MD; Sean McGuire, MD, PhD; Eleni Efsthathiou, MD; Jennifer Wang, MD; Jianbo Wang, MD; Patrick Pilie, MD; Craig Kovitz, MD; Weiliang Du, PhD; Samantha J. Simiele, PhD; Rachit Kumar, MD; Yerko Borghero, MD; Zheng Shi, MD, PhD; Brian Chapin, MD; Daniel Gomez, MD; Ignacio Wistuba, MD; Paul G. Corn, MD, PhD



HR 0.25

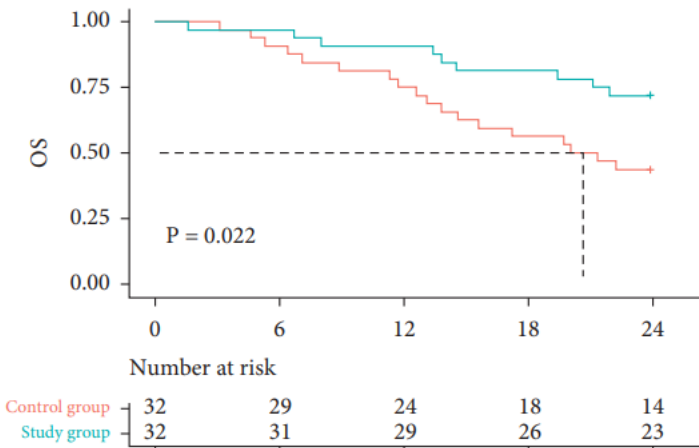
Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 4242346, 6 pages
<https://doi.org/10.1155/2023/4242346>



Research Article

Apatinib plus Radiotherapy on the Expression of CEA and VEGF in Advanced Oligometastatic Non-Small-Cell Lung Cancer

Yanxing Zhu,¹ Zhiren Lin,² and Chengde Wu³



Is the future of OMD is combination and maybe intermittent?

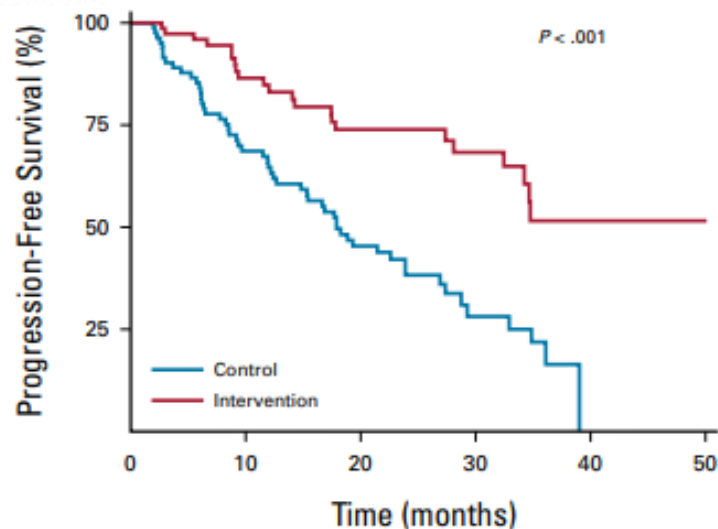
Original Reports | Genitourinary Cancer

Check for update

Stereotactic Body Radiation Therapy and Abiraterone Acetate for Patients Affected by Oligometastatic Castrate-Resistant Prostate Cancer: A Randomized Phase II Trial (ARTO)

Giulio Francolini, MD¹; Andrea Gaetano Allegra, MD²; Beatrice Detti, MD³; Vanessa Di Cataldo, MD⁴; Saverio Caini, MD⁵; Alessio Bruni, MD⁶; Gianluca Ingrassia, MD⁷; Rolando Maria D'Angelillo, MD⁸; Anna Rita Alitto, MD⁹; Matteo Augugliaro, MD⁶; Luca Triggiani, MD⁶; Silvana Parisi, MD¹⁰; Gaetano Facchini, MD¹¹; Marco Banini, MD⁶; Gabriele Simonacchi, MD¹²; Isacco Desideri, MD¹³; Icro Meattini, MD¹⁴; Richard K. Valicenti, MD¹⁵; and Lorenzo Livi, MD⁶; on behalf of the ARTO Working Group members

DOI: <https://doi.org/10.1200/JCO.23.00985>



No. at risk:

Study arm = control	82	52	32	10	0	0
Study arm = intervention	75	51	37	22	6	1

EUROPEAN UROLOGY 81 (2022) 253–262

available at www.sciencedirect.com
journal homepage: www.europeanurology.com

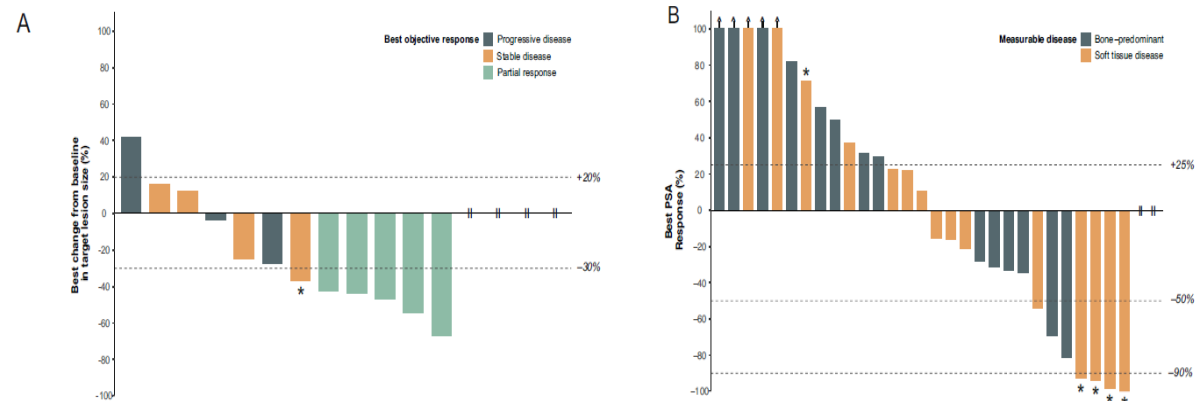
EAU
European Association of Urology

Platinum Priority – Prostate Cancer

Editorial by Umang Swami, Nicolas Sayegh and Neeraj Agarwal on pp. 263–265 of this issue

Avelumab Combined with Stereotactic Ablative Body Radiotherapy in Metastatic Castration-resistant Prostate Cancer: The Phase 2 ICE-PAC Clinical Trial

Edmond M. Kwan^{a,b}, Lavinia Spain^{c,d,e}, Angelyn Anton^{d,e,f}, Chun L. Gan^b, Linda Garrett^b, Deborah Chang^b, Elizabeth Liow^b, Caitlin Bennett^e, Tiantian Zheng^g, Jianjun Yu^g, Chao Dai^g, Pan Du^g, Shidong Jia^g, Heidi Fetteke^{h,i}, Claire Abou-Seif^j, Gargi Kothari^k, Mark Shaw^{l,k}, Phillip Parente^{d,e}, Carmel Pezaro^{d,e}, Ben Tran^{c,f,i}, Shankar Siva^{l,k}, Arun A. Azad^{a,c,l,*}

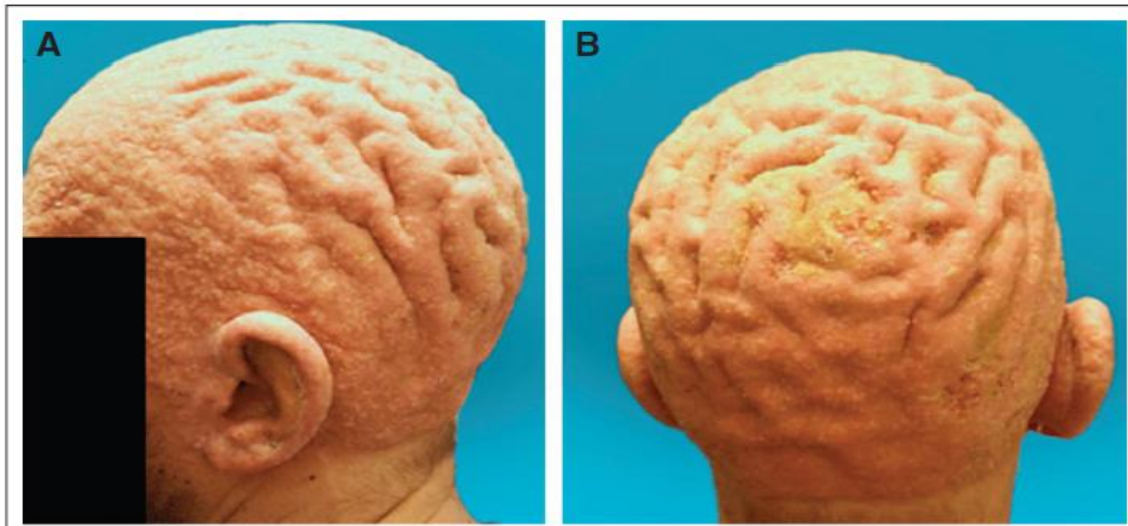


REVIEW

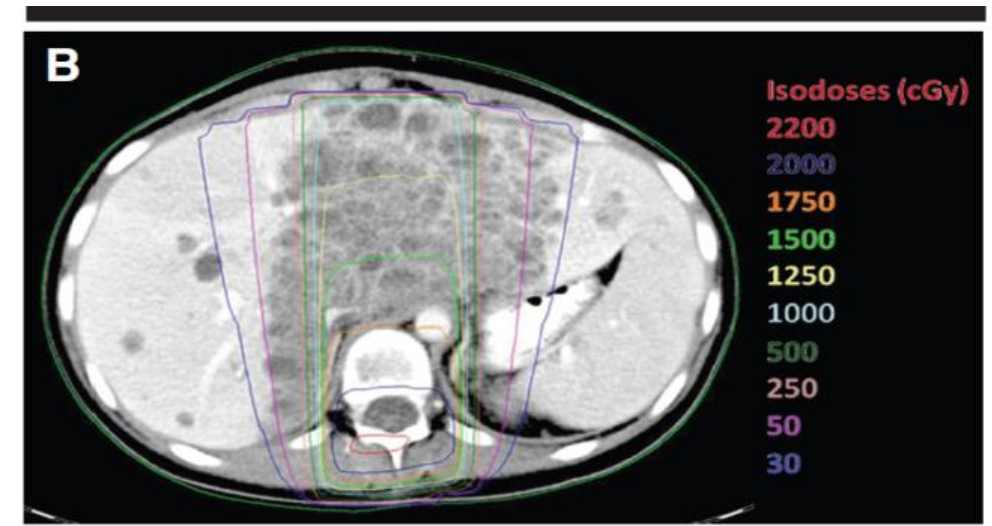
Open Access

Radiotherapy and “new” drugs-new side effects?

Maximilian Niyazi^{1†}, Cornelius Maihoefer^{1†}, Mechthild Krause², Claus Rödel³, Wilfried Budach⁴ and Claus Belka^{1*}



vemurafenib and RT Cutis Verticis Gyrata
Harding JJ et al. JCO 2014



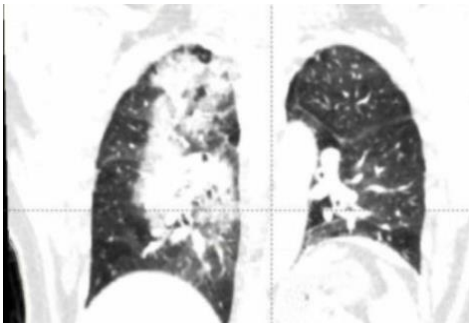
vemurafenib and RT Liver necrosis
Anker CJ et al. JCO 2013

EVOLUTION example of M1 breast cancer and cyclin inhibitors

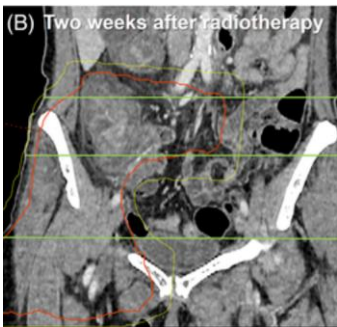
Case reports



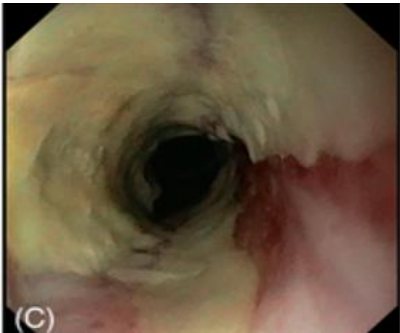
Chest, 20 Gy/5 for mediastinal nodes (Death)



Pelvic bone RT 20Gy/5 (Severe enterocolitis)



Left thoracic wall recurrence 46Gy/13 (oesophagitis G3)



Clinical series



NO increase of the overall TOX, including for brain RT and SRS

Potential slight increase of neutropenia

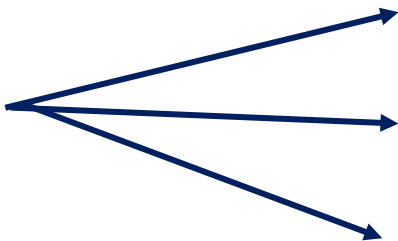
NO increase of G3-G4 TOX

5% radionecrosis

Early-phase trials



Ongoing



Palbociclib

ASPIRE
PALATINE

Breast cancer, Bone mets
De-novo M+ breast cancer (local RT)

Ribociclib

NCT03355794

Glioma

Abemaciclib

NCT04923542

Breast cancer, brain mets

Courtesy of Dario Trapani

Van Aken, case reports 2021; David, [Transl Oncol](#) 2021; Kawamoto, Radiother Oncol 2019; Messer, Pol SocRadiatOncol 2019; Guerini, Sci Rep 2020; Meattini, JCO 2020; Chowdhari, Int J Rad Onc 2019; Ippolito, Breast Edinb Scotl 2019; Figura, J Neurooncol 2019; Meattini, The Breast 2018

CHALLENGES in studying combinations

1. Heterogeneity of locations
2. Heterogeneity of agents
3. Heterogeneity of indications and clinical scenarios
(de novo, oligorecurrent, previous therapy, CRPC, staging with conventional or next generation imaging etc)



Targeted agent elimination half-life as published by the FDA <https://www.accessdata.fda.gov/scripts/cder/daf/index.cfm>

Immune checkpoint inhibitors	t1/2
aPD-(L)1	
Nivolumab (Opdivo)	26.7d
Pembrolizumab (Keytruda)	26d
Durvalumab (Imfinzi)	18d
Avelumab (Bavencio)	6.1d
Atezolizumab (Tecentriq)	27d
Cemiplimab (Libtayo)	19d
aCTLA-4	
Ipilimumab (CTLA4-i, Yervoy)	15.4d
Targeted therapy	
aEGFR/EGFRi	
Cetuximab (Erbix)	4.8d
Panitumumab (Vectibix)	7.5d
Erlotinib (Tarceva)	36.2h
Osimertinib (Tagrisso)	48h
Gefitinib (Iressa)	48h
Afatinib (Giotrif)	37h
Dacomitinib (Vizimpro)	70h
aVEGFR	
Bevacizumab (Avastin)	20d
Ramucirumab (Cyramza)	15d

ALK/ROS1/NTRKi	
Alectinib (Alecensa)	30.7-32.5h
Ceritinib (Zykadia)	41h
Crizotinib (Xalkori)	42h
Lorlatinib (Lorbrena)	24h
Brigatinib (Alunbrig)	25h
Larotrectinib (Vitrakvi)	2.9h
mTKI	
Sunitinib (Sutent)	40-110h
Sorafenib (Nexavar)	20-27h
Lenvatinib (Lenvima)	28h
Pazopanib (Votrient)	30.9h
Axitinib (Inlyta)	2.5-6.1h
Cabozantinib (Cabometyx/Cometriq)	99h
Regorafenib (Stivarga)	28-51h
mTORi	
Everolimus (Afinitor)	30h
Temsirolimus (Torisel)	17.3h

HER2i/aHER2	
Lapatinib (Tykerb)	24h
Trastuzumab (Herceptin)	5.8d
Ado-trastuzumab emtansine	4d
Pertuzumab (Perjeta)	18d
PARPi	
Olaparib (Lynparza)	11.9-14.9h
Rucaparib (Rubraca)	17h
Niraparib (Zejula)	36h
Talazoparib (Talzenna)	90h
BRAFi/MEKi	
Vemurafenib (Zelboraf)	57h
Dabrafenib (Tafinlar)	2.6-8h
Trametinib (Mekinist)	3.9-4.8d
Encorafenib (Braftovi)	3.5h
Binimetinib (Mektovi)	3.5h
CDK4/6i	
Palbociclib (Ibrance)	29h
Ribociclib (Kisqali)	32h

2.5 h – 27 days
axitinib – atezolizumab

3-7 May 2024

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Policy Review

Metastases-directed stereotactic body radiotherapy in combination with targeted therapy or immunotherapy: systematic review and consensus recommendations by the EORTC-ESTRO OligoCare consortium

Stephanie G C Kroeze*, Matea Pavic*, Karin Stellamans, Yolande Lievens, Carlotta Becherini, Marta Scorsetti, Filippo Alongi, Umberto Ricardi, Barbara Alicja Jereczek-Fossa, Paulien Westhoff, Jasna But-Hadzic, Joachim Widder, Xavier Geets, Samuel Bral, Maarten Lambrecht, Charlotte Billiet, Igor Sirak, Sara Ramella, Ivaldi Giovanni Battista, Sergi Benavente, Almudena Zapatero, Fabiola Romero, Thomas Zilli, Kaouthar Khanfir, Hossein Hemmatazad, Bernardino de Bari, Desiree N Klass, Shaikat Adnan, Heike Peulen, Juan Salinas Ramos, Michiel Strijbos, Sanjoy Popat, Piet Ost, Matthias Guckenberger

Stereotactic body radiotherapy (SBRT) for patients with metastatic cancer, especially when characterised by a low

Radiotherapy and Oncology 190 (2024) 109966

Contents lists available at ScienceDirect

Radiotherapy and Oncology

journal homepage: www.thegreenjournal.com



Guidelines

ESTRO clinical practice guideline: Stereotactic body radiotherapy for spine metastases

M Guckenberger^{a,*}, N Andratschke^a, C Belka^{b,c,d}, D Bellut^e, F Cuccia^f, M Dahele^g, RS Guninski^a, M Josipovic^{h,i}, P Mancosu^j, G Minniti^{k,s}, M Niyazi^l, U Ricardi^l, P Munck af Rosenschold^m, A Sahgalⁿ, Y Tsang^o, WFAR Verbakel^p, F Alongi^{q,r}

International multidisciplinary consensus on the integration of radiotherapy with new systemic treatments for breast cancer: European Society for Radiotherapy and Oncology (ESTRO)-endorsed recommendations

Icro Meattini, Carlotta Becherini, Saverio Caini, Charlotte E Coles, Javier Cortes, Giuseppe Curigliano, Evandro de Azambuja, Clare M Isacke, Nadia Harbeck, Orit Kaidar-Person, Elisabetta Marangoni, Birgitte V Offersen, Hope S Rugo, Viola Salvestrini, Luca Visani, Andrea Morandi, Matteo Lambertini, Philip Poortmans*, Lorenzo Livi*, on behalf of the Consensus Panellist Group†

Novel systemic therapies for breast cancer are being rapidly implemented into clinical practice. These drugs often have



Clinical and Translational Radiation Oncology

journal homepage: www.sciencedirect.com/journal/clinical-and-translational-radiation-oncology

Health-related quality of life in men with oligometastatic prostate cancer following metastases-directed stereotactic body radiotherapy: Real-world data from the E²-RADlatE OligoCare cohort

Renée Bultjink^{a,b,*}, Mieke Van Hemelrijck^c, Valérie Fonteyne^{a,b}, Lorenzo Livi^{d,e}, Barbara Alicja Jereczek-Fossa^{f,g}, Hossein Hemmatazad^h, Michael Mayingerⁱ, Heike Peulen^j, Luc Verbeke^k, Sara Ramella^{l,m}, Pablo Castroⁿ, Pelagia Tsoutsou^o, Karin Stellamans^p, Adnan Shaukat^q, Miha Orazem^r, Paul Jeene^s, Petra Braam^t, Helena Verkooijen^u, Inga-Malin Simek^v, Filippo Alongi^w, Enrico Clementel^x, Catherine Fortpied^y, Abigirl Machingura^z, Felix Boakye Oppong^{aa}, Matthias Guckenberger^{ab}, Piet Ost^{ac}



Practical Radiation Oncology® (2023) 13, 393–412



Clinical Practice Guideline

Treatment of Oligometastatic Non-Small Cell Lung Cancer: An ASTRO/ESTRO Clinical Practice Guideline

Puneeth Iyengar, MD, PhD,^{a,*} Sean Ali, MD,^b Mark F. Berry, MD,^b Thomas P. Boike, MD,^c Lisa Bradfield, BA,^d Anne-Marie C. Dingemans, MD, PhD,^e Jill Feldman, MA,^f Daniel R. Gomez, MD,^g Paul J. Hesketh, MD,^h Salma K. Jabbour, MD,ⁱ Melenda Jeter, MD, MPH,^{j,k} Mirjana Josipovic, PhD,^k Yolande Lievens, MD, PhD,^l Fiona McDonald, MD,^m Bradford A. Perez, MD,ⁿ Umberto Ricardi, MD,^o Enrico Ruffini, MD,^p Dirk De Ruysscher, MD, PhD,^q Hina Saeed, MD,^r Bryan J. Schneider, MD,^s Suresh Senan, MRCP, FRCR, PhD,^t Joachim Widder, MD, PhD,^u and Matthias Guckenberger, MD^v



Matthias Guckenberger



Piet Ost

ESTRO & EORTC
Registry trial:
OligoCare

Matthias Guckenberger, Piet Ost
on behalf of the OligoCare project

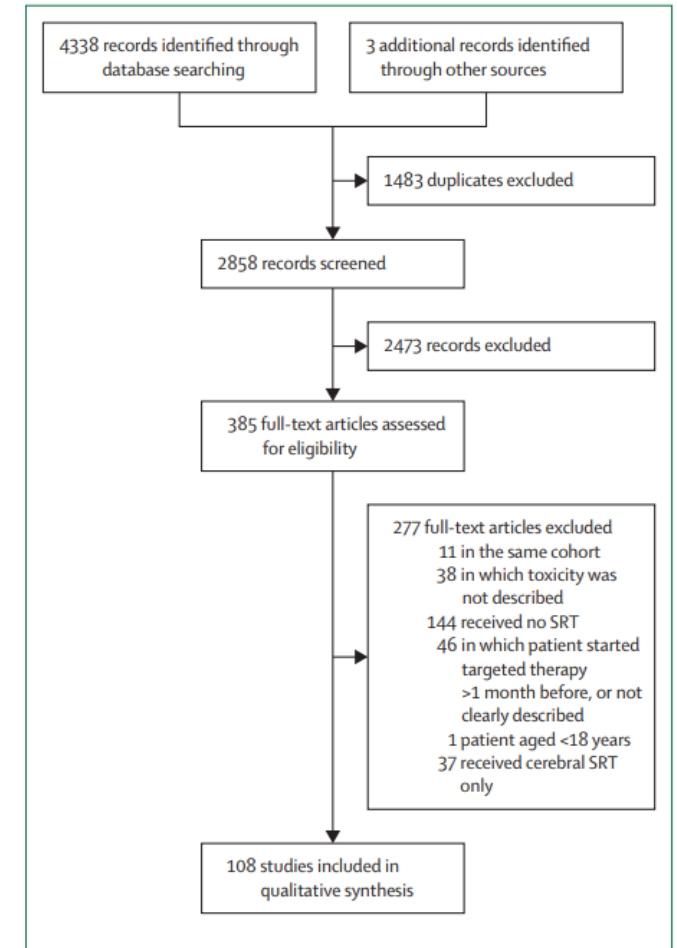


Metastases-directed stereotactic body radiotherapy in combination with targeted therapy or immunotherapy: systematic review and consensus recommendations by the EORTC–ESTRO OligoCare consortium

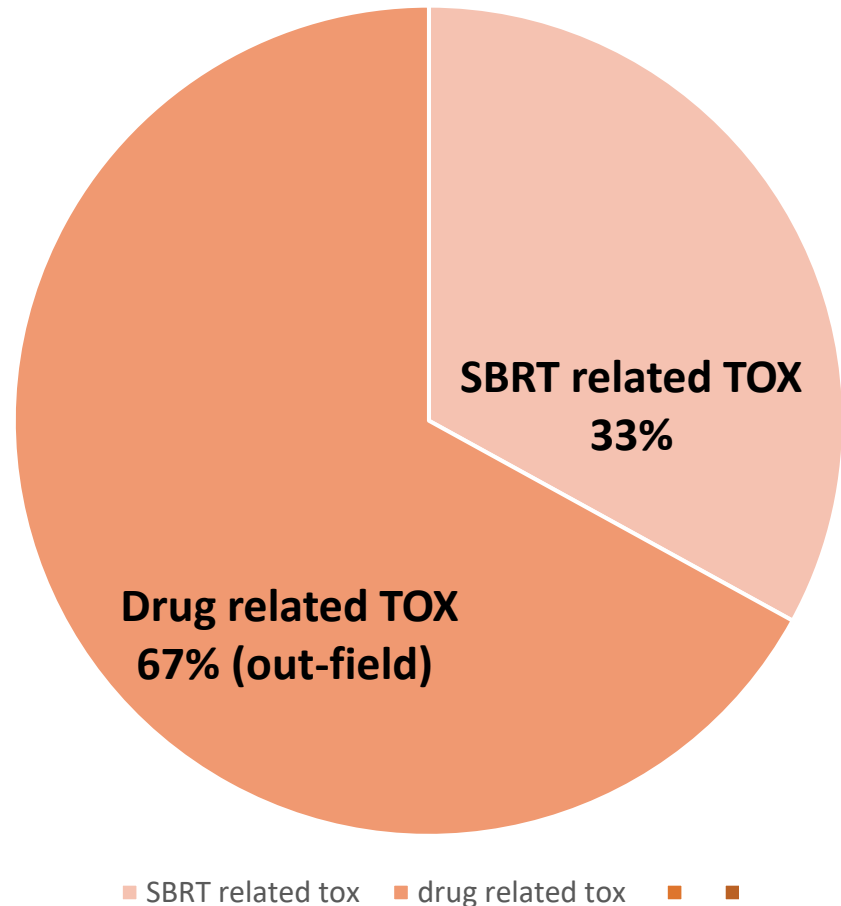
Stephanie G C Kroeze*, Matea Pavic*, Karin Stellamans, Yolande Lievens, Carlotta Becherini, Marta Scorsetti, Filippo Alongi, Umberto Ricardi, Barbara Alicja Jereczek-Fossa, Paulien Westhoff, Jasna But-Hadzic, Joachim Widder, Xavier Geets, Samuel Bral, Maarten Lambrecht, Charlotte Billiet, Igor Sirak, Sara Ramella, Ivaldi Giovanni Battista, Sergi Benavente, Almudena Zapatero, Fabiola Romero, Thomas Zilli, Kaouthar Khanfir, Hossein Hemmatazad, Berardino de Bari, Desiree N Klass, Shaukat Adnan, Heike Peulen, Juan Salinas Ramos, Michiel Strijbos, Sanjay Popat, Piet Ost, Matthias Guckenberger

Stereotactic body radiotherapy (SBRT) for patients with metastatic cancer, especially when characterised by a low *Lancet Oncol* 2023; 24: e121–32

ESTRO and EORTC OligoCare registry project (EORTC 1822, first cohort of the joint EORTC–ESTRO Radiation Infrastructure for Europe EORTC 1811 study; NCT03818503)



SOME FACTS



G3 tox in 560 (21%) of 2675 patients

G4 tox in 28 (1%) patients

G5 tox in 26 (1%) patients

SBRT-induced toxicity was most frequently observed in

- nivolumab–ipilimumab in the thorax 26%
- multikinase inhibitors 22%
- cetuximab in the cervical area 15%
- bevacizumab in the abdominal area 12%
- ipilimumab in the thorax 12%
- ipilimumab in the abdomen 10%

RISK MITIGATION STRATEGIES

1. Whether systemic therapy can be delivered on the same day as SBRT or not
2. Whether there is a preferred time interval between the SBRT and the systemic therapy
3. Whether the dose of SBRT and number of fractions is reduced when delivered concomitantly with systemic therapy



RISK MITIGATION STRATEGIES

1. Whether systemic therapy can be delivered on the same day as SBRT or not

CAN BE GIVEN ON THE SAME DAY:

Anti-HER2 monoclonal antibodies

NOT ON THE SAME DAY:

anti-CTLA4 (ipilimumab) plus anti-PD-1 (nivolumab)

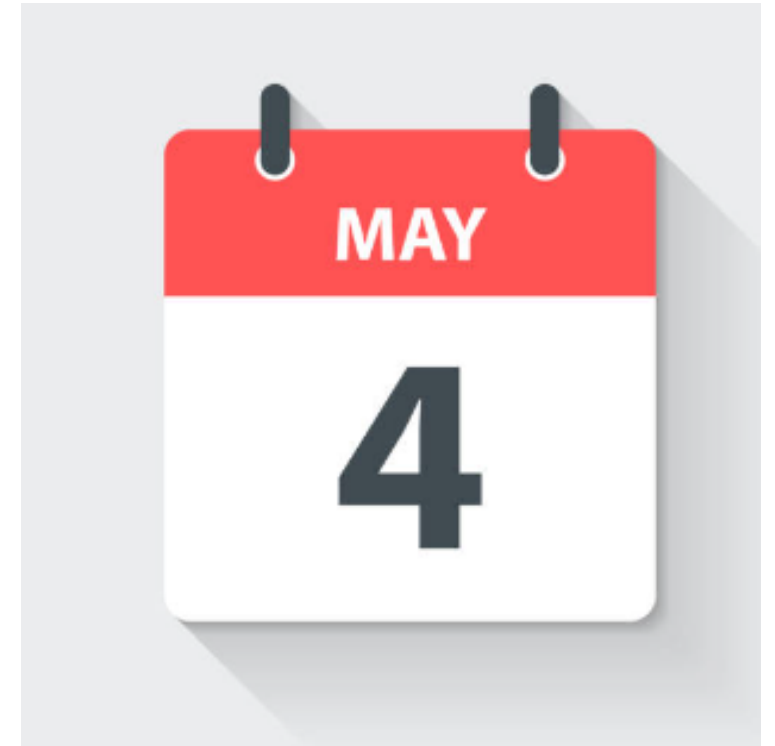
anti-VEGF and anti-EGFR monoclonal antibodies

small molecules EGFRi

BRAFi/MEK

PARPi

Other: no consensus



https://www.istockphoto.com/it/vettoriale/4-maggio-icona-calendario-giornaliero-in-stile-flat-design-gm1363058683-434765260_bgblue

RISK MITIGATION STRATEGIES

2. Whether there is a preferred time interval between SBRT and systemic therapy



No omission: anti-HER2 monoclonal antibodies, anti-PDL-1

one week:

anti-CTLA4 (ipilimumab) plus anti-PD-1 (nivolumab)

anti-VEGF and anti-EGFR monoclonal antibodies

two weeks: BRAFi/MEK

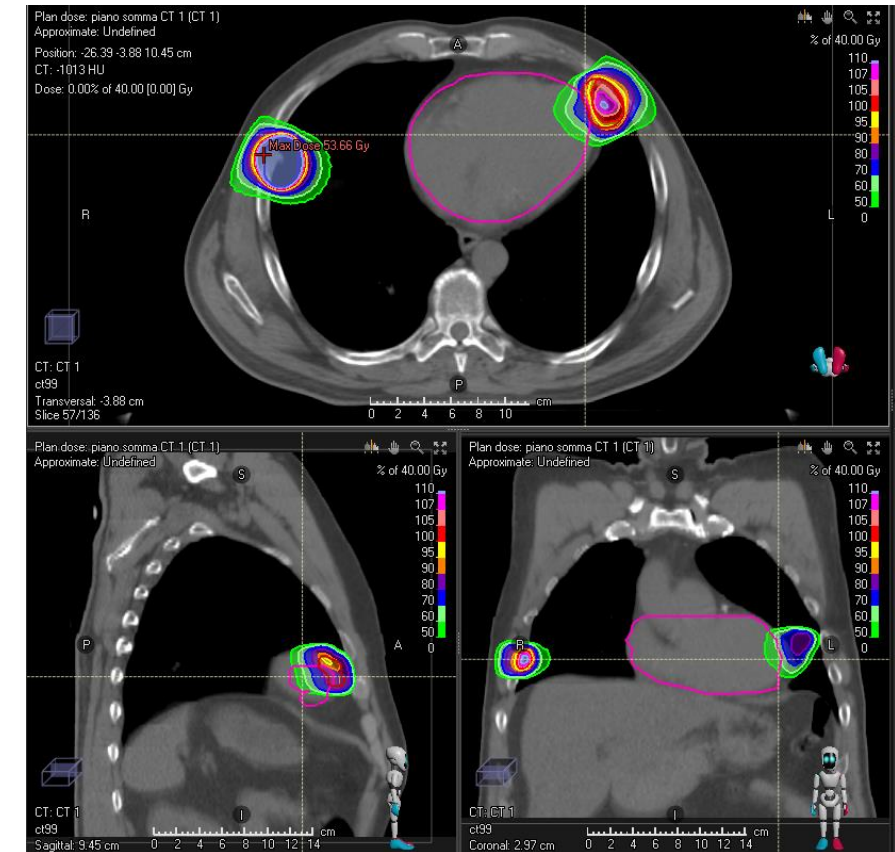
omit one cycle: monoclonal antibodies anti-VEGF

Others: no consensus

RISK MITIGATION STRATEGIES

3. Whether the dose of SBRT and number of fractions is reduced when delivered concomitantly with systemic therapy

**Consensus:
NO CHANGE IN SBRT**



Play it safe...

Practical Radiation Oncology® (2021) 11, e355–e365



Topic Discussion

Organ at Risk Dose Constraints in SABR: A Systematic Review of Active Clinical Trials



Serenna G. Gerhard, BHSc (candidate),^a David A. Palma, MD, PhD,^{a,*}
Andrew J. Arifin, MD,^a Alexander V. Louie, MD, PhD,^b George J. Li, HBSc,^c
Faiez Al-Shafa, MD,^d Patrick Cheung, MD,^b George B. Rodrigues, MD, PhD,^a
Carol W. Bassim, DMD, MSc, MHSc,^e and Mark T. Corkum, MD, MSc^b

**OARs Constraints review from
85 trials using:**

**Timermann et al
UK SABR Hanna et al
AAPM
Hy-TEC etc**

Table 5 Comparison of modal 5 fraction dose constraints included in our study with AAPM-TG 101, Timmerman, NRG-BR001, and the UK Consensus Guidelines

Organ	Parameter	Mode of included studies	AAPM-TG 101	Timmerman	NRG-BR001	UK Consensus
		Volume dose (Gy)	Volume dose (Gy)	Volume dose (Gy)	Volume dose (Gy)	Volume dose (Gy)
Colon	D _{max} (<0.1 cm ³)	38	38	38	40	
	D0.5 cm ³	32				32
	D20 cm ³	25	25	25	28.5	
Rectum	D _{max} (<0.1 cm ³)	38	38	38	55	
	D0.5 cm ³	30, 32				32
	D3.5 cm ³	50			50	
	D20 cm ³	25	25	25	32.5	
Bladder wall	D _{max} (<0.1 cm ³)	38	50	38	38	
	D0.5 cm ³	38				38
	D15 cm ³	18.3	30	18.3	20	18.3
Ureter	D _{max} (<0.1 cm ³)	45			45	
	D0.5 cm ³	45				45
Penile bulb	D _{max} (<0.1 cm ³)	50		50		
	D0.5 cm ³					50
	D3 cm ³	30		30	30	30
Femoral heads	D10 cm ³	30	30	30	30	30

Table 5 Comparison of modal 5 fraction dose constraints included in our study with AAPM-TG 101, Timmerman, NRG-BR001, and the UK Consensus Guidelines

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Rectum	D _{max} (<0.1 cm ³)	38	38	38	55	
	D0.5 cm ³	30, 32				
	D3.5 cm ³	50			50	
	D20 cm ³	25	25	25	32.5	
Bladder wall	D _{max} (<0.1 cm ³)	38	50	38	38	
	D0.5 cm ³	38				
	D15 cm ³	18.3	30	18.3	20	
Ureter	D _{max} (<0.1 cm ³)	45			45	
	D0.5 cm ³	35				
Penile bulb	D _{max} (<0.1 cm ³)	45				
	D0.5 cm ³	35				
	D3 cm ³	35				
Femoral heads	D10 cm ³	35				

WARNING:

- 1. No clinical data matched with constraints
- 2. Readers should exercise prudence when reviewing and referencing such constraints.

RISK MITIGATION STRATEGIES

1. Whether systemic therapy can be delivered on the same day as SBRT or not

2. Whether there is a preferred time interval between the SBRT and the systemic therapy

3. Whether the dose of SBRT and number of fractions is reduced when delivered concomitantly with systemic therapy

4. Drug dose reduction?





Meattini I et al. Cancer Treat rev 2022

Recommendations based on preclinical and clinical evidence on how to properly integrate RT with approved drugs in breast cancer

Recommendations based on preclinical and clinical available evidence on how to properly integrate radiation therapy with approved drugs for breast cancer.

Family drug	Drug	Preclinical Effectiveness	Clinical Toxic effect	LoE ^o	Recommendation concomitant treatment	Drug 5-half-lives, days*
CDK4/6i	Palbociclib	Increased	Increased	4	Cautionary	5.8
	Ribociclib	Increased	Increased		Cautionary	6.7
	Abemaciclib	Increased	Increased		Cautionary	5
PI3Ki mTORi	Alpelisib	Increased	Uncertain	4	Unsuitable	1.9
	Everolimus	Increased	Increased		Unsuitable	6.2
Anti-HER	Trastuzumab	Increased	Safe	3	Suitable	175
	Pertuzumab	Increased	Safe		Suitable	90
	Lapatinib	Increased	Safe		Suitable	5
PARPi	T-DM1	Uncertain	Uncertain/Safe	4	Cautionary	20
	Olaparib	Increased	Increased		Unsuitable	3.1
	Talazoparib	Increased	Increased		Unsuitable	18.7
Immunotherapy	Atezolizumab	Uncertain	Safe	4	Suitable	135
	Pembrolizumab	Uncertain	Safe		Suitable	110



International multidisciplinary consensus on the integration of radiotherapy with new systemic treatments for breast cancer: European Society for Radiotherapy and Oncology (ESTRO)-endorsed recommendations



Icro Meattini, Carlotta Becherini, Saverio Caini, Charlotte E Coles, Javier Cortes, Giuseppe Curigliano, Evandro de Azambuja, Clare M Isacke, Nadia Harbeck, Orit Kaidar-Person, Elisabetta Marangoni, Birgitte V Offeren, Hope S Rugo, Viola Salvestrini, Luca Visani, Andrea Morandi, Matteo Lambertini, Philip Poortmans*, Lorenzo Livi*, on behalf of the Consensus Panellist Group†

Novel systemic therapies for breast cancer are being rapidly implemented into clinical practice. These drugs often have [Lancet Oncol 2024; 25: e73-83](#)

40 panellists

Class	Agent	Adjuvant RT	Brain RT (WBRT or SRS)	Extracranial SBRT or palliation
CDK4/6	abemaciclib, palbo, ribo	Trial (100%)	Trial (92.5%)	OK (90%)
PIK3 inhibitors		No (90%)	No (90%)	No (90%)
mTOR		No (95%)	No (95%)	No (95%)
Anti HER2 (no ACD)	trastuzumab, pertuzumab	Ok (100%)	Ok (97.5%)	
	lapatinib	Ok (85%)	Ok (87.5%)	
	newer tyrosine kinase inhibitors (ie, neratinib, tucatinib)	Trial (97.5%)	Trial (97.5%)	Trial (97.5%)
Antibody–drug conjugates	trastuzumab emtansine (T-DM1)	OK (92.5%)	No (90%)	
	trastuzumab deruxtecan	Trial (100%)	Trial (100%)	Trial (100%)
PARP inhibitors		Trial (97.5%)	Trial (80%)	Trial (80%)
Immunotherapy		Ok (95%)	Ok (92.5%)	Ok (92.5%)

Clinical Practice Guideline

Treatment of Oligometastatic Non-Small Cell Lung Cancer: An ASTRO/ESTRO Clinical Practice Guideline

Puneeth Iyengar, MD, PhD,^{a,*} Sean All, MD,^a Mark F. Berry, MD,^b Thomas P. Boike, MD,^c Lisa Bradfield, BA,^d Anne-Marie C. Dingemans, MD, PhD,^e Jill Feldman, MA,^f Daniel R. Gomez, MD,^g Paul J. Hesketh, MD,^h Salma K. Jabbour, MD,ⁱ Melenda Jeter, MD, MPH,^{j,†} Mirjana Josipovic, PhD,^k Yolande Lievens, MD, PhD,^l Fiona McDonald, MD,^m Bradford A. Perez, MD,ⁿ Umberto Ricardi, MD,^o Enrico Ruffini, MD,^p Dirk De Ruyscher, MD, PhD,^q Hina Saeed, MD,^r Bryan J. Schneider, MD,^s Suresh Senan, MRCP, FRCR, PhD,^t Joachim Widder, MD, PhD,^u and Matthias Guckenberger, MD^v

ASTRO

ESTRO

European Society for
Radiotherapy & Oncology

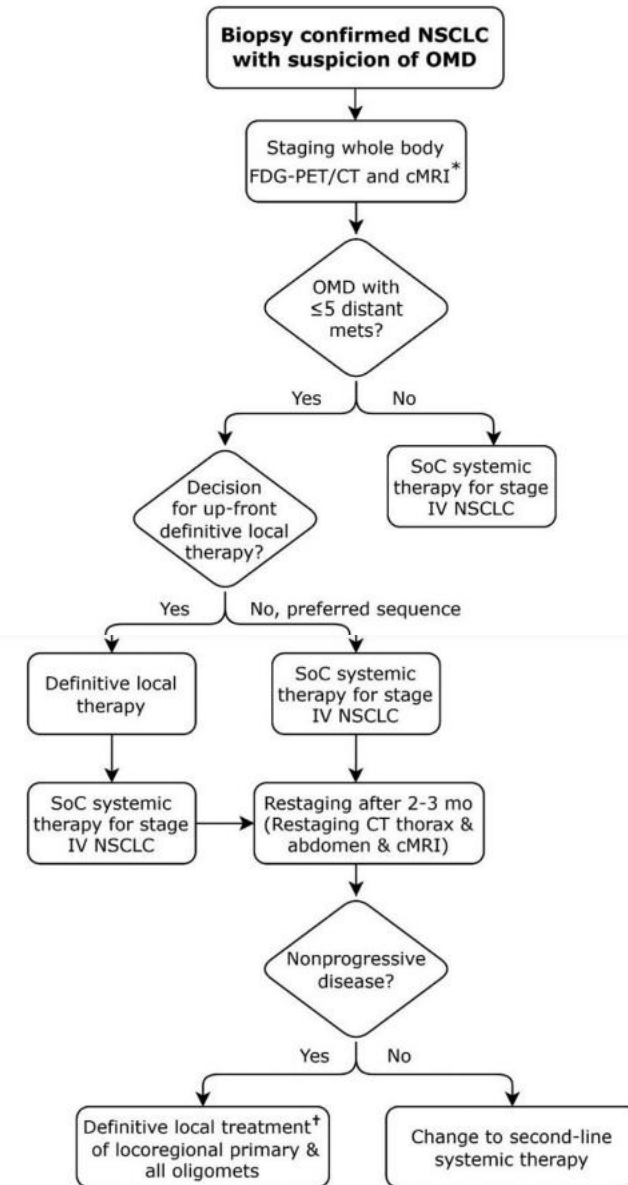




Table 5 Sequencing and timing of treatment therapies for oligometastatic NSCLC

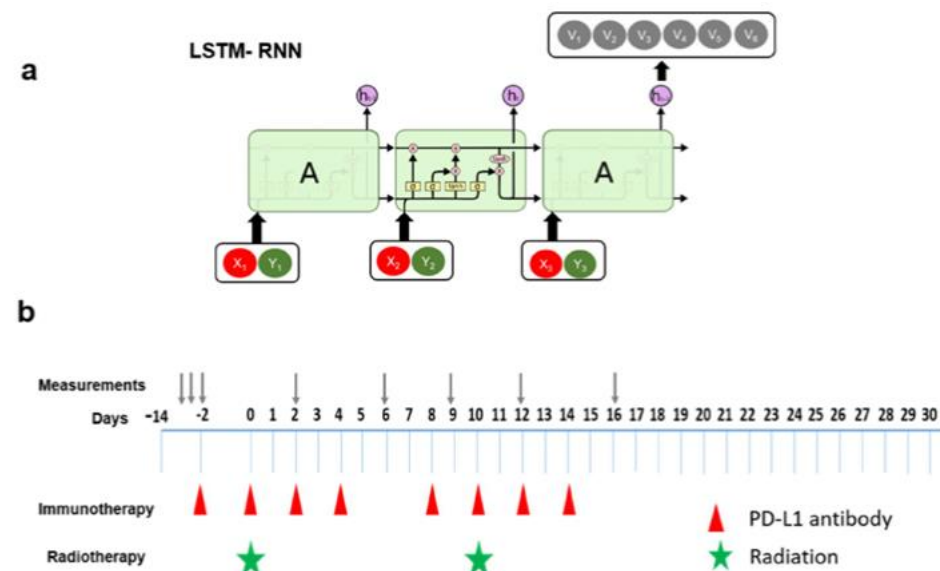
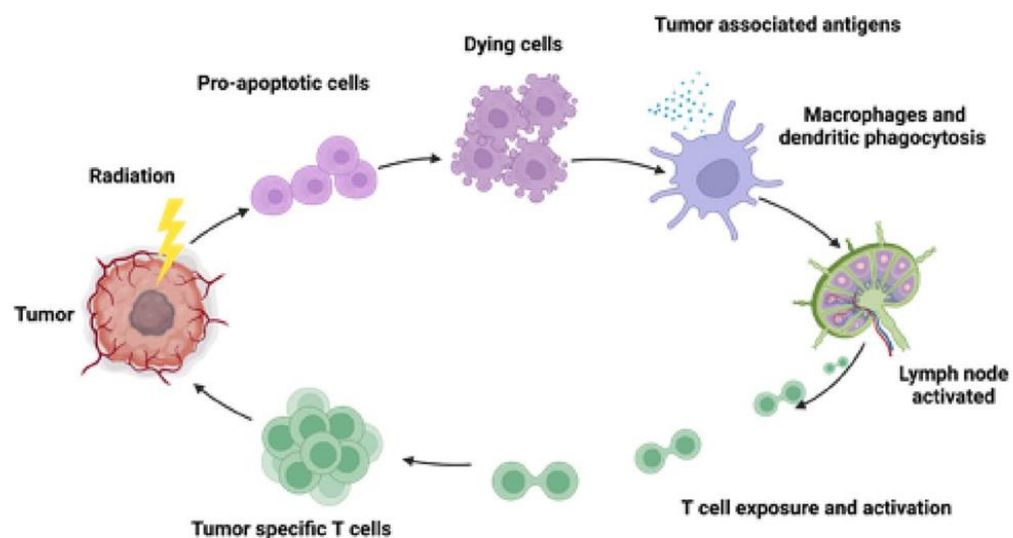
KQ3 Recommendations	Strength of Recommendation	Quality of Evidence (refs)
1. For patients with synchronous oligometastatic NSCLC, ≥ 3 months of systemic therapy is recommended prior to definitive local therapy.	Strong	Moderate 8,35
2. For patients with oligometastatic NSCLC, up-front definitive local treatment for <i>symptomatic</i> lesions should be prioritized. <u>Implementation remark:</u> Symptomatic disease sites (eg, brain metastases) are treated with up-front definitive local therapy.	Strong	Low 56
3. For patients with synchronous oligometastatic NSCLC, the temporary pause of systemic therapy during definitive local therapy versus concomitant treatment should be discussed using a multidisciplinary team approach.	Strong	Expert Opinion
4. For patients with synchronous oligometastatic NSCLC, maintenance systemic therapy is conditionally recommended after completion of definitive local therapy.	Conditional	Low 8,35
<i>Abbreviations:</i> KQ = key question; NSCLC = non-small cell lung cancer.		





OPEN An AI-based approach for modeling the synergy between radiotherapy and immunotherapy

Hao Peng^{1,2}✉, Casey Moore³, Yuanyuan Zhang¹, Debabrata Saha¹, Steve Jiang^{1,2} & Robert Timmerman¹



TAKE HOME MESSAGES

1. Combination is becoming routine
2. Balancing is based on
 - pausing rules
 - safe SBRT (constraints, technology)
3. Predictive markers of toxicity are needed





THANK YOU

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