

XXXII CONGRESSO NAZIONALE AIRO  
XXXIII CONGRESSO NAZIONALE AIRB  
XII CONGRESSO NAZIONALE AIRO GIOVANI

# AIRO2022

Radioterapia di precisione per un'oncologia innovativa e sostenibile

BOLOGNA, 25-27 NOVEMBRE  
PALAZZO DEI CONGRESSI

 Associazione Italiana  
Radioterapia e Oncologia clinica

 Società Italiana di Radiobiologia

 Associazione  
Italiana  
Radioterapia  
e Oncologia  
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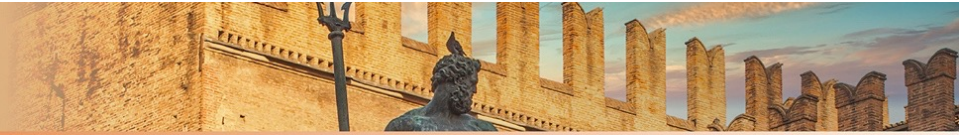
Radioterapia di precisione per un'oncologia innovativa e sostenibile

BOLOGNA, 25-27 NOVEMBRE  
PALAZZO DEI CONGRESSI

**Effect of number of administered lines of systemic treatment on symptomatic and radiologic response to radiotherapy of multiple myeloma: a sub-analysis of RR-Myelo POINT retrospective study.**

Andrea Guerini

ASST Spedali Civili di Brescia -Università degli Studi di Brescia



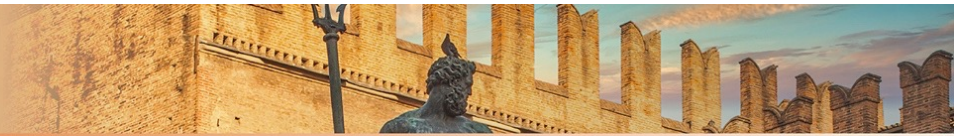
## DICHIARAZIONE

Relatore: ANDREA GUERINI

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 (NIENTE DA DICHIARARE )
- Fondi per la ricerca da aziende con interessi commerciali in campo sanitario (NIENTE DA DICHIARARE)
- 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)





## Multiple myeloma treatment

<https://www.healthcentral.com/condition/multiple-myeloma>

Chemotherapy and systemic agents cornerstone of MM treatment

Osteolytic lesions are present in up to 80% of cases at diagnosis


MM is highly chemosensitive and radiosensitive

RT central role in palliative treatment (pain, structural instability, spinal cord compression)

### COMMON TREATMENTS FOR MULTIPLE MYELOMA


#### CHEMOTHERAPY

Although some meds are in pill form, chemo is usually delivered through an IV infusion or via an injection, killing cancer cells over the course of four to six weeks.




#### TARGETED THERAPY

This type of treatment zeroes in on certain proteins and receptors in cancer cells, slowing the growth or boosting your immune system to fight.




#### STEROIDS

These drug include prednisone and dexamethasone, which help to reduce inflammation, swelling, and pain. They can also ease some chemotherapy side effects.



#### BISPHOSPHONATES

Because myeloma can weaken bones, it's helpful to take a bone-strengthening medication to slow the damage and reduce overall pain.



healthcentral



## Multiple myeloma treatment

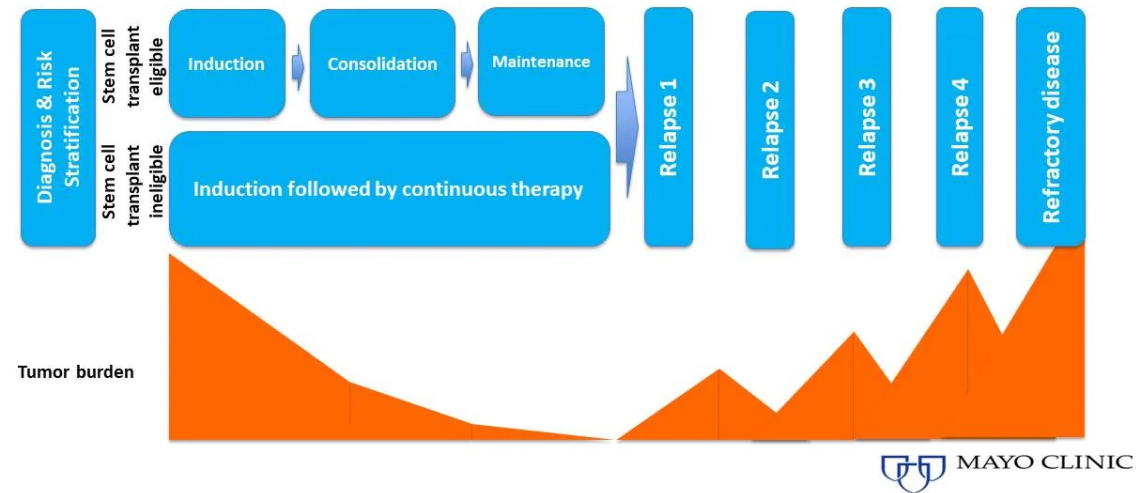
<https://www.mayoclinic.org/medical-professional>

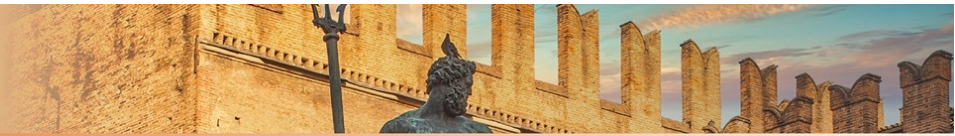
innovative systemic treatments (bortezomib, carfilzomib, ixazomib, lenalidomide, pomalidomide, and daratumumab) improvement in overall survival

novel agents + RT: synergy? increased toxicity?

almost invariably treatment resistance and disease progression.

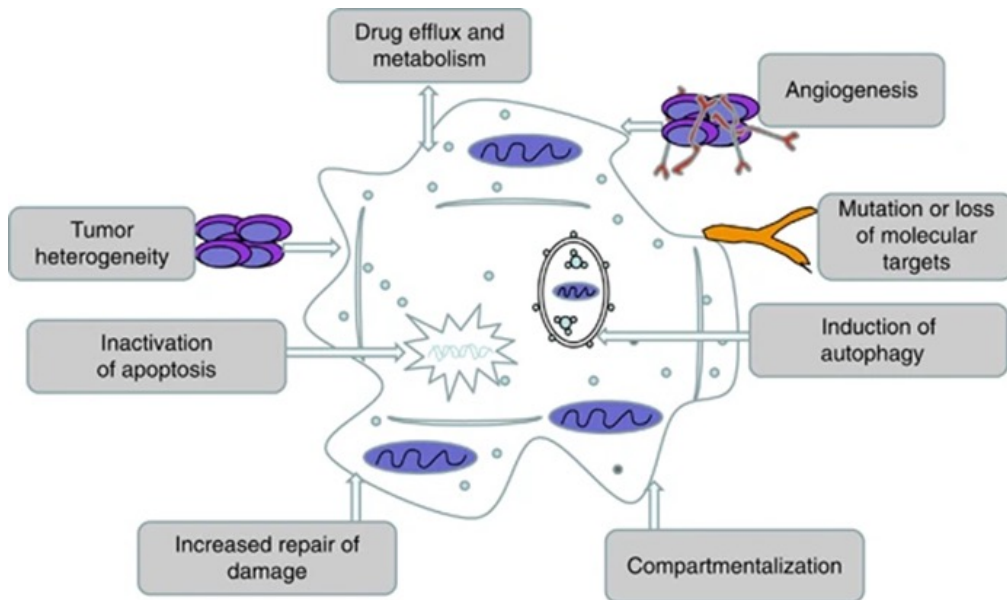
### Multiple myeloma treatment paradigm



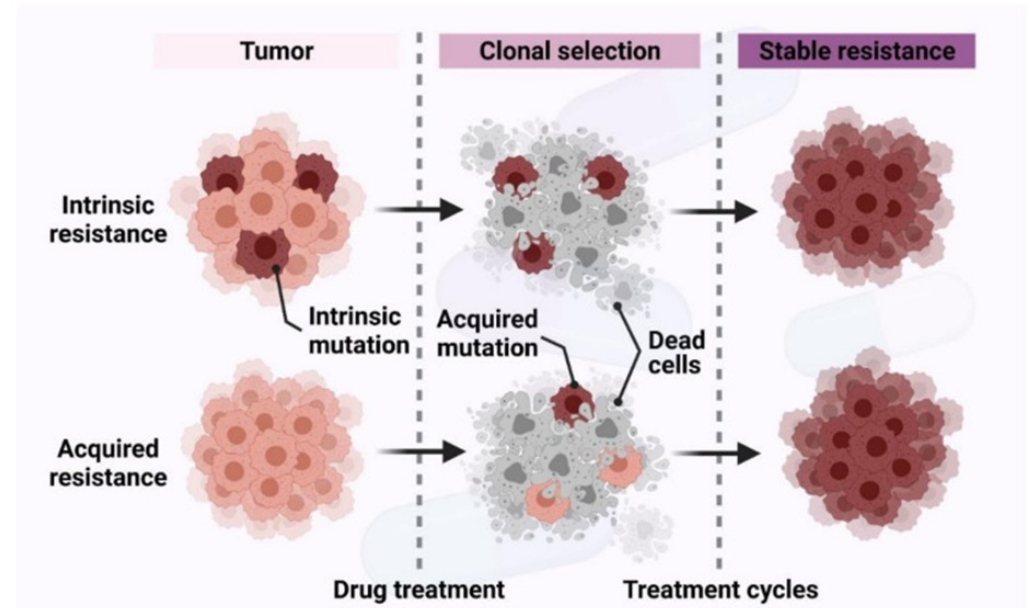


## Multiple myeloma chemoresistance

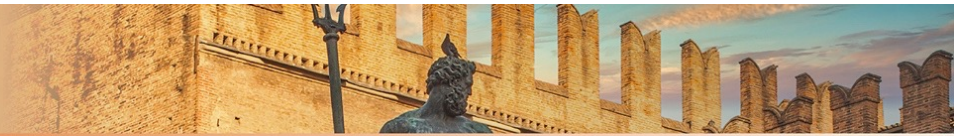
Sui X et al. Cell Death & Disease volume 4, page838 (2013)



Ramos A et al. Int J Mol Sci. 2021 Sep; 22(17): 9451. doi: 10.3390/ijms22179451

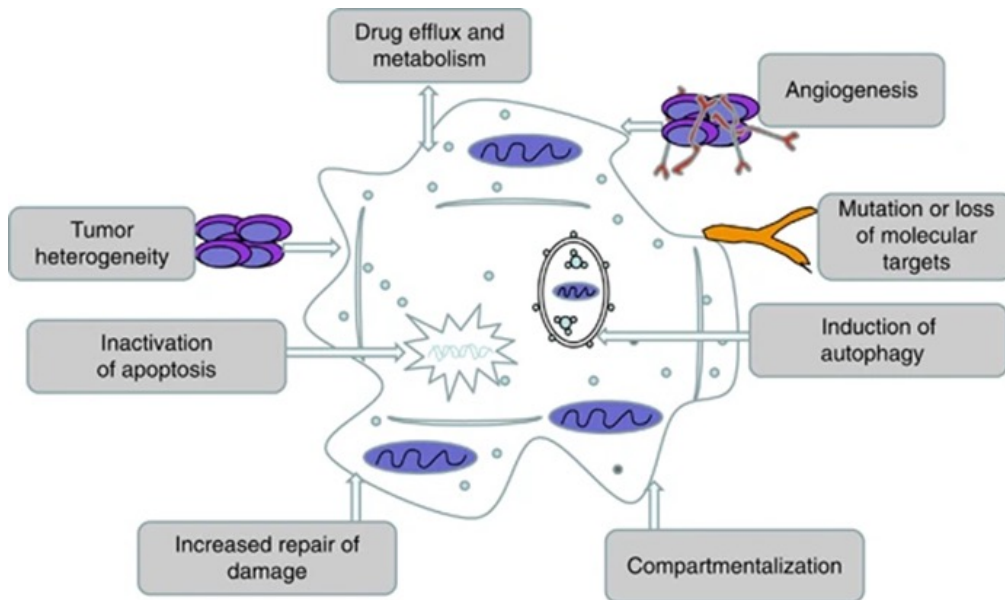




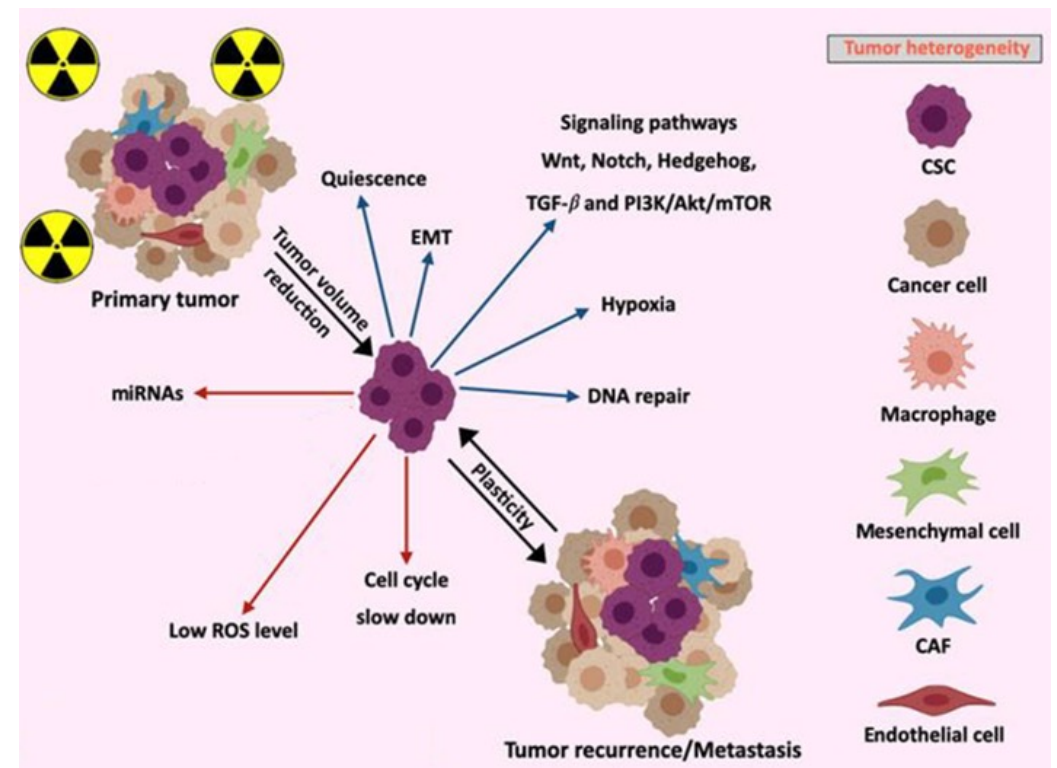


## Multiple myeloma chemoresistance

Sui X et al. Cell Death & Disease volume 4, page838 (2013)



Olivarez-Urbano MA et al. Cells 2020, 9(7), 1651; <https://doi.org/10.3390/cells9071651>



Article

**RR Myelo POINT: A Retrospective Single-Center Study Assessing the Role of Radiotherapy in the Management of Multiple Myeloma and Possible Interactions with Concurrent Systemic Treatment**Andrea Emanuele Guerini <sup>1</sup>, Alessandra Tucci <sup>2</sup>, Filippo Alongi <sup>3</sup> , Eneida Mataj <sup>1</sup>, Angelo Belotti <sup>2</sup>,

RT for MM at our institution from 1 January 2005 to 30 June 2020.

312 patients, 577 lesions

Sites vertebrae (60%) or extremities (18.9%)

RT completed in 96.6% of the accesses, excellent safety profiles (G<sub>≥2</sub> tox 4.1%)

BED10 > 38 Gy and CST significantly associated with higher rates of toxicity

CST and BED10 no impact on the toxicity at one and three months



Article

## RR Myelo POINT: A Retrospective Single-Center Study Assessing the Role of Radiotherapy in the Management of Multiple Myeloma and Possible Interactions with Concurrent Systemic Treatment

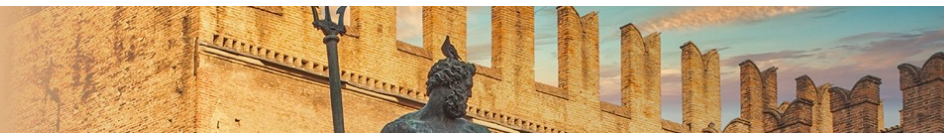
Andrea Emanuele Guerini <sup>1</sup>, Alessandra Tucci <sup>2</sup>, Filippo Alongi <sup>3</sup> , Eneida Mataj <sup>1</sup>, Angelo Belotti <sup>2</sup>,

RT significant improvements in PS

pain control rate 87.4% at the end of treatment, 96.9% at 3 mo, 94% at 6mo

Radiological response rate at 6 mo (181 lesions) 79%, only 4.4% PD

PD significantly more frequent without CST or BED10 < 15 Gy, less frequent with concurrent biologic therapy



Article

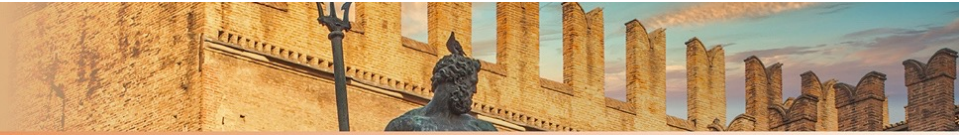
## RR Myelo POINT: A Retrospective Single-Center Study Assessing the Role of Radiotherapy in the Management of Multiple Myeloma and Possible Interactions with Concurrent Systemic Treatment

Andrea Emanuele Guerini <sup>1</sup>, Alessandra Tucci <sup>2</sup>, Filippo Alongi <sup>3</sup>, Eneida Mataj <sup>1</sup>, Angelo Belotti <sup>2</sup>,

Radiological Response at 6 Months ( <i>n</i> of Lesions)					
	Complete response	Partial response	Stable disease	Disease progression	Total
Overall	16 (8.8%)	127 (70.2%)	30 (16.6%)	8 (4.4%)	181
RT alone	8 (11.8%)	43 (63.2%)	10 (14.7%)	7 (10.3%)	68
Concurrent CHT	0 (0%)	9 (69.2%)	4 (30.8%)	0 (0%)	13
Concurrent biological agent	8 (8%)	75 (75%)	16 (16%)	1 (1%)	100
BED <sub>10</sub> < 15 Gy	2 (18.2%)	3 (27.3%)	4 (36.4%)	2 (18.2%)	11
BED <sub>10</sub> 15–38 Gy	8 (25.8%)	13 (41.9%)	9 (29%)	1 (3.2%)	31
BED <sub>10</sub> > 38 Gy	6 (4.3%)	111 (79.9%)	17 (12.2%)	5 (3.6%)	139

Radiological response rate at 6 mo (181 lesions) 79%, only 4.4% PD





## Does number of systemic treatment line influence radiologic response?

no statistically significant difference for number of systemic treatment lines ( $p=0.227$ )

no statistically significant difference across the three different groups ( $p=0.078$ )

pain control rate 97% 1mo, 96.9% 3mo 94% 6mo

no systemic treatment vs 1-2 lines vs > 3 lines

no significant difference between the three different groups ( $p=0.978$  at one month,  $p=0.360$  at three months and  $p=0.416$  at six months)



## Does number of systemic treatment line influence radiologic response?

Number of lines of systemic treatment administered had no statistically significant impact on symptomatic and radiologic response to radiotherapy, suggesting that MM retains its radiosensitivity also after multiple treatments.



Thank you for the attention  
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