

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

STEREOTACTIC RADIOTHERAPY FOR BRAIN METASTASES FROM RENAL CELL CARCINOMA: OUTCOME EVALUATION AND PROGNOSTIC FACTORS ASSESSMENT. A MULTICENTER RETROSPECTIVE STUDY.

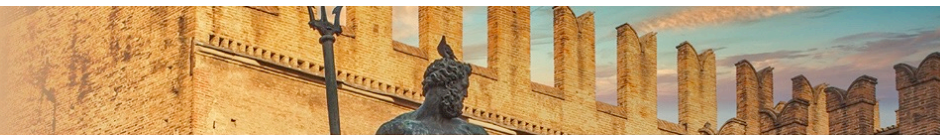
E. Clerici¹, P. Navarria¹, L. Bellu¹, A.M. Marzo¹⁻², F. Pessina¹⁻², G.R.D'Agostino¹, C.Franzese¹⁻², G.Minniti³, V.Pinzi⁴, L.Paganini¹, P.Gallo¹, M.Scorsetti¹⁻²

1. IRCCS Humanitas Research Hospital

2. Department of Biomedical Sciences, Humanitas University

3. Advanced Radiotherapy Center, UPMC San Pietro FBF, Roma, Italy

4. Fondazione IRCCS Istituto Neurologico C. Besta



DICHIARAZIONE

Relatore: Elena Clerici

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)



The kidney represents a **common** site of primary malignant tumour

The incidence rate has been **increasing** recently

seer.cancer.gov Common Types of Cancer	Estimated New Cases 2022
1. Breast Cancer (Female)	287,850
2. Prostate Cancer	268,490
3. Lung and Bronchus Cancer	236,740
4. Colorectal Cancer	151,030
5. Melanoma of the Skin	99,780
6. Bladder Cancer	81,180
7. Non-Hodgkin Lymphoma	80,470
8. Kidney and Renal Pelvis Cancer	79,000
9. Uterine Cancer	65,950
10. Pancreatic Cancer	62,210
-	-
Cancer of Any Site	1,918,030

30% of all patients undergoing surgical resection of primary tumour will develop **distant metastases** during follow-up:

1. lung
2. liver
3. bone
4. **brain**

IMDC Risk Calculator

Karnofsky Performance status
 Is the Karnofsky Performance status < 80%?

Time from diagnosis to treatment
 Has it been < 1 year from time of diagnosis to systemic therapy?

Hemoglobin < Lower limit of normal
 Usually < 120 g/L (12.0 mg/dL) for females and < 135 g/L (13.5 mg/dL) for males*

Neutrophils > Upper limit of normal
 Usually > 7.8 x 10⁹/L or 7000-8000/mm³*

Platelets > Upper limit of normal
 Usually > 400-450 cells/μL*

Corrected Calcium > Upper limit of normal
 Usually > 2.6 mmol/L or > 10.6 mg/dL*

GPA Index Home

From which of the following diagnoses does your patient have brain metastases?

Renal Cell Carcinoma >

What is the patient's Karnofsky Performance Score (KPS)?

< 80 >

80 >

90 - 100 >

Does the patient have extra-cranial metastases?

Yes >

No >

What is the patient's hemoglobin count?

≤ 11.1 g/dL >

11.2 - 12.5 g/dL or unknown >

≥ 12.6 g/dL >

How many brain metastases does the patient have?

1 - 4 >

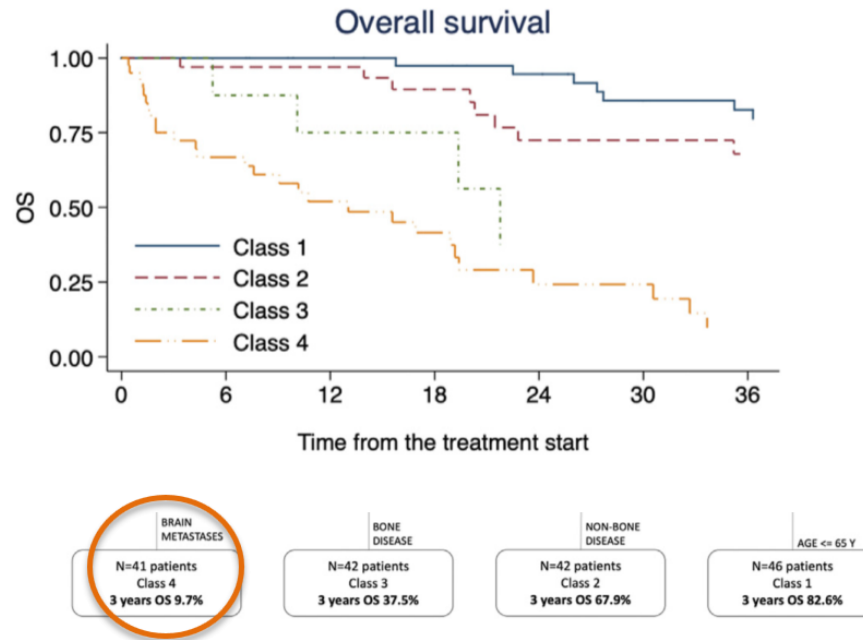
≥ 5 >

The kidney represents a **common** site of primary malignant tumour

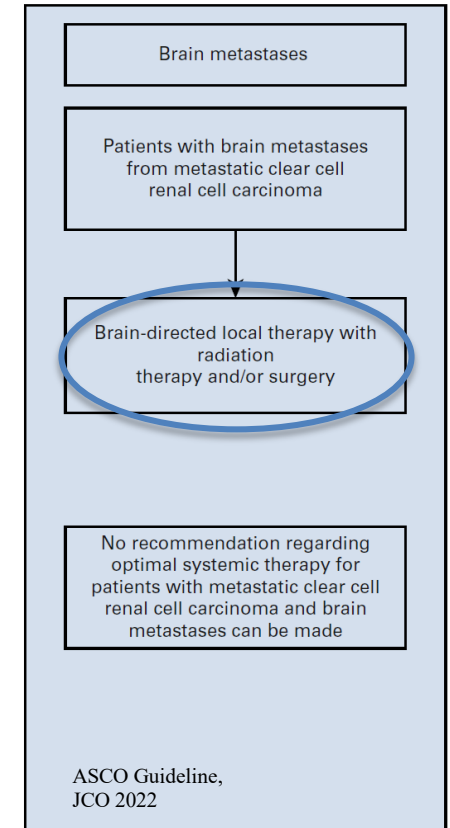
The incidence rate has been **increasing** recently

30% of all patients undergoing surgical resection of primary tumour will develop **distant metastases** during follow-up:

1. lung
2. liver
3. bone
4. **brain**



C. Franzese et al. Risk-group Classification by Recursive Partitioning Analysis of Patients Affected by Oligometastatic Renal Cancer Treated with Stereotactic Radiotherapy. Clinical Oncology 2022





KQ1 Recommendations	Strength of Recommendation	Quality of Evidence (refs)
1. For patients with an ECOG performance status of 0-2 and up to 4 intact brain metastases, SRS is recommended.	Strong	High 13-18
2. For patients with an ECOG performance status of 0-2 and 5-10 intact brain metastases, SRS is conditionally recommended.	Conditional	Low 19-21
3. For patients with intact brain metastases measuring <2 cm in diameter, single-fraction SRS with a dose of 2000-2400 cGy is recommended. <u>Implementation remark:</u> If multifraction SRS were chosen (eg, V12 Gy >10 cm ³ [see KQ4]), options include 2700 cGy in 3 fractions or 3000 cGy in 5 fractions.	Strong	Moderate 5,13,16,19,22
4. For patients with intact brain metastases measuring ≥2 to <3 cm in diameter, single-fraction SRS using 1800 cGy or multifraction SRS (eg, 2700 cGy in 3 fractions or 3000 cGy in 5 fractions) is conditionally recommended (see KQ4).	Conditional	Low 22-24
5. For patients with intact brain metastases measuring ≥3 to 4 cm in diameter, multifraction SRS (eg, 2700 cGy in 3 fractions or 3000 cGy in 5 fractions) is conditionally recommended. <u>Implementation remarks:</u> <ul style="list-style-type: none"> • If single-fraction SRS were chosen, doses up to 1500 cGy may be used (see KQ4). • Multidisciplinary discussion with neurosurgery to consider surgical resection is suggested for all tumors causing mass effect, irrespective of tumor size. 	Conditional	Low 23,24
6. For patients with intact brain metastases measuring >4 cm in diameter, surgery is conditionally recommended, and if not feasible, multifraction SRS is preferred over single-fraction SRS. <u>Implementation remark:</u> Given limited evidence, SRS for tumor size >6 cm is discouraged.	Conditional	Low 19,22-24

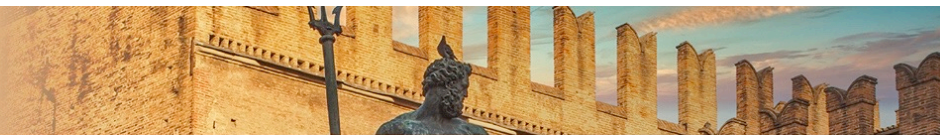
Gondi et al, ASTRO Clinical Practice Guideline. Practical Radiation Oncology, 2022

We evaluated the clinical outcomes of a large series of brain metastases from renal cell carcinoma (BM-RCC) patients treated in **3 Italian centers** using stereotactic radiotherapy (SRT).

Efficacy was evaluated in terms of:

- Local Control (LC)
- Brain Distant Failure (BDF)
- Progression Free Survival (PFS)
- Overall Survival (OS).

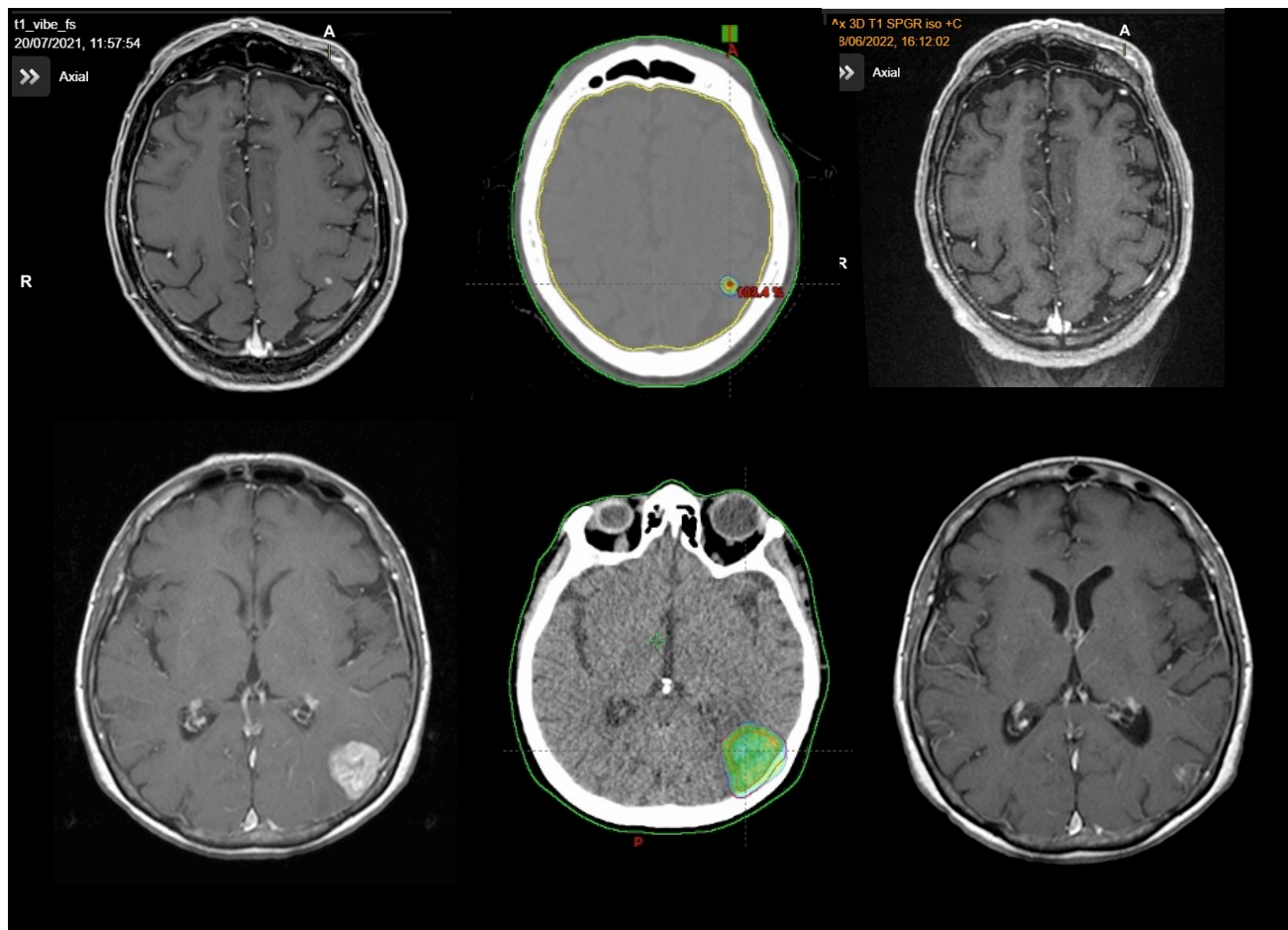
Prognostic factors related to OS were analyzed too.



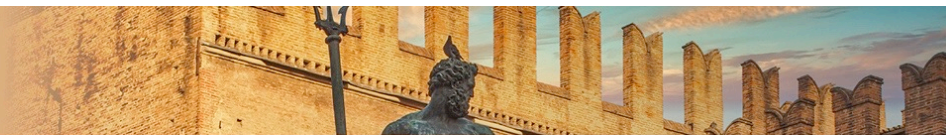
10/2005 – 07/2021

Retrospective

SRS/HSRS/CH+HSRS



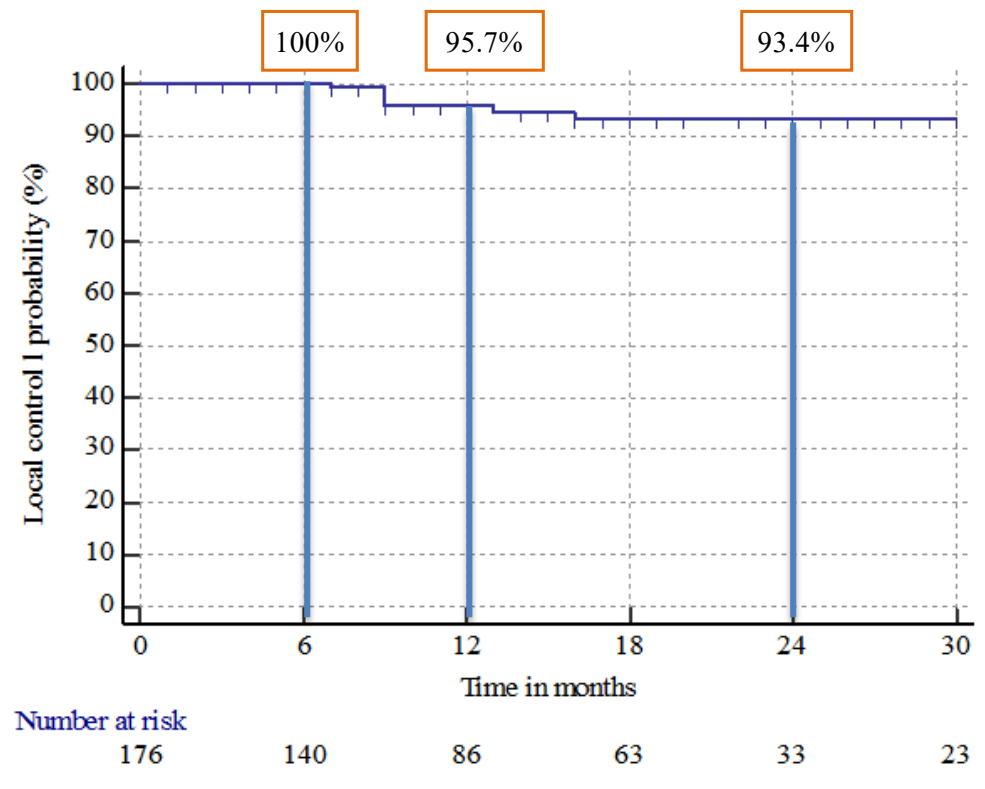
From October 2005 to July 2021	N. (tot 120 pts)	%
Median age (range) at SRT time	64 years (range 37–84 years)	
Gender		
Female	32	26.7
Male	88	73.3
KPS		
70	2	1.7
80	30	25.0
90-100	88	73.3
Stage at diagnosis		
I-III	71	59.2
IV	49	40.8
EC met at BMs treatments		
No	13	10.8
Yes	107	89.2
DS GPA		
1.5-2	11	9.2
2.5-3	52	43.3
3.5-4	57	47.5
IMDC score		
Favorable	28	23.3
Intermediate	91	75.8
Poor	1	0.9



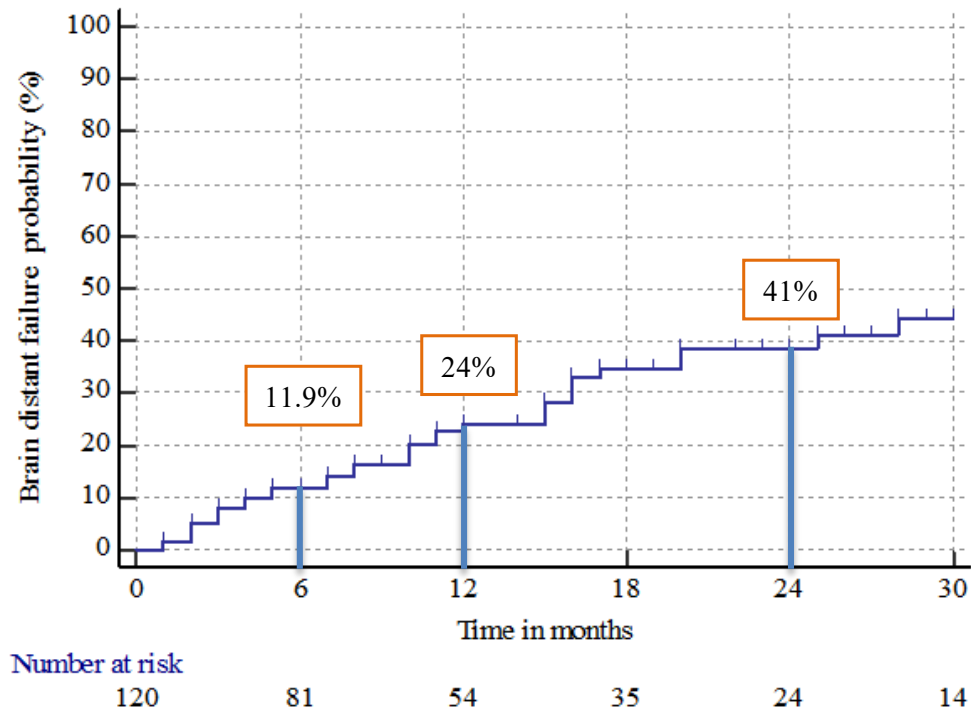
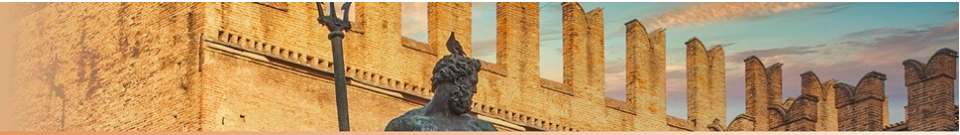
From October 2005 to July 2021	N. of BMs (tot 176)	%
No. of BMs		
1	84	70
2	26	21.7
3	8	6.7
4	2	1.6
Treatment:		
SRS	120	68.3
HSRS	28	15.9
Ch+HSRS	28	15.9
SRS for BMs:		
24-25Gy/1fr	80	45.4
20-22Gy/1fr	34	19.3
16-18Gy/1fr	6	3.4
HSRS for BMs		
21-24Gy/3frs	10	5.7
32Gy/4frs	10	5.7
30Gy/5frs	8	4.5
HSRS for surgical cavity		
27-30Gy/3frs	25	14.2
30Gy/5frs	3	1.7



The median follow-up time was 70 months (range 11-230 months)

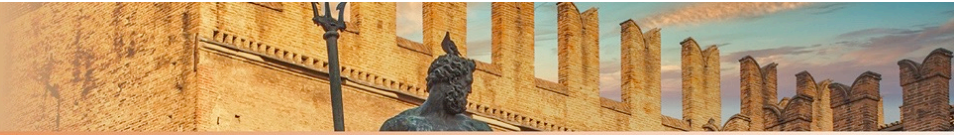


No severe neurological toxicity

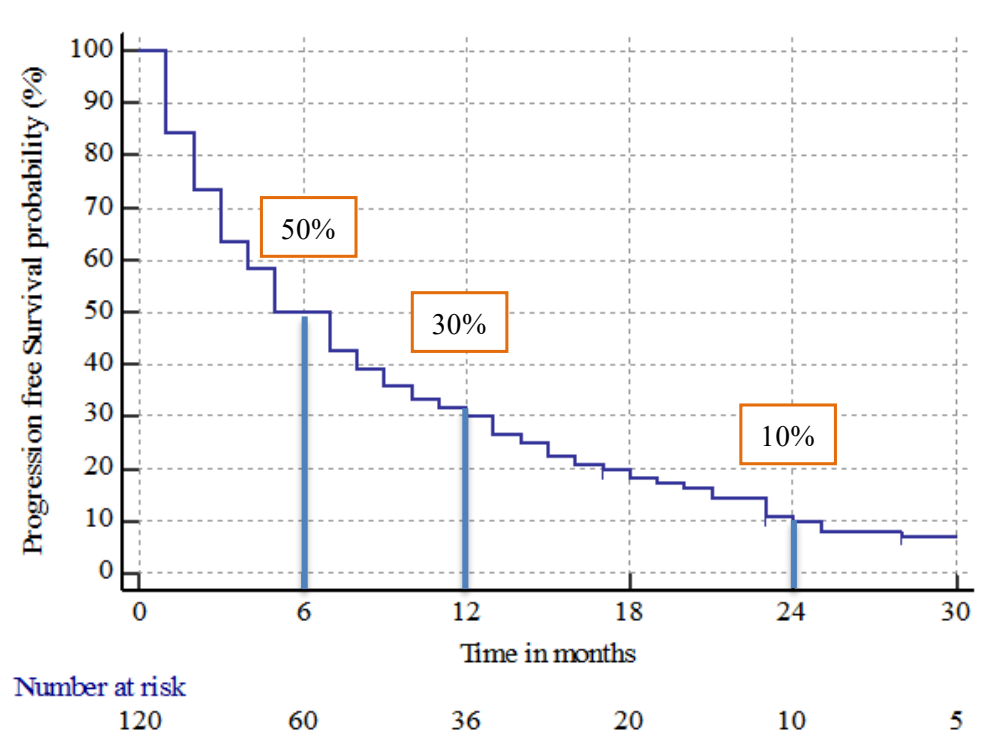


4 pts: WBRT

31 pts: SRS/HSRS

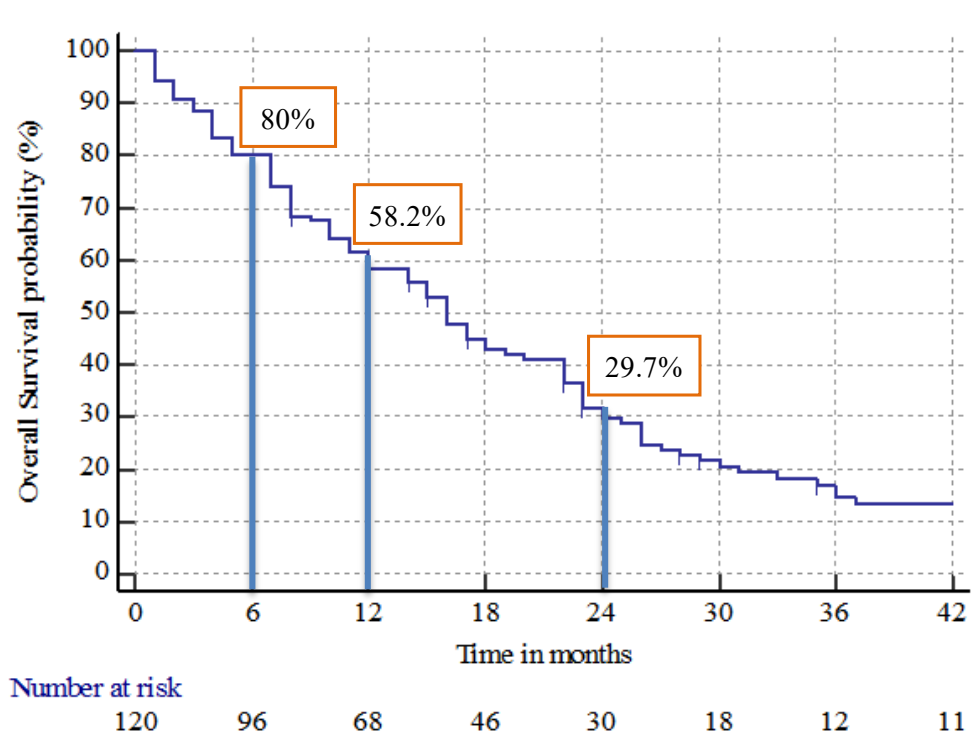


The median PFS was 5 months





The median OS was 16 months



Multivariate analysis

DS-GPA score

Combined local treatment (CH+HSRS)



SRT have proven to be an **effective** local treatment for BM-RCC.

Multidisciplinary evaluation and careful assessment of prognostic factors are useful for the optimal therapeutic choice.



AIRO2022

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

Radioterapia di precisione per un'oncologia innovativa e sostenibile

