
XXXIII CONGRESSO NAZIONALE AIRO
AIRO2023
BOLOGNA,
27-29 OTTOBRE 2023
PALAZZO DEI CONGRESSI
Radioterapia Oncologica: l'evoluzione al servizio dei pazienti
Associazione Italiana
Radioterapia e Oncologia clinica

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RADIOTHERAPY FOR HEPATOCELLULAR CARCINOMA (HCC) WITH PORTAL VEIN TUMOR THROMBOSIS (PVTT) AND/OR VENA CAVA INVOLVEMENT (VCI): CLINICAL OUTCOMES ON 41 PATIENTS

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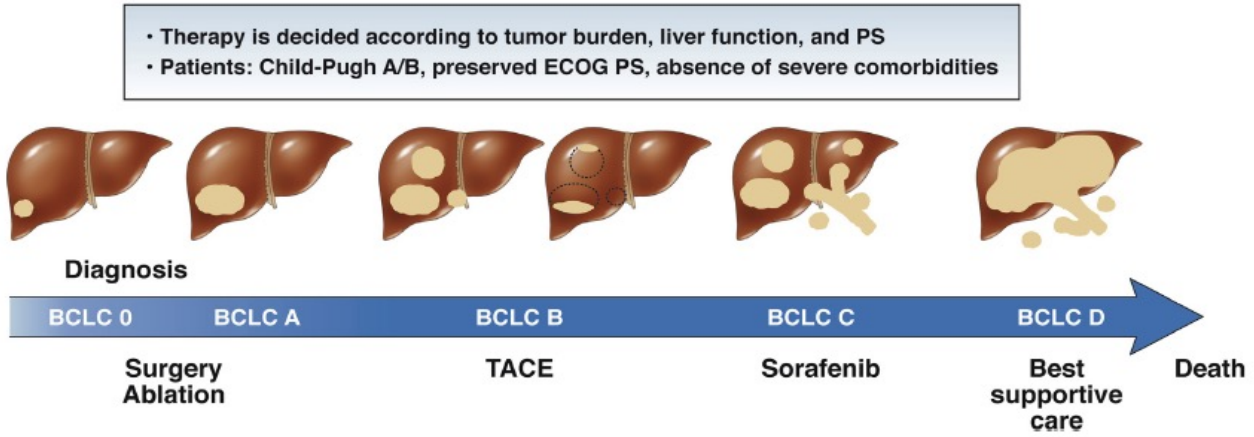
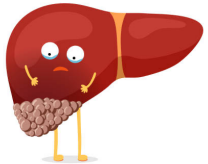
Hepatocellular carcinoma HCC

- Most frequent primary liver cancer
- 6th most common malignancy
- Rapid disease progression
- Commonly associated with cirrhosis, HBV, HCV

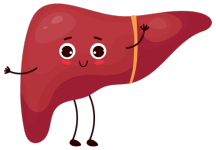


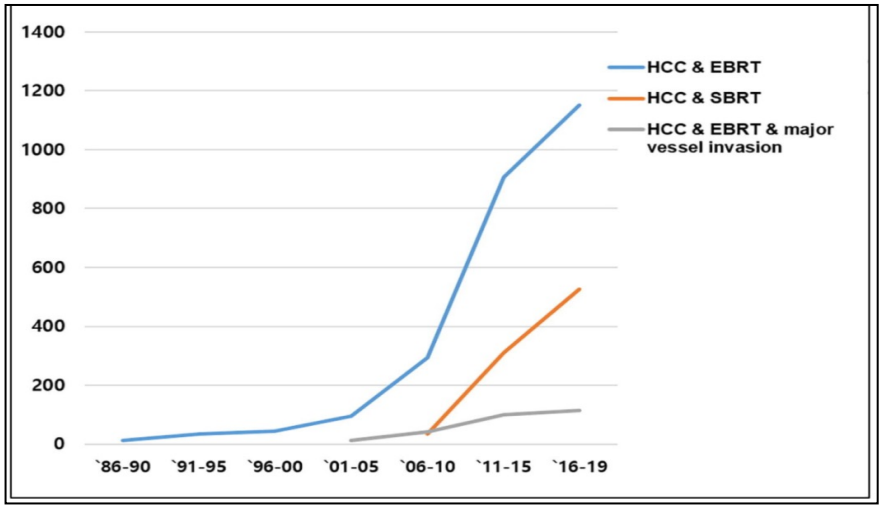
Radiotherapy for HCC over the years

- Lack of high-level evidence
- Liver toxicity, RILD - associated using older techiniques



- SBRT or HRT (IMRT-VMAT) allows high dose delivery and maximum OAR sparing



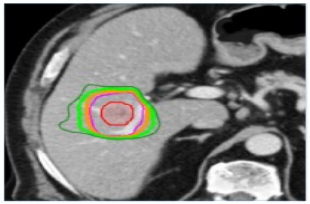


Park S et al. WJG (2020)
C.H. Rim et al. Radiotherapy and Oncology (2020)

Role of SBRT

Stage 0

Not a resection candidate
Location not suitable for thermal ablation

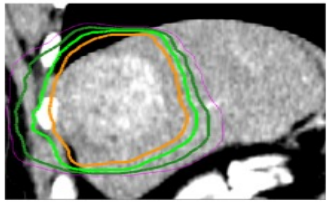


Consider SABR if abutting major vessels or bile ducts.
Non-invasive option for subphrenic or exophytic HCC.

Stage A

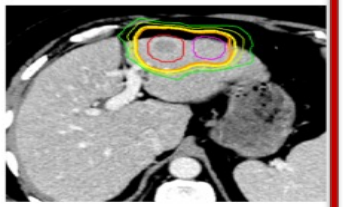
Single lesion

Not for resection/OLT
Location not suitable or too large for thermal ablation



Multifocal
≤ 3 lesions ≤ 3cm

Not for resection/OLT
Not suitable for or recurred following ablation or TACE

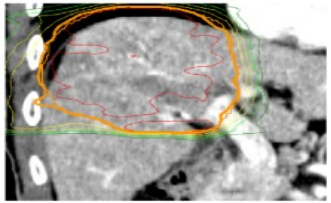


Potential first-line ablative therapy or adjunctive therapy for residual or recurrent disease following TACE.
Potential option for bridge to OLT in patients unsuitable for thermal ablation or TACE.

Stage C

Dominant lesion with MVI
Liver confined disease

Systemic therapy
TACE + RT or TARE
SABR



RT or SABR can be effective in controlling tumor thrombus.
Consider combining with TACE.

Shanker MD, et al. J Gastroenterol Hepatol 2021

Study description

Retrospective evaluation of local control and survival in Stage C hepatocarcinoma patients with portal vein tumor thrombosis treated with HRT/SBRT

PVTT Type 1-4
(Cheng classification)
mOS: 3-10 months

→ intrahepatic spread
→ extrahepatic spread

Patients with HCC + PVTT

SBRT/HRT

- 60-30 Gy
- 5-10 fractions
- BED10 56 Gy (37-120 Gy)

End-points

- Local control
- Extrafield-PFS
- Systemic-PFS
- Overall survival

Study population

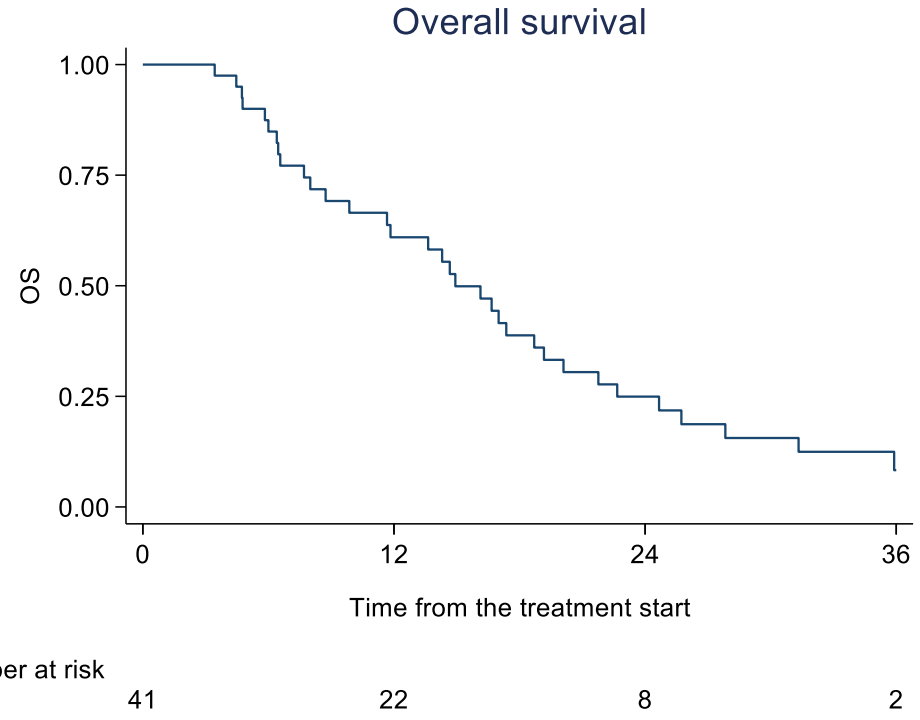
Patient characteristics

Patients	41
Mean age	77,83
Mean age at diagnosis	67,68
Hepatitis C infection	22
Hepatitis B infection	7
Hepatitis D infection	0
HIV infection	1
Esophageal varices	14
Alcohol-related cirrhosis	7
Metabolic-related cirrhosis	8

Prior locoregional therapies

Type of treatment	Number of patients
Surgical resection	6
Percutaneous ethanol injection (PEI)	2
Radiofrequency/Microwave ablation	13
Transarterial chemoembolization	22
Systemic therapy	10

Results



Overall response of 75.6%

19 (46.3%) Partial response

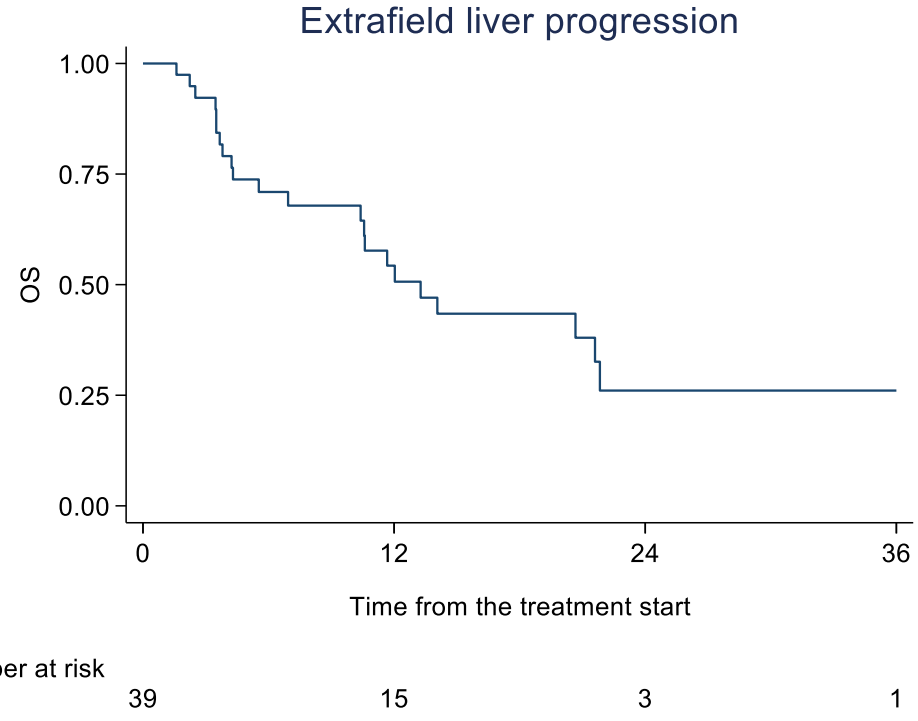
2 (4.9%) Complete response.

Median OS – 14.9 months

1 year rate - 60.9% (95%CI 43.7 – 74.3)

2 year rate - 8.3% (95%CI 1.7 – 21.5)

Results



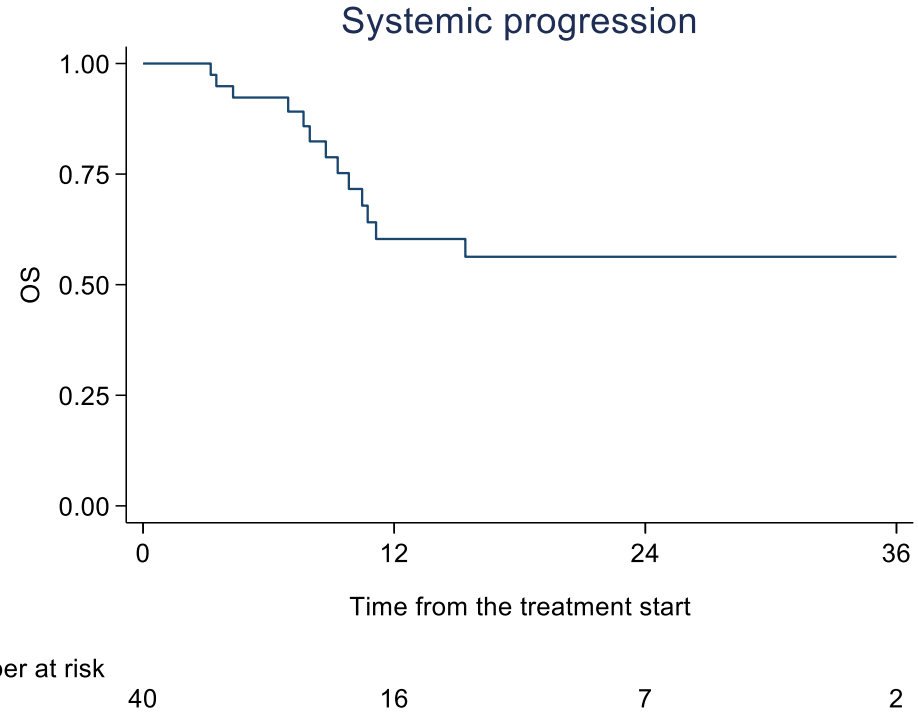
Median Extrafield-PFS 13.2 months

- 1 year rate – 54.2% (95%CI 36.1 –69.3)
- 2 year rate - 26.0% (95%CI 10.1 – 45.4)

Factors related to E-PFS:

- BED10 (HR 0.98, 95%CI 0.96 – 0.99; p=0.031)
- In-field progression (HR 5.91, 95%CI 2.13 – 16.3; p=0.001)

Results



Systemic-PFS

- 1 year rate - 60.3% (95%CI 40.3 – 75.4)
- 2 year rate - 56.3% (95%CI 36.3 – 72.2)

Factor related to S-PFS:

- BED10 ≥ 56 Gy was associated with improved SPFS (HR 0.96, 95%CI 0.94 – 0.99; p=0.042)

Conclusions

SBRT/HRT is a promising therapeutic option for HCC patients with PVTT, in terms of local control, OS, PFS and toxicity:

- 75.6% response rate
- Median OS 14.9 m
- BED10 ≥ 56 Gy was associated with an increased time to systemic progression
- Only three patients experienced G3 late liver toxicity after RT.

Case example from our study

81 year old male, Monofocal HCC at diagnosis

- 2016 Radiofrequency in S8 lesion
- 2019 Transarterial embolisation on recurrent S8 lesion
- 03/2022 PD at CT control scan
  - Volumetric increase of lesion in S8
  - 2 new lesions in S7
  - Portal vein thrombosis
- 07/2022 Ulterior PD

08/2022 SBRT 40 Gy/10 fractions in S7, S8 lesions including PVTT

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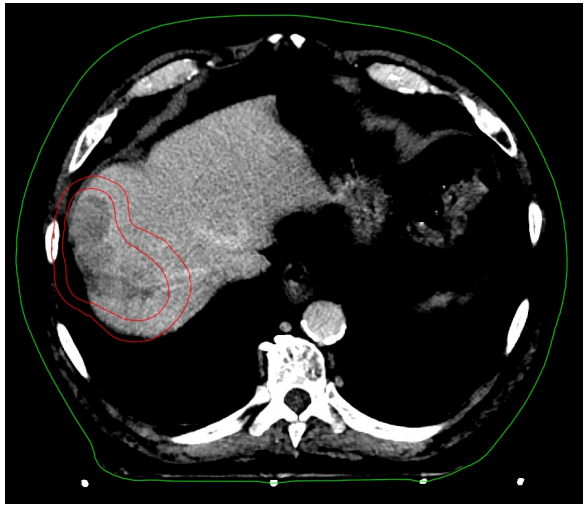

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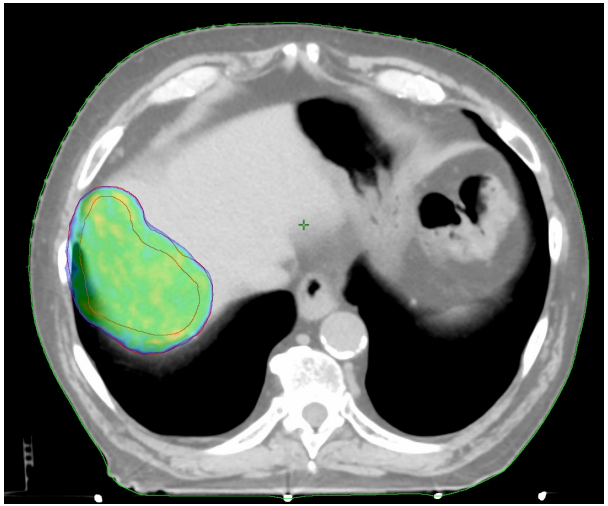
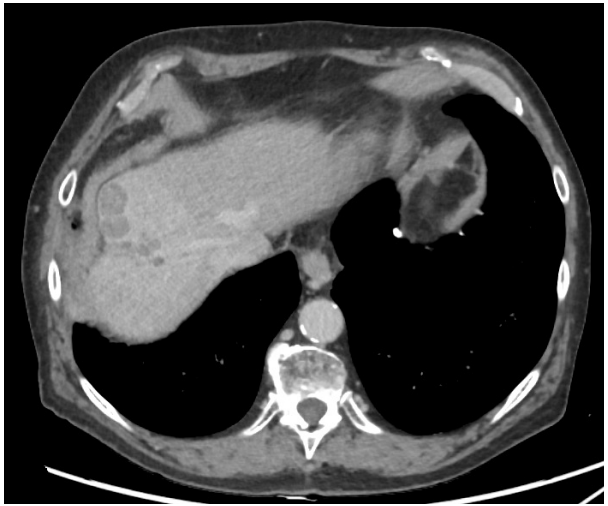


40 Gy / 10 fractions



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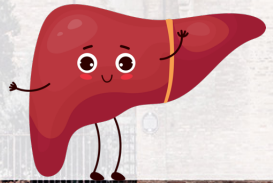
Thank you for your attention!



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