Supplementary Table 1: List of used antibodies

| Antibody name	Manufacturer	Calatogue number	Antibody clone	dilution	incubation time	Stainer	Program / Pretreatment
BAP1	Bio SB	BSB 3305	BSB-109	1:50	32 minutes	Ventana Benchmark	CC1 mild
ki-67	Dako/Agilent	M7240	MIB-1	1:50	32 minutes		
PD-L1	Cell Signaling	13684S	E1L3N	1:200	direct incubation	Leica Bond Max	Dewax, HP1, ER2, 30 minutes
CD3	Dako/Agilent	A045201-2	polyclonal	1:100	30 minutes		
CD4	Leica	NCL-L-CD4-368	4B12	1:20	30 minutes		
CD8	Leica	M7103	C8/144B	1:100	30 minutes		
CD68	Dako/Agilent	M0876	PG-M1	1:200	30 minutes		
PAX5	BD Transduction	610863	24/PAX-5	1:10	direct incubation		
CD56	Leica	NCL-L-CD56-504	CD564	1:50	30 minutes		
FOXP3	Bio-Rad/Serotec	MCA2376GA	236A/E7	1:200	30 minutes		
MPO	Dako/Agilent	A0398	polyclonal	1:3000	30 minutes		
CD123	BD Pharmingen	555642	9F5	1:10	direct incubation		
CD11c	Epitomics	AC-0134RUO	EP157	1:50	direct incubation		

Supplementary Table 2

Patient/Cohort	Sex	Age at mUM diagnosis	Age at PM diagnosis	Metastatic sites at mUM diagnosis	Metastastic sites at PM diagnosis	Systemic treatments	Liver-directed treatments
A1	M	70	70	OSS, PUL, PLE, LYM, PER	PER, OSS, PUL, PLE, LYM	Ipi/Nivo, GeT	X
A2	F	55	65	PUL	PER, PUL, LYM, OTH (soft tissue)	GeT, Nivolumab, GeT	RFA
A3	M	74	74	PER, PUL, OTH (pancreas)	PER, PUL, OTH (pancreas)	Tebetafusp	X
A4	M	64	65	PUL	PER, PUL, PLE, LYM, OTH (soft tissue)	Ipil/Nivo, Tebentafusp, GeT, Fotemustin	X
A5	M	67	67	PER, LYM	PER, LYM	GeT, Trametinib	X
A6	M	72	78	OSS	PER, OSS	Pembrolizumab, Trametinib	X
B1	M	56	56	HEP, PER, OSS	HEP, PER, OSS	Ipi/Nivo	TACE, SIRT
B2	F	55	55	HEP, PER, PLE, OSS	HEP, PER, PLE, OSS	X	X
B3	M	81	81	HEP, PER, PUL, LYM	HEP, PER, PUL, LYM	GeT	X
B4	M	69	69	HEP, PER, LYM	HEP, PER, LYM	Sorafenib, Pembrolizumab	X
B5	M	67	67	HEP, PER	HEP, PER	X	TACE, SIRT
B6	M	51	51	HEP, PER, PUL, LYM, OTH (pancreas)	HEP, PER, PUL, LYM, OTH (pancreas)	Ipi/Nivo, GeT, Trametinib	TACE, SIRT
B7	M	55	55	HEP, PER, PUL	HEP, PER, PUL, OTH (soft tissue)	Ipil/Nivo, Tebentafusp, GeT, Fotemustin	X
B8	M	65	65	HEP, PER	HEP, PER	Treosulfan	X
B9	M	56	56	HEP, PER, SKI, PUL, ADR, OSS, OTH (soft tissue)	HEP, PER, SKI, PUL, ADR, OSS, OTH (soft tissue)	Tebentafusp, Ipi/Nivo, GeT, Fotemustin, Trametinib	X
C1	M	64	65	HEP	HEP, PER	X	SIRT
C2	M	61	62	HEP, PUL, OSS	HEP, PUL, OSS, PER	Ipi/Nivo, Sorafenib, Tebentafusp	TACE
C3	F	50	51	HEP, PUL, OSS, OTH (soft tissue)	HEP, PUL, OSS, LYM, ADR, PER, OTH (soft tissue, ovar)	Ipi/Nivo, GeT, Fotemustin	TACE
C4	M	55	56	HEP, PUL, OSS, LYM, OTH (soft tissue, retroperitoneum)	HEP, PUL, OSS, LYM, PLE, PER, OTH (soft tissue, pancreas, retroperitoneum)	Ipi/Nivo, GeT, Tebentafusp	TACE, SIRT
C5	M	64	65	HEP, OSS	HEP, OSS, LYM, ADR, PUL/PLE, PER, OTH (soft tissue)	GeT	TACE
C6	M	66	67	HEP, OSS, OTH (soft tissue)	HEP, OSS, PER, OTH (soft tissue)	X	TACE
C7	M	68	69	HEP	HEP, ADR, PUL, LYM, PER, OTH (soft tissue)	Fotemustin, GeT	X
C8	M	75	76	HEP	HEP, PER, OTH (soft tissue)	Tebentafusp	SIRT, TACE
C9	M	47	48	HEP	HEP, PLE, PER, OTH (soft tissue)	Ipi/Nivo, GeT	SIRT
C10	M	48	51	HEP	HEP, PER	GeT, Fotemustin, Trametinib	SIRT
C11	F	66	67	HEP, OTH (soft tissue)	HEP, PUL, PER, OTH (soft tissue)	GeT, Fotemustin, Crizotinib	SIRT
C12	F	67	69	HEP, LYM, ADR, PUL, OTH (pancreas)	HEP, LYM, ADR, PUL, PER, OTH (pancreas, soft tissue)	GeT, Crizotinib, Trametinib, Fotemustin, Sorafenib	TACE
C13	M	57	60	HEP	HEP, PUL, LYM, PER	Fotemustin, GeT, Pembrolizumab, Ipilimumab	SIRT, TACE
C14	F	61	63	HEP	HEP, PUL, OSS, PER	GeT, Ipi/Nivo	TACE
C15	F	67	68	HEP, PUL	HEP, PUL, LYM, ADR, PER, OTH (soft tissue)	GeT	TACE
C16	F	69	72	HEP	HEP, PUL, PER, OTH (soft tissue)	X	SIRT
C17	M	52	53	HEP	HEP, OSS, ADR, PER, OTH (soft tissue)	Tebentafusp, GeT	TACE, SIRT
C18	M	72	74	HEP, LYM	HEP, LYM, OSS, PER	DTIC	IHP, brachytherapy
C19	M	73	74	HEP, LYM	HEP, LYM, PER	Carbo/Gem, Cis/Gem	X
C20	M	80	81	HEP, PUL, OSS, LYM	HEP, PUL, OSS, LYM, ADR, PER, OTH (spleen)	GeT	TACE
C21	M	63	64	HEP	HEP, PUL, PER	GeT	X
C22	F	63	64	HEP	HEP, ADR, LYM, PER	Pembrolizumab, GeT	TACE
C23	F	60	61	HEP	HEP, PER	GeT	TACE
C24	F	44	46	HEP	HEP, OSS, PER, OTH (soft tissue)	Trametinib	SIRT, TACE
C25	F	73	76	HEP	HEP, PUL, LYM, OSS, PER, OTH (soft tissue)	GeT	TACE
C26	M	49	51	HEP	HEP, OSS, LYM, ren, PER	Ipi/Nivo, Fotemustin	SIRT

Suppl. Tab. 2: Individual patient characteristics. ADR, Adrenal; Carbo, carboplatin; Cis, cisplatin; SKI, skin; DTIC, dacarbazine; Gem, gemcitabine; GeT, gemcitabine/treosulfan; IHP, isolated hepatic perfusion; Ipi/Nivo, ipilimumab/nivolumab; LYM, lymphonodal; mUM, metastatic uveal melanoma; NA, not available; OSS, Osseous; OTH, other; PER, peritoneal; PLE, pleural; PER, peritoneum; PUL, pulmonary; RFA, radiofrequency ablation; SIRT, selective intrahepatic radiotherapy; TACE, transarterial chemoembolization.

Supplementary Table 3: available as a separate Word file

Supplementary Figure 1
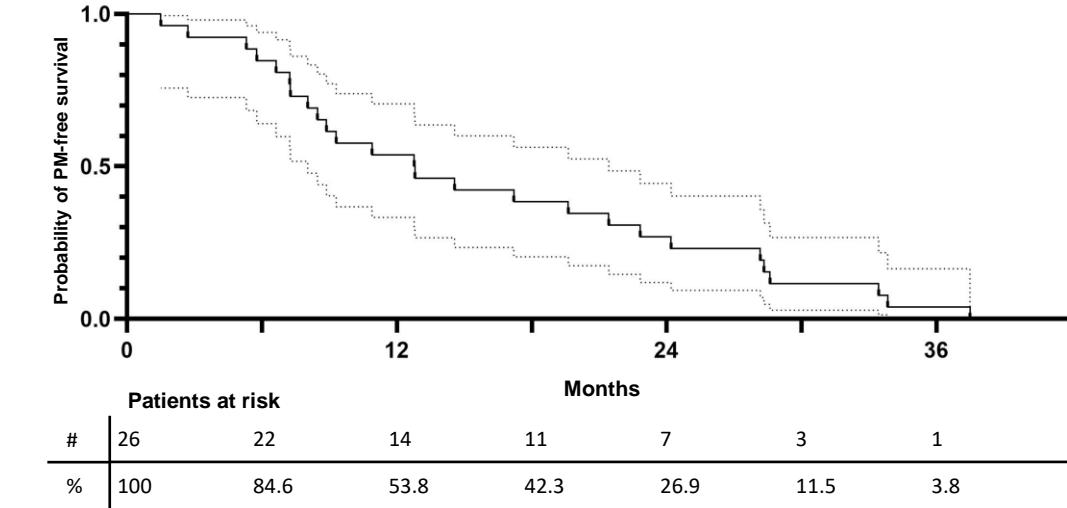
Suppl. Fig. 1: Time from initial metastatic uveal melanoma diagnosis to secondary peritoneal metastases. Kaplan-Meier survival plots representing time from initial mUM diagnosis to secondary peritoneal metastases (median: 12.8 months; range: 1.5-123.3; N=26).

Supplementary Figure 2
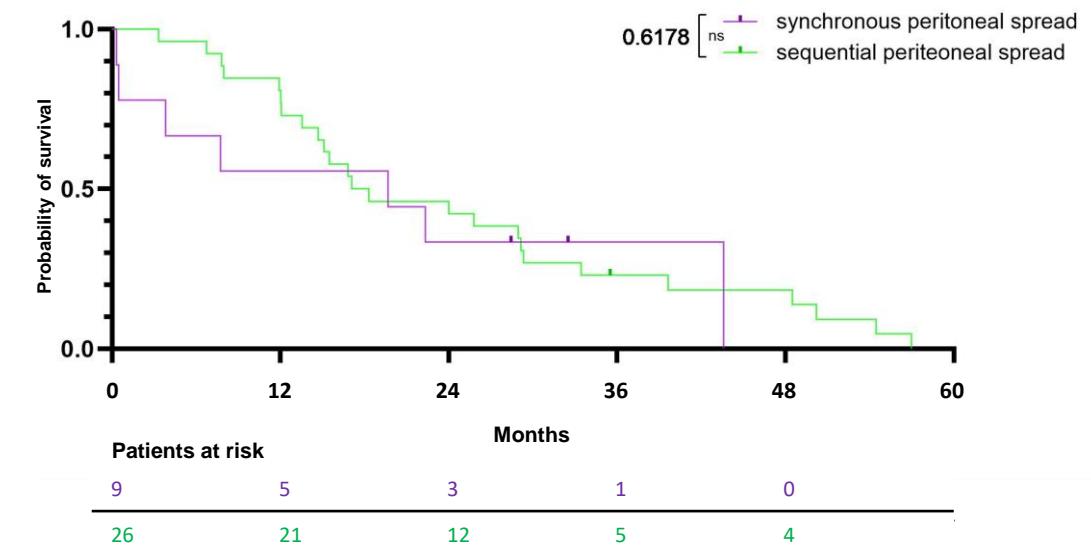
Suppl. Fig. 2: Overall survival of patients with synchronous hepatic and peritoneal metastases (cohort B) vs. primary hepatic and secondary peritoneal metastases (cohort C). Kaplan-Meier survival plots representing the median overall survival of patients with synchronous hepatic and peritoneal dissemination (cohort B, violet; median OS 19.7 months; 95% CI; 9.6-29.8; N=9) vs. patients with sequential (primary hepatic and secondary peritoneal) dissemination (cohort C, green; median OS 17.7 months; 95% CI; 11.8-23.6; N=26). Log-rank (Mantel Cox) test: p=0.6178.

Supplementary Figure 3
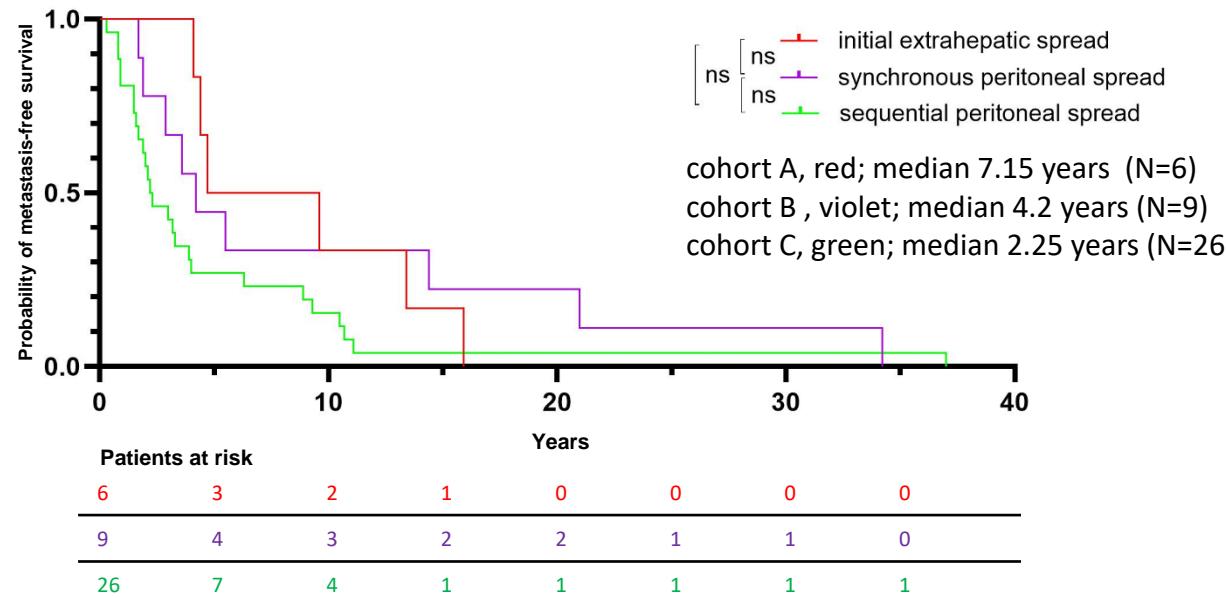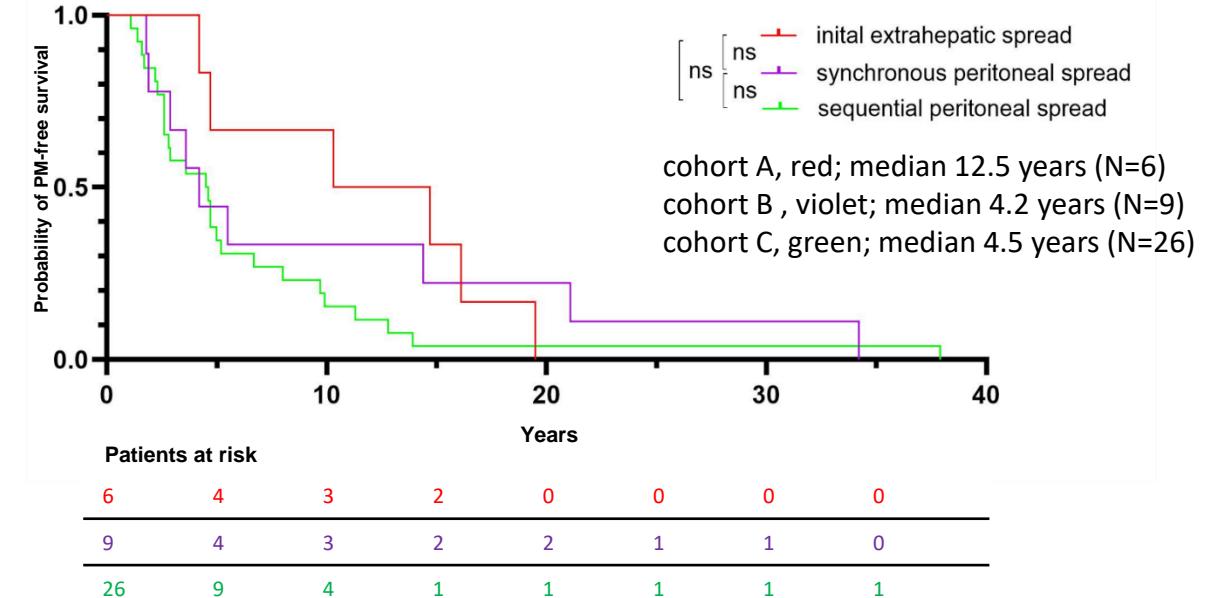
Suppl. Fig. 3: Cohort-specific metastasis/PM-free survival: (**A**) Kaplan-Meier survival plot representing metastasis-free survival from primary diagnosis in patients with initial extrahepatic dissemination (cohort A; median: 7.15; 95% CI: 3.3-14.0; N = 6), patients with synchronous hepatic and peritoneal dissemination (cohort B; median 4.2 years; 95% CI 1.3-18.6; N=9), patients with sequential (primary hepatic and secondary peritoneal) dissemination (cohort C; median: 2.25 years; 95% CI 2.1-8.0; N = 26). Log-rank (Mantel Cox) test: A vs B (p=0.942), A vs C (p=0.0893), B vs C (p=0.1771). (**B**) Kaplan-Meier survival plot representing time from primary diagnosis to development of peritoneal metastases in patients with initial extrahepatic dissemination (cohort A; median: 12.5; 95% CI 5.1-18.2; N=6), patients with synchronous hepatic and peritoneal dissemination (cohort B; median 4.2 years; 95% CI 1.3-18.6; N=9), patients with sequential (primary hepatic and secondary peritoneal) dissemination (cohort C; median: 4.5 years; 95% CI 3.4-9.4; N=26). Log-rank (Mantel Cox) test: A vs B (p=0.8031), A vs C (p=0.0685), B vs C (p=0.3917).

Supplementary Figure 4
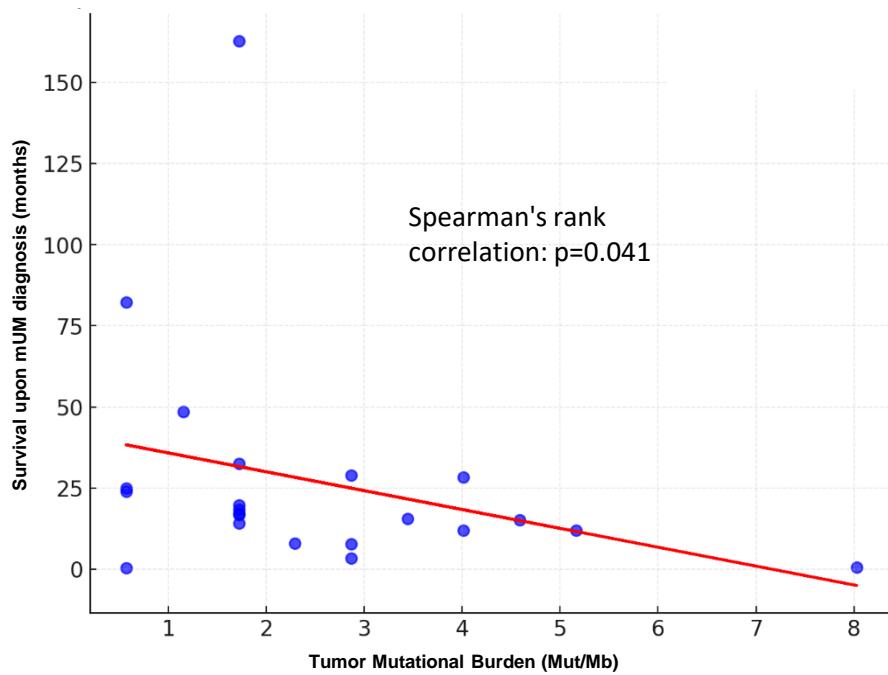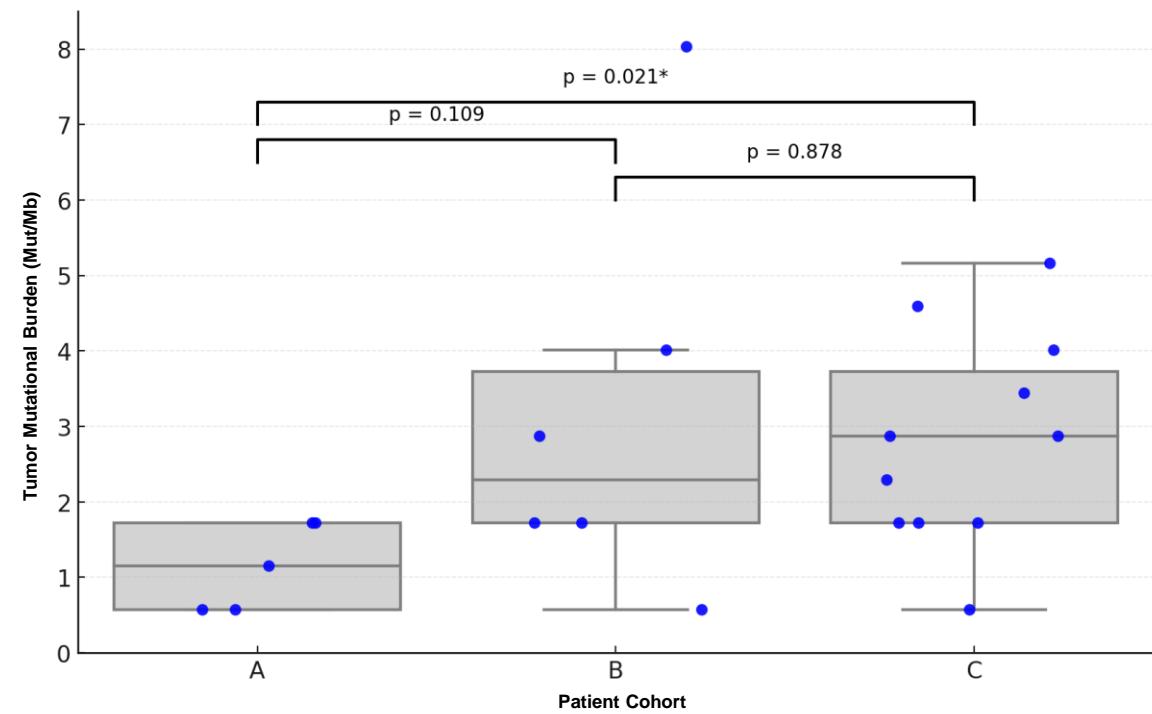
Suppl. Fig. 4: Tumor mutational burden. (**A**) Scatter plot representing correlation between individual TMB values and survival upon mUM diagnosis in months. Each blue dot represents one patient. Spearman's rank correlation: p=0.041. (**B**) Boxplots representing TMB according to patient cohort (A vs B vs C). Each blue dot represents one patient. Patient cohort A: median 1.15 Mut/Mb (SD 0.58). Patient cohort B: median 2.3 Mut/Mb (SD 2.66). Patient cohort C: median 2.87 Mut/Mb (SD 1.39). Pairwise Mann-Whitney U Test. A vs B p=0.109, A vs C p=0.021. B vs C p=0.878.

Supplementary Figure 5
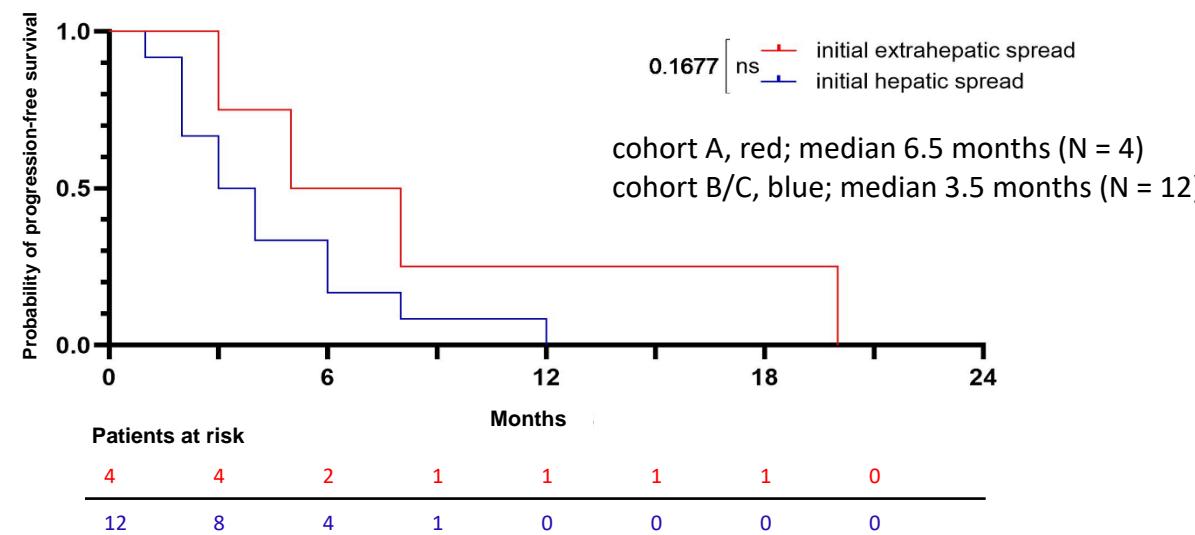
Suppl. Fig. 5: Progression-free survival under immune checkpoint blockade. Kaplan-Meier survival plot representing progression-free survival (PFS) in patients undergoing ICB treatment. Median PFS in patients with initial extrahepatic dissemination of 6.5 months (cohort A, red; 95% CI 3.1-21.1; N = 4) compared to PFS in patients with initial hepatic dissemination of 3.5 months (cohort B+C, blue; 95% CI 2.4-6.4; N = 12). Log-rank (Mantel Cox) test: p = 0.1677.