Munich Cancer Registry

- Incidence and Mortality
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- *Deutsch*

ICD-10 C22.0: Liver cell carcinoma

Survival

Year of diagnosis	1988-1997	1998-2020
Patients	298	4,789
Diseases	298	4,789
Cases evaluated	276	3,830

Creation date	04/15/2022
Database export	12/20/2021
Population	4.92 m

Munich Cancer Registry
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https://www.tumorregister-muenchen.de/en

https://www.tumorregister-muenchen.de/en/facts/surv/sC220_E-ICD-10-C22.0-Liver-cell-carcinoma-survival.pdf

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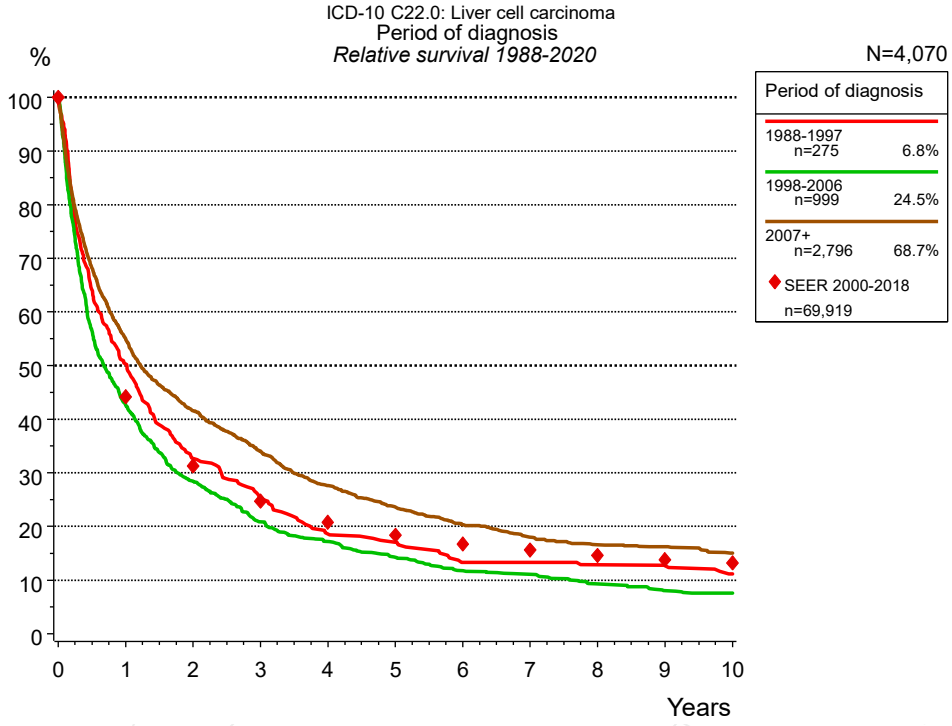

Figure 1a. Relative survival of patients with liver cell carcinoma by period of diagnosis. Included in the evaluation are 4,070 cases diagnosed between 1988 and 2020.

The survival results of the SEER program (Surveillance, Epidemiology, and End Results) of the American National Cancer Institute (NCI) are summarized as the period of diagnosis from 2000 to 2018, and are represented by colored diamonds in order to facilitate comparisons between MCR and SEER.

The presented survival curves are derived from clinical records with valid follow-up informations, which means that death certificate cases (DCO) cases are omitted from the analysis. With this one restriction, the MCR has provided population-based statistics since 1998, collecting data on all cancer cases in the region of southern Bavaria. Historical data of previous time periods can be heavily selected, therefore, univariate survival comparisons of the presented time periods must be carefully considered. Nonetheless, all calculable survival curves are depicted to facilitate the comparison of long time follow-up analyses of relative survival between particular cancers.

	Period of diagnosis					
	1988-1997 n=275		1998-2006 n=999		2007+ n=2,796	
Years	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	49.2	50.3	41.4	42.5	53.6	55.0
2	31.2	32.7	27.0	28.5	39.5	41.6
3	23.7	25.3	19.3	20.9	31.5	34.0
4	17.2	18.6	15.6	17.2	24.9	27.6
5	15.6	17.0	12.6	14.3	20.7	23.6
6	11.7	13.3	10.2	11.8	17.4	20.4
7	11.7	13.3	9.4	11.1	15.0	18.1
8	10.9	12.9	7.6	9.3	13.5	16.6
9	10.5	12.7	6.4	8.0	12.9	16.2
10	9.0	11.1	6.0	7.5	11.5	15.0
Median	0.9		0.7		1.1	

Table 1b. Observed (obs.) and relative (rel.) survival of patients with liver cell carcinoma by period of diagnosis for period 1988-2020 (N=4,070).

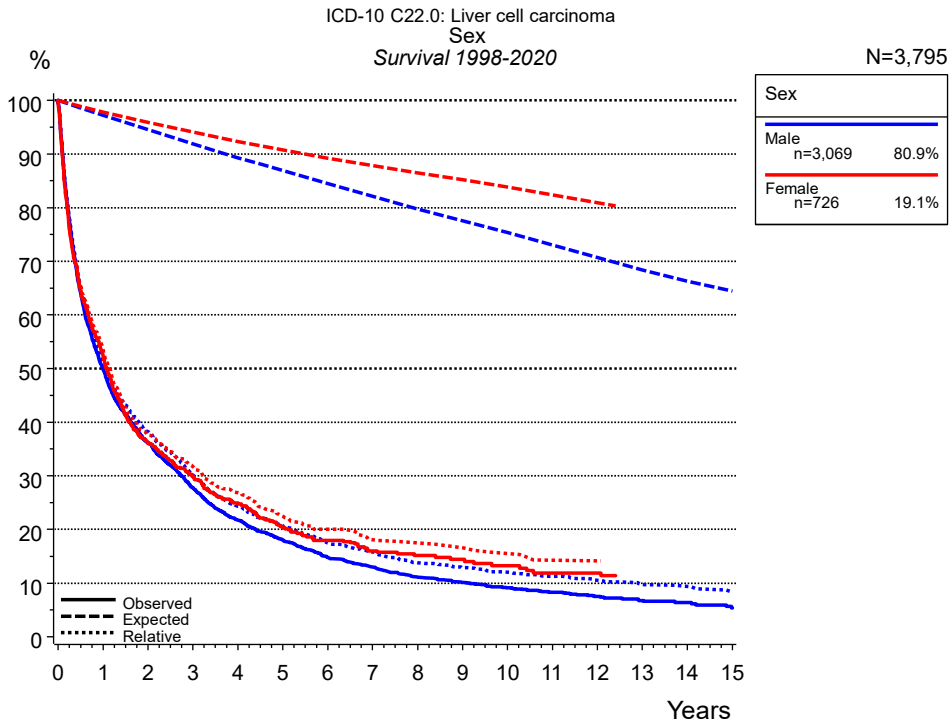

Figure 2a. Survival of patients with liver cell carcinoma by sex. Included in the evaluation are 3,795 cases diagnosed between 1998 and 2020.

	Sex			
	Male n=3,069		Female n=726	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	49.9	51.3	52.3	53.4
2	36.2	38.2	36.1	37.6
3	27.7	30.1	30.0	31.7
4	21.8	24.3	24.9	26.8
5	18.0	20.7	20.6	22.4
6	14.8	17.5	18.0	20.0
7	13.0	15.8	16.0	18.1
8	11.0	13.8	15.1	17.5
9	10.0	12.9	14.4	16.6
10	9.1	12.1	13.2	15.5
11	8.3	11.3	11.9	14.3
12	7.5	10.5	11.9	14.1
13	6.8	9.7		
14	6.4	9.4		
15	5.4	8.3		
Median	1.0		1.1	

Table 2b. Observed (obs.) and relative (rel.) survival of patients with liver cell carcinoma by sex for period 1998-2020 (N=3,795).

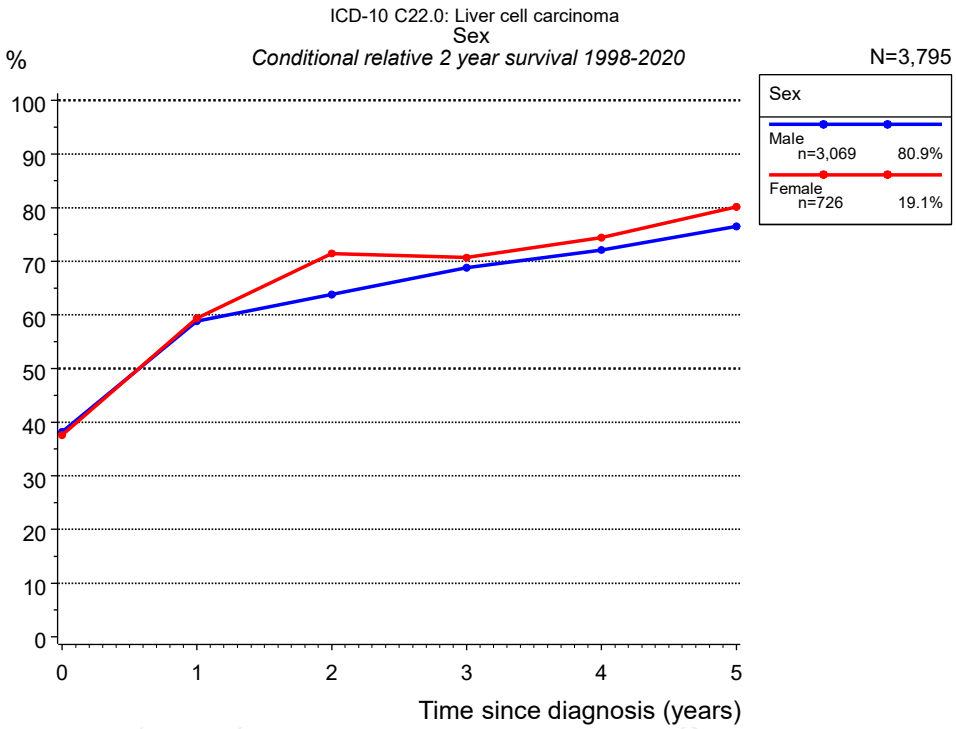

Figure 2c. Conditional relative 2-year survival of patients with liver cell carcinoma by sex. For 3,795 of 3,795 cases diagnosed between 1998 and 2020 valid data could be obtained for this item.

	Sex			
	Male		Female	
Years	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs
0	3,069	38.2	726	37.6
1	1,484	58.8	364	59.3
2	1,016	63.8	240	71.5
3	725	68.8	185	70.7
4	520	72.1	139	74.4
5	407	76.5	100	80.2

Table 2d. Conditional relative 2-year survival of patients with liver cell carcinoma by sex for period 1998-2020 (N=3,795).

Conditional relative survival rates refer to the relative survival probability, in this case for 2 years after cancer diagnosis, compared to the age- and sex-matched population (=100 %) under the condition of being alive for a certain time period (x-axis in Figure 2a). The results illustrate to what extent the cancer induced mortality of particular subgroups declines in the subsequent years after detection of the malignancy. For instance, according to the presented survival statistics, patients in the subgroup sex="Male", who are alive at least 3 years after cancer diagnosis, the conditional relative 2-year survival rate is 68.8% (n=725).

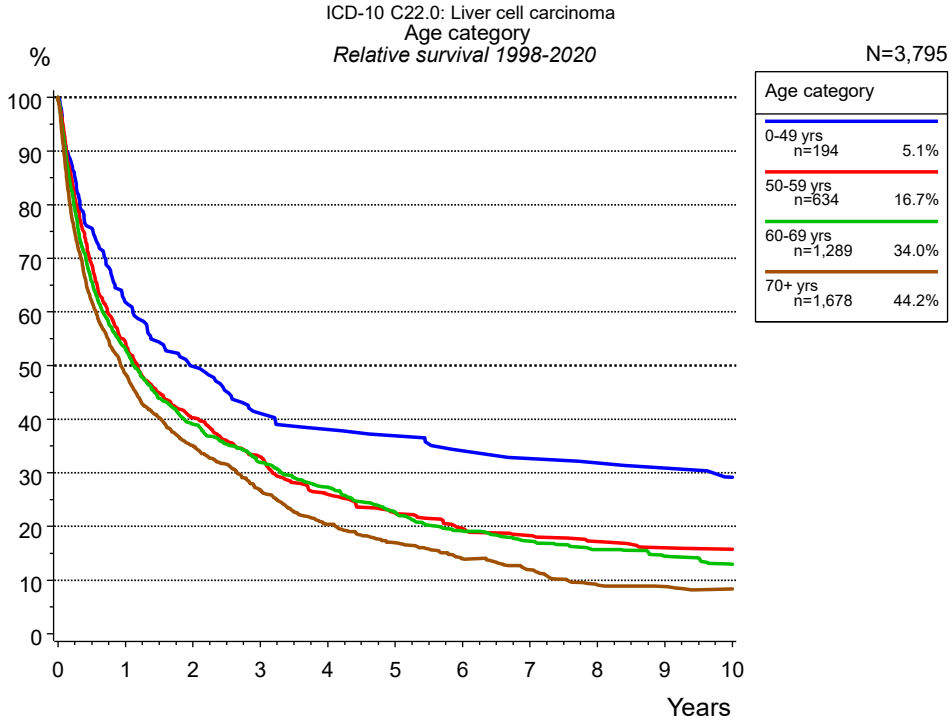

Figure 3a. Relative survival of patients with liver cell carcinoma by age category. Included in the evaluation are 3,795 cases diagnosed between 1998 and 2020.

	Age category							
	0-49 yrs n=194		50-59 yrs n=634		60-69 yrs n=1,289		70+ yrs n=1,678	
Years	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	61.8	61.8	54.1	54.3	52.3	53.0	46.1	48.4
2	49.8	49.8	39.8	40.3	37.9	39.1	31.9	35.0
3	41.2	41.1	32.4	33.0	30.5	32.0	23.3	26.9
4	38.2	38.1	25.3	26.0	25.6	27.3	16.7	20.4
5	36.9	36.9	21.8	22.5	20.8	22.6	13.2	16.9
6	33.9	34.1	19.0	19.7	17.3	19.1	10.3	14.0
7	32.4	32.7	17.5	18.3	15.2	17.2	8.3	12.0
8	31.6	31.8	16.2	17.2	13.5	15.7	6.0	9.1
9	30.7	30.9	15.0	16.0	12.1	14.5	5.5	8.8
10	28.5	29.2	14.6	15.8	10.6	13.0	4.8	8.3
Median	2.0		1.2		1.1		0.9	

Table 3b. Observed (obs.) and relative (rel.) survival of patients with liver cell carcinoma by age category for period 1998-2020 (N=3,795).

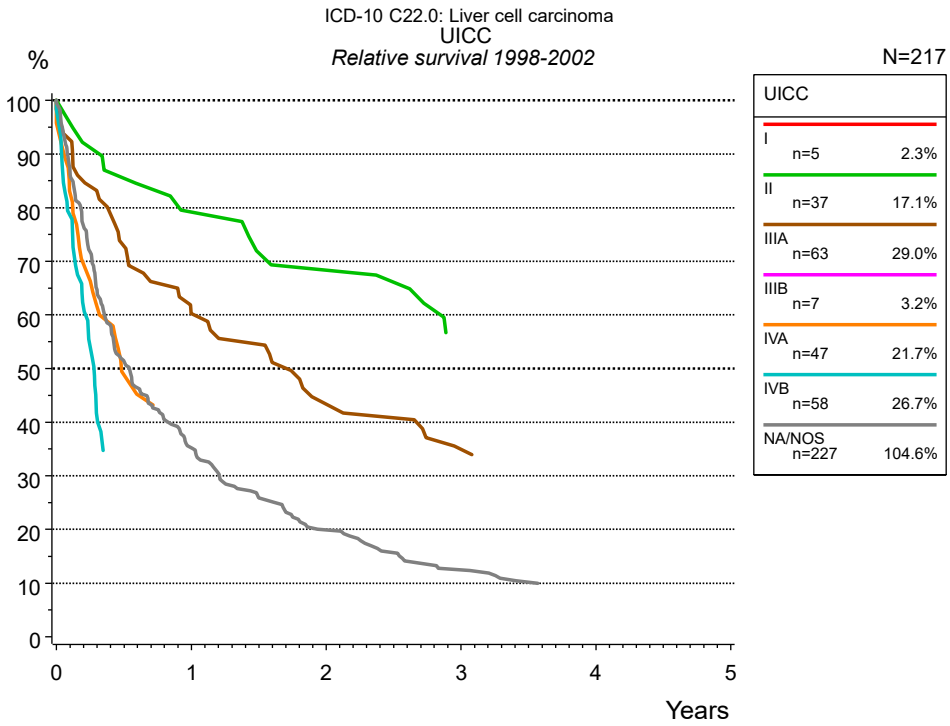

Figure 4a. Relative survival of patients with liver cell carcinoma by UICC. For 227 of 444 cases diagnosed between 1998 and 2002 valid data could be obtained for this item. For a total of 217 cases an evaluable classification was established. The grey line represents the subgroup of 227 patients with missing values regarding UICC (51.1 % of 444 patients, the percent values of all other categories are related to n=217). Subgroups with sample size <20 are omitted from the chart.

	UICC									
	II		IIIA		IVA		IVB		NA/NOS	
	n=37		n=63		n=47		n=58		n=227	
Years	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	78.4	79.1	58.7	60.2					34.6	35.3
2	67.6	68.3	42.9	43.4					18.9	19.9
3			33.3	35.0					11.7	12.5
Median			1.6		0.5		0.3		0.5	

Table 4b. Observed (obs.) and relative (rel.) survival of patients with liver cell carcinoma by UICC for period 1998-2002 (N=217).

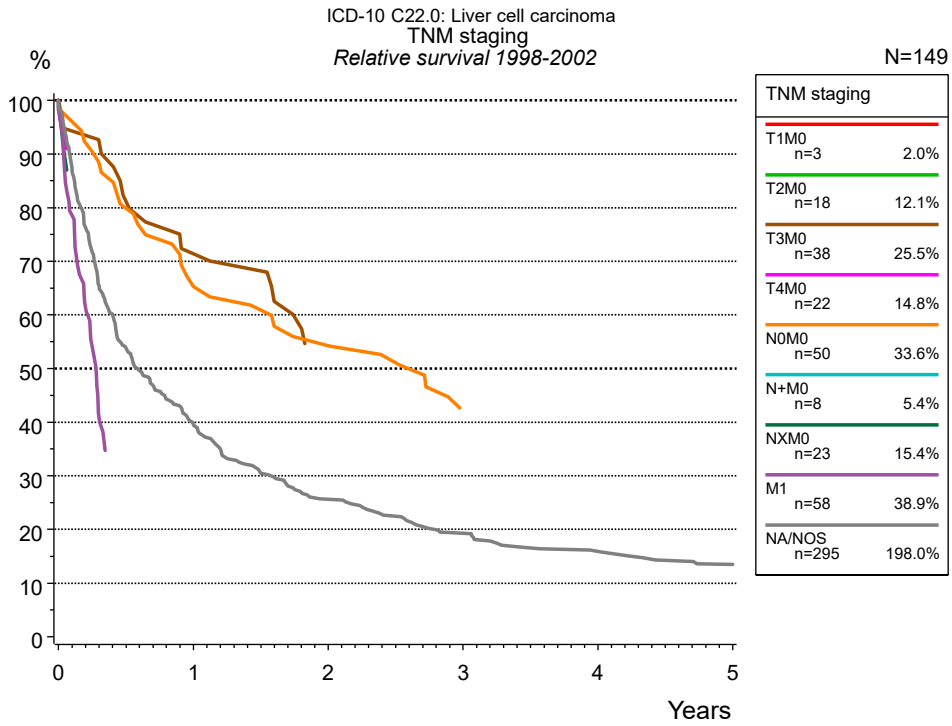

Figure 4c. Relative survival of patients with liver cell carcinoma by TNM staging. For 227 of 444 cases diagnosed between 1998 and 2002 valid data could be obtained for this item. For a total of 149 cases an evaluable classification was established. The accumulated percentage exceeds the 100 % value because patients are potientially considered in more than one subgroup. The grey line represents the subgroup of 295 patients with missing values regarding TNM staging (66.4 % of 444 patients, the percent values of all other categories are related to n=149). Subgroups with sample size <20 are omitted from the chart.

	TNM staging											
	T3M0 n=38		T4M0 n=22		N0M0 n=50		NXM0 n=23		M1 n=58		NA/NOS n=295	
Years	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	71.1	71.4			64.0	65.3					38.5	39.5
2					54.0	54.3					24.3	25.6
3					40.0	42.3					18.1	19.3
4											14.6	15.9
5											12.1	13.5
Median					2.5				0.3		0.6	

Table 4d. Observed (obs.) and relative (rel.) survival of patients with liver cell carcinoma by TNM staging for period 1998-2002 (N=149).

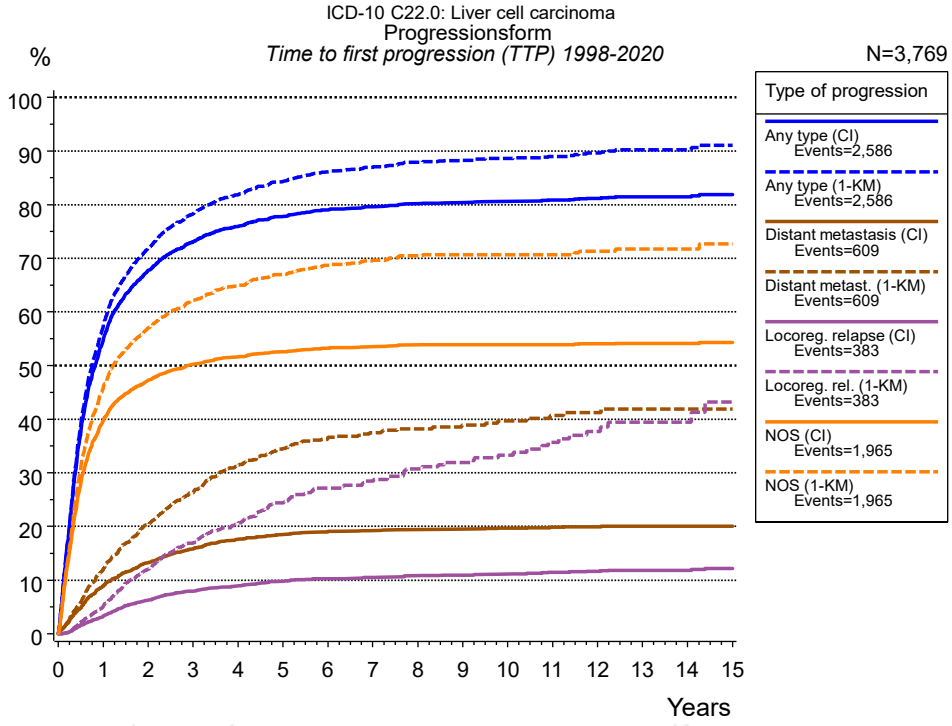

Figure 5a. Time to first progression of 3,769 patients with liver cell carcinoma diagnosed between 1998 and 2020 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

	Type of progression						
	Any type (CI)	Any type (1-KM)	Distant metastasis (CI)	Distant metast. (1-KM)	Locoreg. relapse (CI)	Locoreg. rel. (1-KM)	NOS (CI)
N	3,326	3,326	3,327	3,327	3,769	3,769	3,768
Events	2,586	2,586	609	609	383	383	1,965
compet.	399		2,178		2,863		1,351
Years	%	%	%	%	%	%	%
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	54.8	57.4	9.0	12.2	3.3	5.2	39.8
2	67.7	72.0	13.3	20.5	6.3	12.1	47.3
3	73.1	78.3	15.8	26.3	7.9	16.9	50.3
4	75.9	81.8	17.6	31.3	8.9	20.6	51.6
5	77.8	84.3	18.5	34.4	9.8	24.4	52.6
6	79.1	86.1	19.0	36.3	10.3	27.2	53.2
7	79.7	87.0	19.3	37.5	10.5	28.5	53.5
8	80.2	87.8	19.5	38.2	10.8	30.8	53.8
9	80.5	88.3	19.6	38.9	11.0	31.9	53.9
10	80.7	88.6	19.7	39.7	11.1	33.3	53.9
11	80.9	89.0	19.9	40.7	11.4	35.7	53.9
12	81.2	89.7	20.0	41.2	11.6	37.8	54.0
13	81.5	90.2	20.1	41.9	11.8	39.4	54.1
14	81.5	90.2	20.1	41.9	11.8	39.4	54.1
15	81.9	91.0	20.1	41.9	12.2	43.2	54.3

Type of progression	
cont'd	NOS (1-KM)
N	3,768
Events	1,965
compet.	
Years	%
0	0.0
1	45.9
2	57.0
3	62.2
4	64.8
5	67.0
6	68.6
7	69.6
8	70.5
9	70.6
10	70.6
11	70.6
12	71.3
13	71.8
14	71.8
15	72.7

Table 5b. Time to first progression of patients with liver cell carcinoma for period 1998-2020 (N=3,769), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

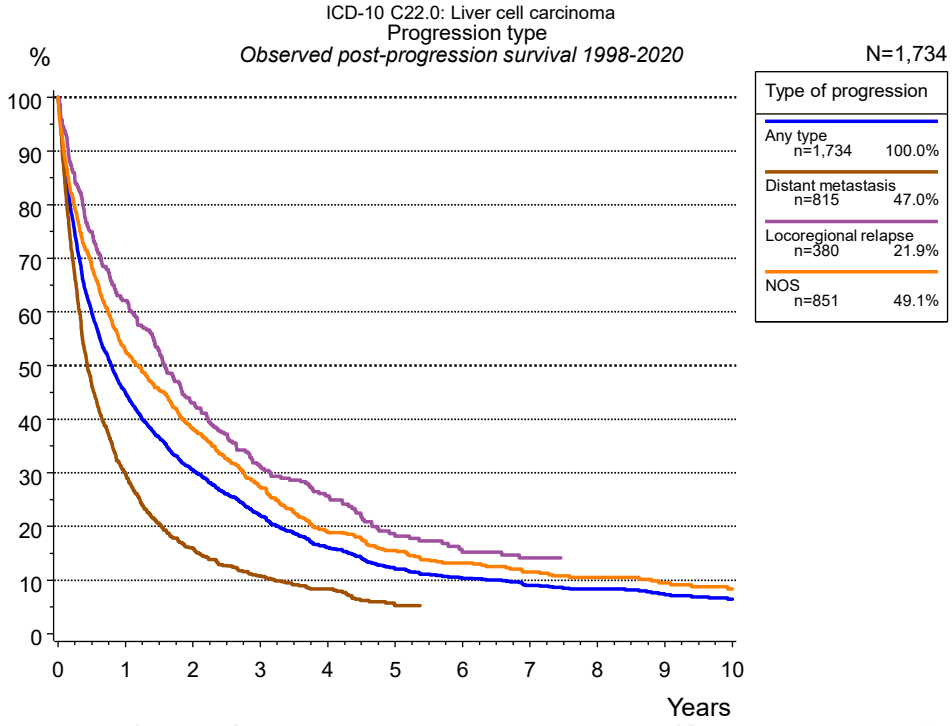

Figure 5c. Observed post-progression survival of 1,734 patients with liver cell carcinoma diagnosed between 1998 and 2020. These 1,734 patients with documented progression events during their course of disease represent 46.0 % of the totally 3,769 evaluated cases (incl. M1, n=443, 11.8 %). Patients with cancer relapse documented via death certificates only were excluded (n=1,295, 34.4 %). Multiple progression types on different sites are included in the evaluation even when not occuring synchronously. The NOS (not otherwise specified) class is included under the condition, that it is the one and only progression type during the course of disease.

Medical record documentation often lacks the linguistic severity to distinguish between local relapse, regional lymph node metastasis and distant spread in solid cancers. Frequently, the statement “not specified” is the only information in registries regarding relapse of the disease. The category “Any type” denotes all cases who suffered from at least one relapse during the course of disease (incl. primary M1-status). Although, the real number of relapsed patients is likely to be much higher. The accumulated percentage of patients with local relapse or distant metastasis exceeds the 100 % value because patients are potientially considered in more than one subgroup.

	Type of progression			
	Any type	Distant metastasis	Locoregional relapse	NOS
	n=1,734	n=815	n=380	n=851
Years	%	%	%	%
0	100.0	100.0	100.0	100.0
1	44.9	29.8	62.2	52.7
2	30.5	15.9	43.0	38.3
3	22.1	10.8	31.2	27.4
4	16.0	8.3	25.7	18.9
5	12.1	5.3	18.2	15.5
6	10.3		15.2	13.2
7	9.0		14.1	11.6
8	8.3			10.5
9	7.3			9.4
10	6.5			8.3

Table 5d. Observed post-progression survival of patients with liver cell carcinoma for period 1998-2020 (N=1,734).

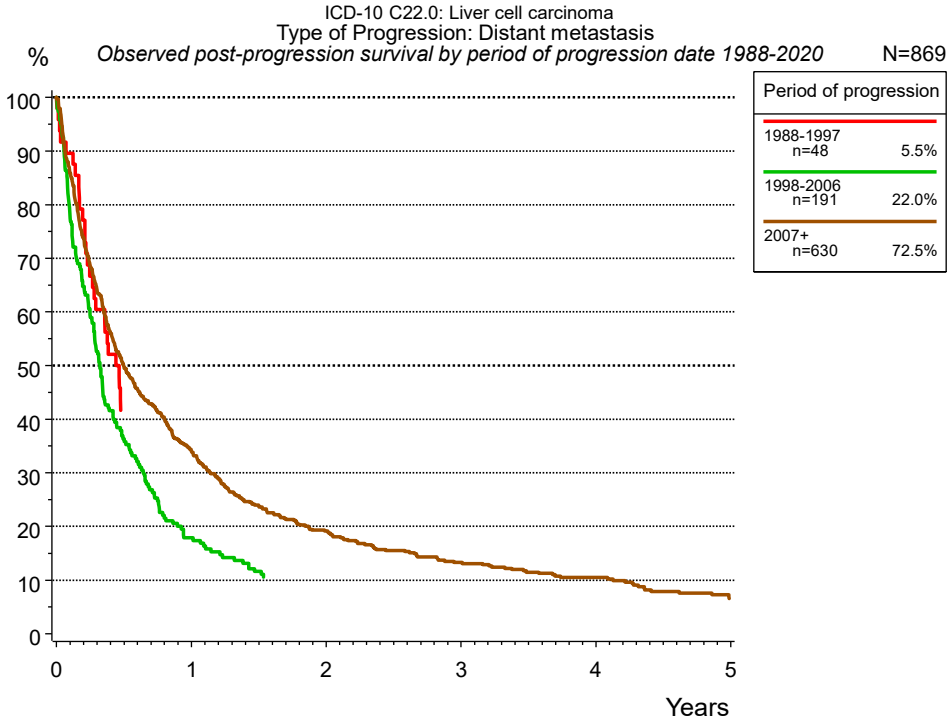

Figure 5e. Observed post-progression (distant metastasis) survival of 869 patients with liver cell carcinoma diagnosed between 1988 and 2020 by period of progression.

	Period of progression		
	1988-1997 n=48	1998-2006 n=191	2007+ n=630
Years	%	%	%
0	100.0	100.0	100.0
1		17.9	34.0
2			19.1
3			13.3
4			10.5
5			6.6

Table 5f. Observed post-progression (distant metastasis) survival of patients with liver cell carcinoma for period 1988-2020 by period of progression (N=869).

Shortcuts

MCR	Munich Cancer Registry, Germany	
NCI	National Cancer Institute, USA	
SEER	Surveillance, Epidemiology, and End Results, USA	
UICC	Union for International Cancer Control, Geneva	
DCO	Death certificate only	Death certificate provides the only notification to the registry.
NA	Not available	
NOS	Not otherwise specified	
OS	Overall/Observed survival	Overall/Observed survival (Kaplan-Meier estimate) Date of entry: diagnosis Event: death from any cause
RS	Relative survival	Survival compared to “general population”, ratio of observed to expected survival (Ederer II method), reflecting cancer specific survival
AS	Assembled survival	Assembled chart of observed, expected, relative survival
CS	Conditional survival	Survival probability under the condition of surviving a given period of time
TTP	Time to progression	Time to first progression / relapse Date of entry: diagnosis Event: (progression / relapse): first local-, lymph node recurrence, distant metastasis or unspecified progression
	1-KM	1 minus Kaplan-Meier estimator (“inverse” Kaplan-Meier estimator)
	CI	Cumulative incidence Death as competing risk (according to Kalbfleisch und Prentice)
PPS	Post-progression survival	Survival since first progression / relapse (Kaplan-Meier estimate) Date of entry (progression / relapse): first local-, lymph node recurrence, distant metastasis or unspecified progression Event: death from any cause

Recommended Citation

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