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Dynamic increase in FIB-4 during treatment is associated with worse overall survival in metastatic colorectal cancer

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Abstract

Background: Non-invasive liver fibrosis markers have been increasingly investigated as prognostic indicators in oncology. However, the clinical relevance of dynamic changes in the fibrosis-4 (FIB-4) index during systemic therapy in metastatic colorectal cancer (mCRC) remains unclear.

Methods: This retrospective multicenter study included patients with mCRC treated with at least two lines of systemic therapy between 2020 and 2025. FIB-4 scores were calculated at baseline, 6 months, and 12 months. Associations with progression-free survival (PFS) and overall survival (OS) were evaluated using Kaplan–Meier and Cox regression analyses.

Results: A total of 152 patients were analyzed. Median FIB-4 increased significantly over time (1.11 at baseline, 1.69 at 6 months, and 1.87 at 12 months; $p<0.001$) (Table 1). Baseline FIB-4 categories were associated with PFS (median 16.8, 16.1, and 6.5 months in low-, intermediate-, and high-risk groups; $p=0.01$) (Table 2) and OS (median 35.6, 38.1, and 22.0 months, respectively) (Table 3). Twelve-month FIB-4 was significantly associated with OS ($p=0.009$) (Table 3). In multivariate analysis, 12-month FIB-4 remained an independent predictor of mortality (HR 2.35 for intermediate risk and HR 6.76 for high risk; $p=0.004$) (Table 4).

Conclusion: FIB-4 scores increase during systemic therapy in mCRC, and both baseline and 12-month FIB-4 values are associated with overall survival. Longitudinal monitoring of FIB-4 may provide a simple prognostic biomarker in metastatic colorectal cancer.

INTRODUCTION

Colorectal cancer (CRC) remains one of the most prevalent malignancies worldwide and continues to represent a major contributor to cancer-related mortality. Despite improvements in screening programs and therapeutic strategies, a considerable proportion of patients are diagnosed with metastatic disease or develop distant metastases during the course of the illness. Outcomes for metastatic colorectal cancer (mCRC) remain unsatisfactory, with reported five-year survival rates generally below 25%, underscoring the need for reliable prognostic biomarkers and improved risk stratification strategies (1–3).

The liver is the most frequent site of metastatic spread in CRC, largely due to its unique vascular anatomy and portal circulation. Approximately half of CRC patients develop liver metastases either at presentation or later in the disease course. The interaction between tumor cells and the hepatic microenvironment plays a central role in this process. According to the classical “seed and soil” hypothesis, metastatic dissemination depends not only on tumor characteristics but also on the biological environment of the target organ. Recent research has further expanded this concept through the description of a “pre-metastatic niche,” in which systemic tumor-derived signals modify distant organs to facilitate metastatic colonization (4, 5).

Beyond tumor-specific factors, host-related characteristics increasingly appear to influence outcomes in CRC. Several clinical and laboratory indicators reflecting systemic inflammation, nutritional status, or organ function have been investigated as potential prognostic markers. In this context, simple and accessible laboratory-based indices have attracted particular attention, as they may provide clinically useful prognostic information without requiring complex testing (6).

Among these markers, indices reflecting hepatic injury and fibrosis have gained interest. The fibrosis-4 (FIB-4) index, which combines patient age, aminotransferase levels, and platelet count, was originally developed as a non-invasive method to estimate liver fibrosis in chronic liver disease. Because the components of this score are routinely measured in clinical practice, FIB-4 has become widely used for fibrosis assessment in different clinical settings (7).

More recently, FIB-4 has been investigated as a prognostic biomarker in several malignancies. Elevated FIB-4 levels have been associated with poorer survival outcomes in cancers such as gastric cancer and cholangiocarcinoma, suggesting that liver injury and fibrosis may influence tumor progression through changes in systemic inflammation and the hepatic microenvironment (8, 9).

In metastatic colorectal cancer, only limited evidence exists regarding the prognostic value of fibrosis-related indices. Previous studies evaluating treatment-naïve mCRC populations have reported an association between higher FIB-4 scores and inferior overall survival, indicating that liver-related laboratory markers may reflect both hepatic involvement and overall disease burden (10).

Furthermore, systemic therapies commonly used in CRC may contribute to hepatic injury. Oxaliplatin-based chemotherapy, a cornerstone of treatment in mCRC, is known to induce sinusoidal injury and other forms of hepatotoxicity that may alter liver function and potentially influence clinical outcomes (11).

However, most previous studies have focused primarily on baseline fibrosis indices, while the potential prognostic significance of dynamic changes in fibrosis markers during treatment has received limited attention. Given the central role of the liver in metastatic CRC and the potential impact of treatment-related hepatic injury, longitudinal evaluation of fibrosis-related markers may provide additional insight into disease progression and patient outcomes. Therefore, the present study aimed to investigate the prognostic significance of the fibrosis-4 (FIB-4) index in patients with metastatic colorectal cancer undergoing systemic therapy. In particular, we evaluated the longitudinal evolution of FIB-4 during treatment and its association with survival outcomes, with the hypothesis that dynamic changes in liver fibrosis markers may serve as an accessible prognostic indicator in this patient population

MATERIAL METHOD

This was a retrospective multicenter study of patients diagnosed with metastatic colorectal cancer who were treated with at least two lines of systemic therapy from January 2020 to December 2025. Eligible patients had complete clinical, laboratory, and radiological data at baseline and during follow-up to calculate the FIB-4 score at three time points, six months apart. These included patients with

histologically confirmed colorectal adenocarcinoma and radiologically confirmed metastatic disease. The exclusion criteria included the presence of another concurrent malignancy, incomplete data for FIB-4 calculations, ongoing viral hepatitis or other chronic liver diseases that were not related to malignancy, consumption of alcohol (exceeding 14 units per week), and previous liver transplantation. Additionally, patients who had undergone local liver-directed therapies with no systemic treatment were excluded. In total, 205 patients met the inclusion criteria and were enrolled in the analysis.

The FIB-4 score was calculated using the formula: FIB-4 = (Age × AST) / (Platelet count × √ALT). FIB-4 scores were stratified into three categories: low risk (< 1.3), intermediate risk (1.3–2.67), and high risk (> 2.67), in accordance with previously established thresholds.

Chemotherapy regimens

Treatment selection was dictated by RAS and BRAF mutation status. Patients were enrolled in either FOLFOX or FOLFIRI regimens in the first-line setting. FOLFOX consisted of oxaliplatin 85 mg/m² and leucovorin 400 mg/m² intravenously on Day 1, followed by a 5-fluorouracil (5-FU) bolus of 400 mg/m² and a 46-hour continuous infusion of 2400 mg/m². FOLFIRI treatment included irinotecan 180 mg/m², leucovorin 400 mg/m² IV on Day 1; 5-FU bolus of 400 mg/m²; and 46-hour continuous infusion of 2400 mg/m². Cetuximab was added at a once-every-two-weeks dose of 500 mg/m² in patients with RAS/BRAF wild-type tumors. Patients with RAS-mutant tumors received bevacizumab 5 mg/kg biweekly in addition to chemotherapy. In a second-line setting, an alternate regimen, FOLFIRI or FOLFOX, was chosen with the prescribed biologic agent, based on first-line treatment and molecular profile. Patients with PFS > 12 months in third-line therapy were rechallenged with FOLFOX and a biologic, while others received regorafenib, 160 mg daily for 21 days of each 28-day cycle. Patients on other chemotherapy regimens were excluded. Doses were tailored to performance status, hematologic parameters, and organ function, following institutional guidelines.

STATISTICAL ANALYSIS

Statistical analysis was conducted in SPSS version 24. The normality of continuous variables was tested with the Kolmogorov–Smirnov test. Descriptive statistics were reported as median (interquartile range) for continuous variables and as frequencies and percentages for categorical variables. Changes in FIB-4 scores (baseline, 6 months, and 12 months) were assessed using the related-samples Wilcoxon signed-rank test. Progression-free survival (PFS) and overall survival (OS) were estimated on the basis of the Kaplan–Meier method, and log-rank tests were used to investigate differences between survival curves. Variables that, in univariate analysis, are likely to affect survival ($p < 0.05$) enter a multivariate Cox proportional hazards model to identify independent prognostic factors. A two-sided p-value of < 0.05 is considered statistically significant.

RESULTS

In our cohort, 152 patients with metastatic colorectal cancer who received at least two lines of systemic therapy were included. The median age was 61.5 years (range, 33–87), with 84 (55.3%) male. Tumor localization was most often in the left colon (68 patients, 44.7%), followed by the rectum (48 patients, 31.6%) and right colon (36 patients, 23.7%). Visceral metastasis was present in 98 patients (64.5%). RAS mutation was detected in 81 of 151 evaluable patients (53.6%), while 70 (46.4%) had wild-type tumors (Table 1).

The median baseline FIB-4 score was 1.11 (range, 0.26–5.30). According to predefined cut-off values, 90 patients (59.2%) were classified as low risk, 57 (37.5%) as intermediate risk, and 5 (3.3%) as high risk at baseline. At six months, the median FIB-4 score increased to 1.69 (range, 0.37–11.09), with 45 patients (29.8%) in the low-risk group, 67 (44.4%) in the intermediate-risk group, and 39 (25.8%) in the high-risk group. At twelve months, the median FIB-4 score was 1.87 (range, 0.55–10.77), and 47 patients (31.1%), 78 (51.7%), and 26 (17.2%) were categorized as low, intermediate, and high risk, respectively (Table 1).

At a median follow-up of 19.7 months (5.6–73.9), disease progression was observed in 126 (82.9%) patients, and 109 patients (71.7%) had died.

The longitudinal comparison of FIB-4 measurements showed a significant increase over time. The median FIB-4 score increased from 1.11 (range, 0.26–5.30) at baseline to 1.69 (range, 0.37–11.09) at six months and to 1.87 (range, 0.55–10.77) at twelve months (Table 1). Pairwise comparisons revealed statistically significant differences between baseline and six months ($p < 0.001$), between baseline and twelve months ($p < 0.001$), and between six and twelve months ($p = 0.004$).

Table 1. Baseline Clinicopathological Characteristics of the Patients (N=152)

Characteristic	n (%) or Median (Range)
Age, years	61.5 (33–87)
Sex	
Male	84 (55.3%)
Female	68 (44.7%)
Tumor location	
Right colon	36 (23.7%)
Left colon	68 (44.7%)
Rectum	48 (31.6%)
Visceral metastasis	
Absent	54 (35.5%)
Present	98 (64.5%)
RAS status (n=152)	
Wild-type	70 (46.1%)
Mutant	82 (53.9%)
Baseline FIB-4 score	1.11 (0.26–5.30)
Baseline FIB-4 category	
Low risk (<1.3)	90 (59.2%)
Intermediate risk (1.3–2.67)	57 (37.5%)
High risk (>2.67)	5 (3.3%)
6-month FIB-4 score	1.69 (0.37–11.09)
6-month FIB-4 category	
Low risk (<1.3)	45 (29.8%)
Intermediate risk (1.3–2.67)	67 (44.4%)
High risk (>2.67)	39 (25.8%)
12-month FIB-4 score	1.87 (0.55–10.77)
12-month FIB-4 category	
Low risk (<1.3)	47 (30.9%)
Intermediate risk (1.3–2.67)	79 (52.0%)

High risk (>2.67)	26 (17.1%)

In univariate Kaplan–Meier analyses, baseline FIB-4 categories were significantly associated with PFS (log-rank p=0.01). Median PFS was 16.8 months in the low-risk group, 16.1 months in the intermediate-risk group, and 6.5 months in the high-risk group, with corresponding 12-month PFS rates of 67.7% and 67.2% for the low- and intermediate-risk groups, respectively; the 12-month estimate for the high-risk group was not reliable due to the small sample size. By contrast, 6-month FIB-4 categories were not associated with PFS (log-rank p=0.74). Median PFS was 14.5, 15.6, and 20.0 months in the low-, intermediate-, and high-risk groups, respectively; 12-month PFS rates were 75.5% in the low-risk and 86.3% in the intermediate-risk groups, whereas the estimate for the high-risk group was unreliable. (Table 2)

Gender was not associated with PFS (median PFS: 15.6 vs 17.6 months for males vs females; 12-month PFS: 89.1% vs 85.1%; p=0.46). Median PFS was 19.2 months in patients without liver metastasis and 14.1 months in those with liver metastasis, with 12-month PFS rates of 81.0% and 90.7%, respectively. RAS status was not associated with PFS (median PFS: 15.6 vs 19.2 months for wild-type vs mutant; 12-month PFS: 88.4% vs 87.5%; p=0.81). Tumor location showed no significant link to PFS (p=0.56), with median PFS of 16.1 months in the right colon, 15.6 months in the left colon, and 19.1 months in the rectum. The 12-month PFS rates were 63.3%, 69.0%, and 70.0%, respectively (Table 2).

Table 2. Univariate analysis for Progression Free Survival

Variable	Category	Median PFS (months)	12-month PFS (%)	Log-rank p
Baseline FIB-4	Low (<1.3)	16.8	67.7%	***0.01***
	Intermediate (1.3–2.67)	16.1	67.2%	
	High (>2.67)	6.5	—*	
6-month FIB-4	Low	14.5	75.5%	0.74
	Intermediate	15.6	86.3%	
	High	20.0	—*	
Gender	Male	15.6	89.1%	0.46
	Female	17.6	85.1%	
Liver metastasis	Absent	19.2	81.0%	***0.04***
	Present	14.1	90.7%	
RAS status	Wild-type	15.6	88.4%	0,81
	Mutant	19.2	87.5%	
Tumor location	Right colon	16.1	63.3%	0.56
	Left colon	15.6	69.0%	
	Rectum	19.1	70.0%	

**12-month estimate not reliable due to very small sample size*

Baseline FIB-4 categories were significantly associated with OS. The 24-month OS rates were 79.5%, 74.5%, and 53.3% in the low-, intermediate-, and high-risk groups, respectively. Median OS was 35.6 months (95% CI: 25.3–45.9), 38.1 months (95% CI: 17.1–59.1), and 22.0 months (95% CI: 16.6–27.4), respectively. Six-month FIB-4 categories were not associated with OS (p=0.848). Twelve-month FIB-4 showed a significant association with OS (p=0.009). Median OS was 41.7, 43.3, and 24.3 months in the low-, intermediate-, and high-risk groups, with 24-month OS rates of 85.1%, 77.7%, and 71.0%, respectively. Gender was not significantly associated with OS (p=0.07), although females had longer median OS than males (43.2 vs 30.8 months). Liver metastasis was significantly associated with OS (p=0.007). Patients without liver metastasis had a median OS of 57.0 months and a 24-month OS rate of 82.2%, compared with 31.6 months and 74.9% in those with liver metastasis. RAS status (p=0.9) and tumor location (p=0.7) were not associated with OS (Table 3).

Because few variables showed significance in univariate analyses and effect sizes were modest, a multivariate Cox regression for PFS was not built to prevent overfitting and unstable estimates.

Table 3: Univariate analysis for Overall Survival

Variable	Category	24-Month OS (%)	Median OS months	Median OS 95% CI	Log-rank p
Baseline FIB-4	Low (<1.3)	79.5%	35.6	25.3–45.9	0.003
	Intermediate (1.3–2.67)	74.5%	38.1	17.1–59.1	
	High (>2.67)	53.3%	22.0	16.6–27.4	
6-month FIB-4	Low (<1.3)	82.1%	36.5	25.8–47.3	0.848
	Intermediate (1.3–2.67)	74.5%	34.4	21.3–47.5	
	High (>2.67)	71.0%	30.2	25.0–35.4	
12-month FIB-4	Low (<1.3)	85.1%	41.7	29.7–53.7	0.009
	Intermediate (1.3–2.67)	77.7%	43.3	29.1–57.4	
	High (>2.67)	71.0%	24.3	17.8–30.8	
Gender	Male	68.6%	30.8	27.1-34.4	0.07
	Female	85.8%	43.2	32.3-54.2	
Liver metastasis	Absent	82.2%	57.0	42.1–71.8	0.007
	Present	74.9%	31.6	28.5–34.8	
RAS status	Wild-type	73.0%	—	—	0.9
	Mutant	74.7%	—	—	
Tumor location	Right colon	80.4%	33.3	17.8-48.7	0.7
	Left colon	70.6%	31.6	25.7-37.4	
	Rectum	80.3%	45.8	26.5-44.6	

In multivariate Cox regression analysis, 12-month FIB-4 remained independently associated with OS (overall p=0.004). Compared with the low-risk group, the intermediate-risk group had a 2.35-fold increased risk of mortality (HR 2.35, 95% CI 1.07–5.14; p=0.033), while the high-risk group had a 6.76-fold increased risk (HR 6.76, 95% CI 2.16–21.14; p=0.001). Baseline FIB-4 was also independently associated with OS (overall p=0.011). The intermediate-risk group demonstrated a lower risk of death compared with the reference category (HR 0.30, 95% CI 0.14–0.66; p=0.003), whereas the high-risk group was not significantly associated with OS (HR 0.65, 95% CI 0.07–5.96; p=0.705). Gender (HR 1.71, 95% CI 0.89–3.28; p=0.108) and liver metastasis (HR 0.57, 95% CI 0.31–1.05; p=0.073) were not independently associated with OS in the adjusted model (Table 4).

Table 4. Multivariate Cox regression analysis for overall survival

Variable	Category	HR (Exp(B))	95% CI	p value
12-month FIB-4	Overall	—	—	0.004
	Intermediate (1.3–2.67)	2.35	1.07–5.14	0.033
	High (>2.67)	6.76	2.16–21.14	0.001
Gender	Male vs Female	1.71	0.89–3.28	0.108
Liver metastasis	Present vs Absent	0.57	0.31–1.05	0.073
Baseline FIB-4	Overall	—	—	0.011
	Intermediate (1.3–2.67)	0.30	0.14–0.66	0.003
	High (>2.67)	0.65	0.07–5.96	0.705

DISCUSSION

The liver is the most common metastatic site in colorectal cancer and significantly impacts patient outcomes; liver fibrosis, driven by chronic inflammation and the activation of hepatic stellate cells, plays a crucial role in disease progression and treatment response (12, 13). Non-invasive markers like FIB-4 index, which uses routinely measured lab parameters, have become vital for assessing liver fibrosis (14). FIB-4 is valued for its accessibility and has been incorporated into screening algorithms, also showing promise as a prognostic marker beyond chronic liver diseases (15, 16).

Loosen et al. demonstrated that elevated FIB-4 scores were associated with an increased risk of hepatocellular carcinoma development in patients with non-alcoholic fatty liver disease (15). Similarly, Kariyama et al. reported that FIB-4 was an independent prognostic factor for survival in hepatocellular carcinoma (16). In another study focusing on cholangiocarcinoma, Steffani et al. showed that the presence of liver fibrosis was associated with significantly worse overall survival and higher recurrence rates following treatment (17). These observations support the concept that changes in fibrosis markers may reflect ongoing pathological processes affecting the liver.

In a large community cohort, Wang et al. demonstrated that higher liver fibrosis scores were associated with increased cancer-related mortality (18). Likewise, inflammatory and metabolic pathways linked to fibrosis have been associated with increased mortality and adverse clinical outcomes in metabolic liver disease populations (19). These observations support the hypothesis that fibrosis indices may reflect systemic inflammatory and metabolic disturbances that influence cancer prognosis.

In metastatic colorectal cancer specifically, the prognostic significance of fibrosis markers has been investigated only in limited studies. Yıldırım et al. recently evaluated several non-invasive liver fibrosis indices, including FIB-4, APRI, and ALBI scores, in treatment-naïve metastatic colorectal cancer patients

and demonstrated that higher FIB-4 values were associated with poorer overall survival. However, most previous investigations have focused primarily on baseline fibrosis markers, and little information is available regarding temporal changes in fibrosis indices during systemic therapy.

For instance, Wang et al. demonstrated that post-treatment changes in FIB-4 scores were associated with the subsequent development of hepatocellular carcinoma in patients with chronic hepatitis C infection (21). Likewise, longitudinal studies in population-based cohorts have shown that increasing fibrosis scores are associated with higher risks of liver-related complications and mortality (22). These findings support the concept that temporal changes in fibrosis markers may reflect ongoing pathological processes affecting hepatic function.

In the present study, we evaluated both baseline FIB-4 values and their longitudinal evolution during treatment in patients with metastatic colorectal cancer. Similar to the literature knowledge, our findings demonstrated a significant increase in FIB-4 scores over time, with median values rising from 1.11 at baseline to 1.69 at six months and 1.87 at twelve months. Baseline FIB-4 values were significantly associated with both progression-free survival and overall survival in our cohort. Patients with higher baseline FIB-4 scores experienced shorter survival compared with those in the low-risk group. A particularly notable finding of our study was the prognostic significance of longitudinal FIB-4 measurements. While six-month FIB-4 categories were not associated with survival outcomes, twelve-month FIB-4 values demonstrated a significant association with overall survival and remained an independent prognostic factor in multivariate analysis. Patients in the intermediate- and high-risk groups at twelve months showed substantially increased mortality risk compared with those in the low-risk category.

Several mechanisms may explain the increase in FIB-4 scores observed during systemic therapy in our cohort. One potential explanation is **chemotherapy-related hepatotoxicity**. Oxaliplatin-based chemotherapy, a cornerstone of colorectal cancer treatment, has been associated with sinusoidal obstruction syndrome and other forms of hepatic injury. Histopathological studies have shown that oxaliplatin can induce sinusoidal dilatation, hepatic congestion, and perisinusoidal fibrosis (23). In patients undergoing hepatic resection for colorectal liver metastases, prior exposure to oxaliplatin has been linked to sinusoidal injury and impaired liver function (24).

Another possible explanation involves the interaction between metastatic tumor burden and the hepatic microenvironment. In our cohort, liver metastasis was significantly associated with overall survival in univariate analysis but did not remain an independent predictor in multivariate models. This observation may indicate that fibrosis-related indices such as FIB-4 capture broader aspects of hepatic dysfunction that are not solely explained by the presence of metastatic disease

Several limitations should be considered when interpreting the results of this study. First, the retrospective design introduces the potential for selection bias and limits causal inference. Second, the relatively small number of patients in the high-risk FIB-4 group may have affected the stability of subgroup analyses. Third, FIB-4 represents an indirect marker of fibrosis and may be influenced by

factors such as systemic inflammation, chemotherapy-induced hepatotoxicity, or thrombocytopenia. These factors may contribute to variability in FIB-4 values independent of structural fibrosis.

Despite these limitations, our study provides novel insights into the potential prognostic role of fibrosis-related biomarkers in metastatic colorectal cancer. To our knowledge, few studies have examined longitudinal changes in FIB-4 during systemic therapy and their association with survival outcomes. Our findings suggest that monitoring dynamic changes in FIB-4 may provide clinically relevant prognostic information and help identify patients at increased risk of adverse outcomes.

CONCLUSION

FIB-4 scores increased progressively during systemic therapy in patients with metastatic colorectal cancer, and both baseline and twelve-month FIB-4 values were associated with overall survival. These findings indicate that longitudinal monitoring of fibrosis markers may offer a simple and accessible approach for prognostic assessment in this patient population. Further prospective studies are warranted to validate these observations and to clarify the mechanisms linking hepatic fibrosis markers with cancer progression and treatment-related liver injury.

Abbreviations

FIB-4
Fibrosis-4 index
mCRC
Metastatic colorectal cancer
PFS
Progression-free survival
OS
Overall survival
CRC
Colorectal cancer
AST
Aspartate aminotransferase
ALT
Alanine aminotransferase
5-FU
5-fluorouracil
HR
Hazard ratio
CI
Confidence interval
IV

Intravenous

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval was obtained from the Institutional Ethics Committee of Istanbul Medipol University (Approval number: E-10840098-202.3.02-1501, February 2026). Written informed consent was obtained from all participants.

Consent for publication

Not applicable.

Availability of data and materials

The data that support the findings of this study are not publicly available due to their sensitive nature but are available from the corresponding author upon reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

All authors contributed to the conception of the study.
S.G.A. and H.A. designed the study and drafted the manuscript.
All authors contributed to the interpretation of the data.
S.G.A., H.A., and E.S. critically revised the manuscript for important intellectual content.
All authors approved the submitted version.
All authors agree to be personally accountable for their own contributions and to ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Figures

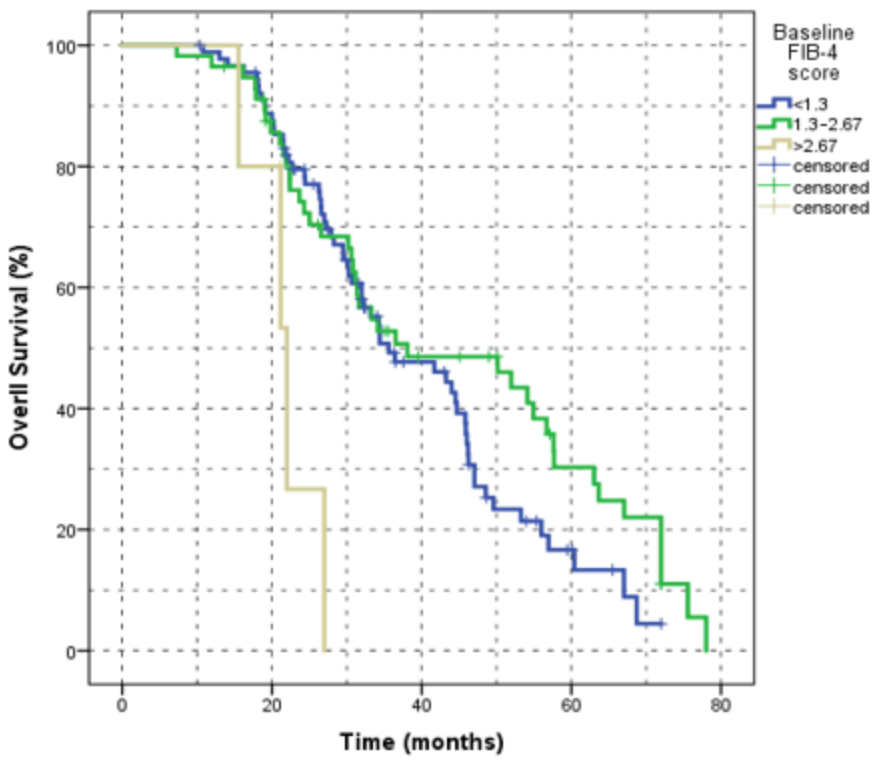


Figure 1

The relationship between baseline FIB-4 score and Overall Survival

Kaplan–Meier survival curves demonstrate the differences in overall survival among the FIB-4 groups. Patients with a higher baseline FIB-4 score (>2.67) showed lower overall survival compared with those with lower FIB-4 scores. (Figure 1)

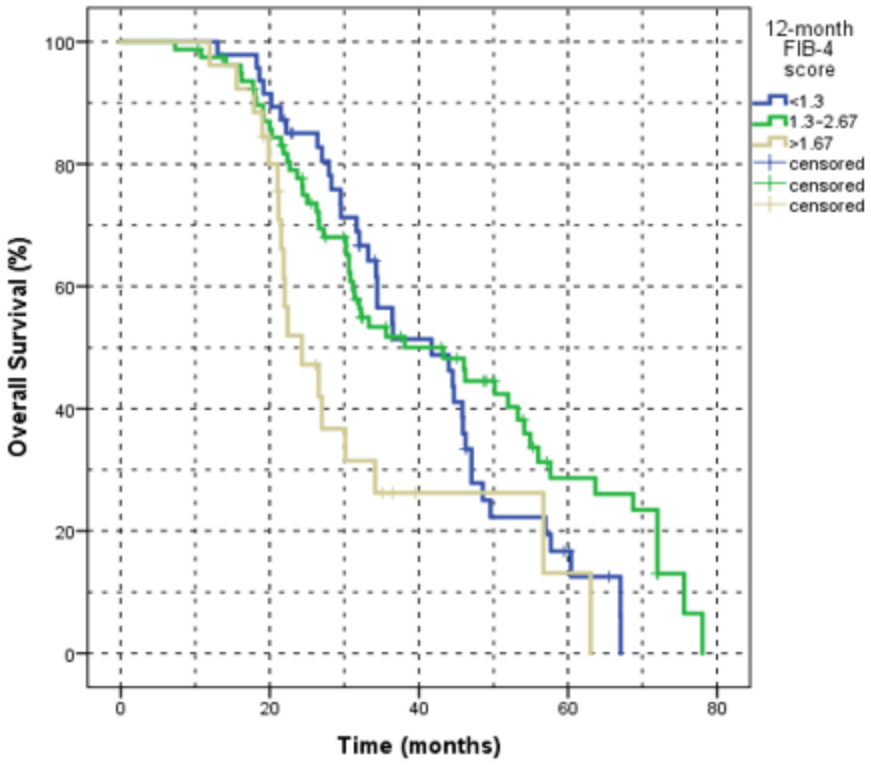


Figure 2

The relationship between 12. month FIB-4 score and Overall Survival

Kaplan–Meier survival curves demonstrating overall survival according to 12-month FIB-4 score categories. Patients with higher 12-month FIB-4 scores (>2.67) showed lower overall survival compared with those with lower FIB-4 scores. (Figure 2)