Long-term prognosis of MAFLD patients according to non-invasive methods

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DIGITAL EXPERIENCE

BACKGROUND

Recently, a new terminology “metabolic(dysfunction)-associated fatty liver disease”(MAFLD) has been suggested by a group of experts to more accurately reflect the pathogenesis of fatty liver diseases. Non-invasive assessment of fibrosis has been shown to predict global and specific mortality and morbidity in NAFLD and AFLD, but this has not yet been demonstrated in MAFLD.

AIM

To assess the prognostic value of noninvasive methods in MAFLD patients.

MATERIALS & METHODS

All consecutive MAFLD patients with liver stiffness measurement (LSM, Fibroscan®), FIB-4, and LIVERFASt™ (an AI algorithm, Fibronostics), with a follow-up ≥ 1 year were prospectively included in a monocentric cohort study. We evaluated overall survival, specific cause of mortality, and occurrence of any complication. The occurrence of mortality was analysed by the Kaplan–Meier method, the risk of morbidity by a logistic regression. Factors independently associated with mortality and morbidity were identified by a multivariate Cox model. The relationship between the hazard ratio and noninvasive methods was assessed using a cubic spline function. The prognostic performance of noninvasive methods for prediction of mortality was evaluated by Harrell’s C-index and for morbidity by AUC. Rates of noninvasive methods were assessed using a linear mixed model, and the association between noninvasive methods values and mortality or morbidity was evaluated using a Cox regression analysis.

RESULTS

Median follow-up was 62 months [42-91] and 73 (5.8%) subjects died.

In terms of mortality: In a time-dependent multivariable analysis adjusted for age, gender, BMI, tobacco and alcohol; LSM, FIB-4 and LIVERFASt values were significantly associated with all-cause and liver-related mortality (p<0.001). Baseline noninvasive methods values were correlated with overall and liver-related mortality (p<0.001). A predictive model (composed of the age, BMI, tobacco consumption, and LSM, FIB-4 or LIVERFASt) was a very good predictor of overall and liver-related mortality (C-index: from 0.8 to 0.9).

In terms of morbidity: In a time-dependent multivariable analysis adjusted for same parameters; LSM, FIB-4 and LIVERFASt were significantly associated with the occurrence of any complication and liver-related outcomes (p<0.001). The same developed predictive model was a good predictor of overall and liver-related morbidity (AUC: 0.72 to 0.74).

Characteristics of the 1253 patients at inclusion

		Available values	Median (IQR) Frequency (%)
Age (years)		1253	55.9(48-63)
Male (%)		1253	708 (56.5)
BMI	**Median**		31.3 (27.9-36.2)
(kg/m²)	**>30**	1253	738 (58.9)
Waist Circumference (cm)		1253	106 (97-115)
Diabetes (%)		1253	528 (42.1)
Hypertension (%)		1253	675 (53.9)
Alcohol consumption (g/day)		1237	0 (0-14)
Serum HDL cholesterol (mmol/L)		1252	1.23 (1.03-1.46)
Serum triglycerides (mmol/L)		1253	1.64 (1.2-2.38)
	Median		1.38 (0.93-2.14)
	< 1.3		575 (45.9)
FIB-4	**From 1.3 to 2.67**	1253	475 (37.9)
	> 2.67		203 (16.2)
	Median		8.3 (5.8-13.7)
	<10		762 (60.8)
LSM	**From 10 to 15**	1253	222 (17.7)
(kPa)	**From 15 to 20**		76 (6.07)
	>20		193 (15.4)
	Median		0.38 (0.21-0.61)
	F0		437 (35.3)
	F1		336 (27.1)
LIVERFASt™ Fibrosis	**F2**	1239	125 (10.1)
	F3		166 (13.4)
	F4		175 (14.1)
	0		22 (5.7)
	1		65 (24.2)
Liver biopsy Fibrosis (%)	**2**	375	94 (24.2)
	3		112 (28.9)
	4		95 (24.5)

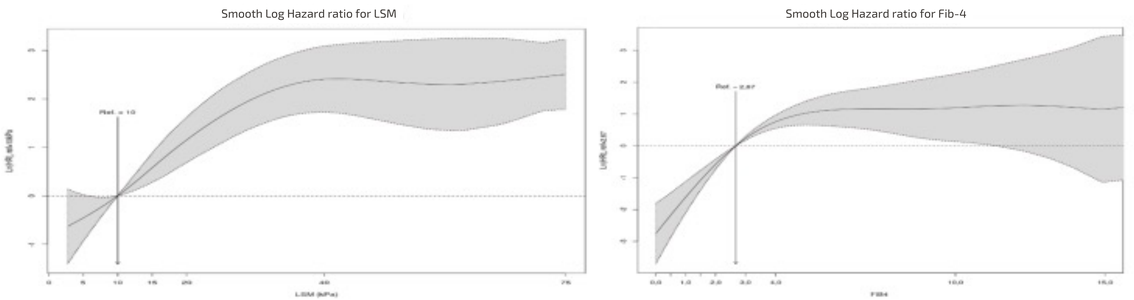

Figure: Hazard ratio of all-cause mortality according to LSM and FIB-4. LSM: Liver stiffness measurement. FIB-4. The relationship between deaths and noninvasive methods was assessed using a cubic spline function.

Table: Prognostic accuracy of non-invasive methods. Prognostic accuracy of non-invasive methods for survival was evaluated according to Harrell’s C-index and according to the area under the receiver operating characteristic curve for outcome.

	HARRELL C-INDEX OVERALL MORTALITY (95% CONFIDENCE INTERVAL)	HARRELL C-INDEX LIVER-RELATED MORTALITY (95% CONFIDENCE INTERVAL)	AUC OVERALL MORTALITY (95% CONFIDENCE INTERVAL)	AUC LIVER-RELATED OUTCOMES (95% CONFIDENCE INTERVAL)
CLINIC MODEL Age + sex + BMI + alcohol consumption + tobacco consumption	**0.74 (0.68-0.81)**	**0.73 (0.65-0.8)**	**0.70 (0.67-0.74)**	**0.80 (0.75-0.84)**
LSM value	**0.78 (0.7-0.85)**	**0.86 (0.79-0.92)**	**0.67 (0.63-0.70)**	**0.87 (0.83-0.91)**
Clinical Model **+ LSM** value	**0.83 (0.77-0.89)**	**0.88 (0.83-0.93)**	**0.74 (0.71-0.77)**	**0.90 (0.87-0.94)**
FIB-4 value	**0.8 (0.74-0.85)**	**0.81 (0.75-0.88)**	**0.67 (0.64-0.71)**	**0.80 (0.75-0.86)**
Clinical Model **+ FIB-4** value	**0.8 (0.74-0.86)**	**0.81 (0.74-0.87)**	**0.72 (0.68-0.75)**	**0.85 (0.81-0.89)**
LIVERFASt™ Fibrosis Score	**0.78 (0.72-0.85)**	**0.83(0.75-0.91)**	**0.69 (0.66-0.73)**	**0.86 (0.82-0.90)**
CLINIC MODEL + LIVERFASt™ Fibrosis Score	**0.83 (0.77-0.87)**	**0.85(0.79-0.92)**	**0.73 (0.69-0.76)**	**0.89 (0.86-0.93)**

CONCLUSION

LSM, FIB-4 or LIVERFASt™ can predict global and liver-related mortality and morbidity in MAFLD patients and could, therefore, be used as prognosis endpoint in clinical trials.

REFERENCES

Eslam M et al. A new definition for metabolic dysfunction-associated fatty liver disease: An international expert consensus statement. J Hepatol. 2020;73.202-9

DISCLOSURES

No disclosure

CONTACT INFORMATION

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FIBRONOSTICS