

Comparative assessment of noninvasive methods (NIMs) - LIVERFAST, liver stiffness measurement (LSM) with transient elastography (TE, Fibroscan), ELF and FIB-4 - in a prospective cohort with chronic liver diseases (CLD) from a tertiary liver center

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INTRODUCTION

- CLD-related mortality in Thailand is increasing due to high prevalence of obesity and not eradicated chronic viral hepatitis B (CHB) and C (CHC)
- LIVERFAST™** (Fibrosonics, Florida, US) is a new point-of-care proprietary technology to assess quantitatively (normalized score from 0.00 to 1.00) liver fibrosis, steatosis and steatohepatitis in MAFLD patients. (1-3)
- LIVERFAST™** is a blood based serum biomarker that demonstrated prognostic value for liver-related events and overall mortality in MAFLD subjects (1)

AIMS

In a prospective tertiary cohort with CLD, to assess clinical performance against liver biopsy of different NIMs:

1/ For advanced and bridging fibrosis: LIVERFAST Fibrosis test, Enhanced liver fibrosis score (ELF), FIB-4 and LSM using vibration controlled transient elastography (VCTE).

2/For steatosis (mild, moderate and marked): LIVERFAST Steatosis test and CAP (Fibroscan) in NAFLD patients, including a control group with CLD without steatosis (S0).

METHODS

Patients

- Patients with NAFLD, CHB and CHC were prospectively included from a tertiary center [Khon Kaen University Hospital in Thailand].
- All patients had simultaneous liver biopsy, blood biomarkers (LIVERFAST, FIB-4 and ELF) and LSM using VCTE
- Biopsy staging was as per METAVIR in CHB/CHC patients and NASH-CRN in NAFLD patients.
- Statistics were descriptive and using area under ROC [AUROC (95%CI)].

CONCLUSIONS

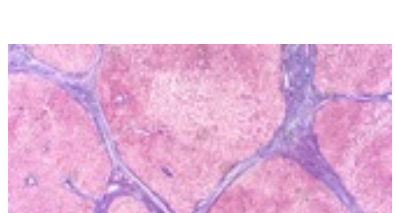
- LIVERFAST is a blood biomarker for fibrosis and steatosis staging fibrosis and steatosis with similar performances to VCTE/CAP in patients with CLD.**
- LIVERFAST and VCTE outperformed ELF for staging advanced liver fibrosis.**
- LIVERFAST can be an alternative to imaging methods for stratifying patients with NAFLD and NASH.**

RESULTS

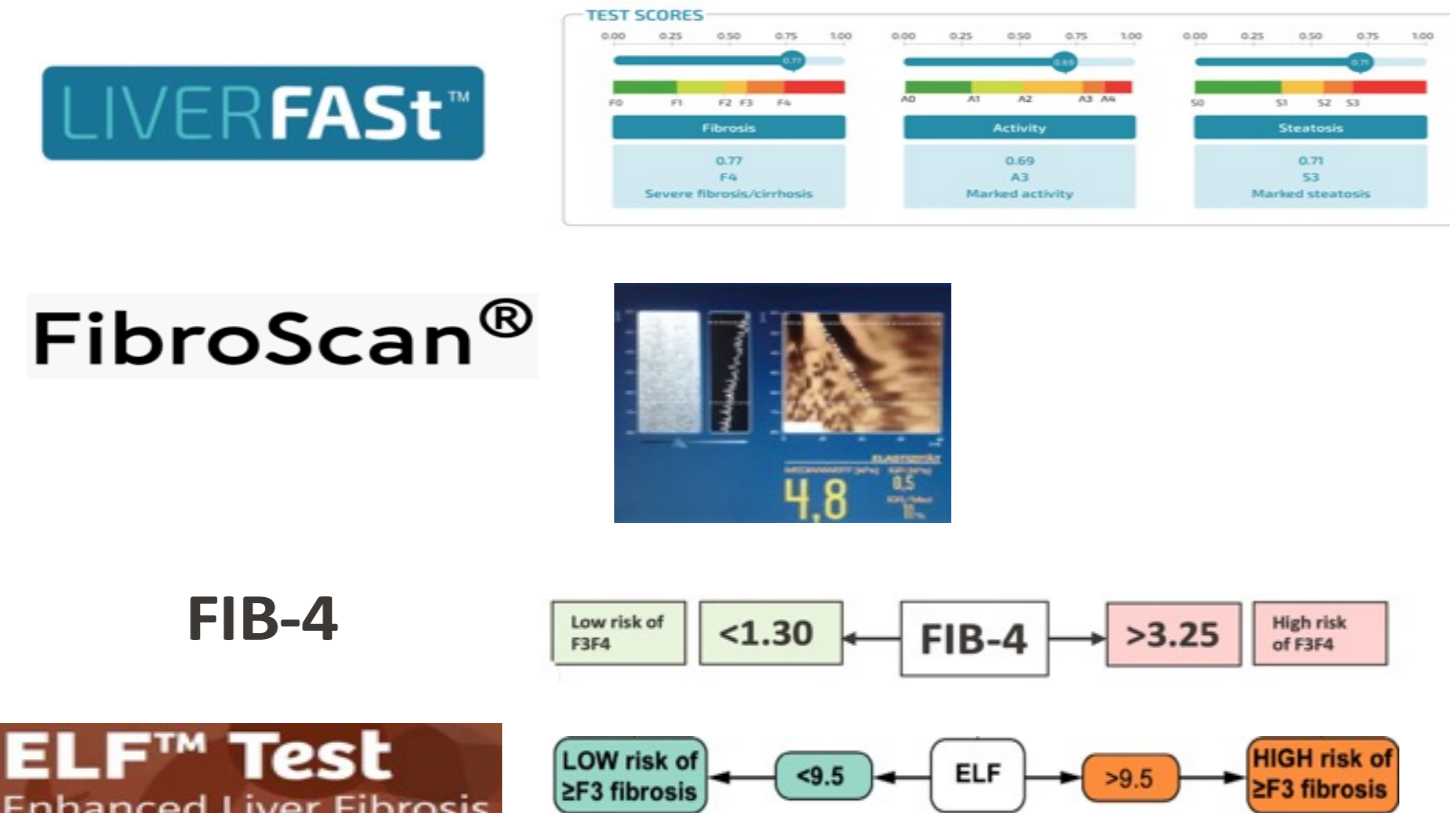
STUDY DESIGN

N=192 pts with NAFLD, CHB and CHC prospectively included had liver biopsy, LIVERFAST, FIB4 and LSM.

Liver Biopsy

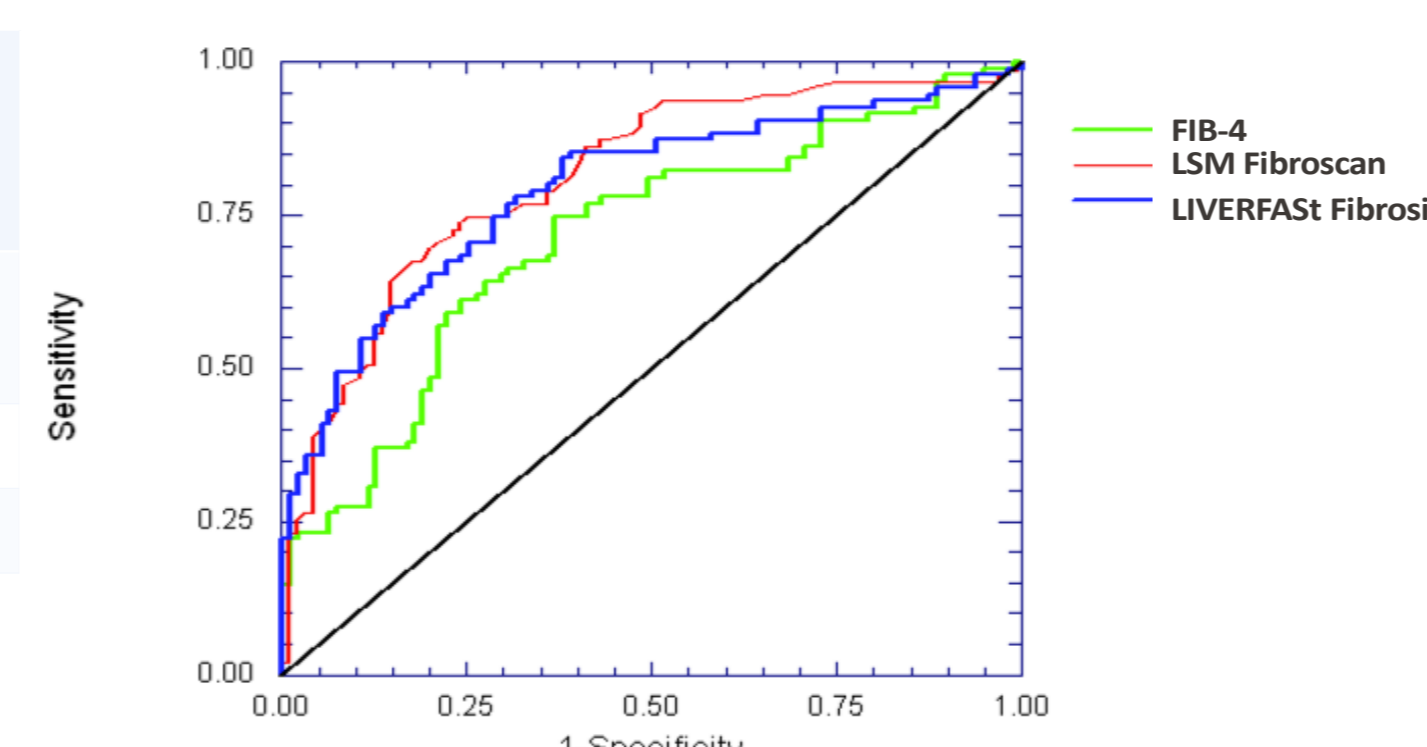


N=157 patients had ELF along with other NIMs and liver biopsy

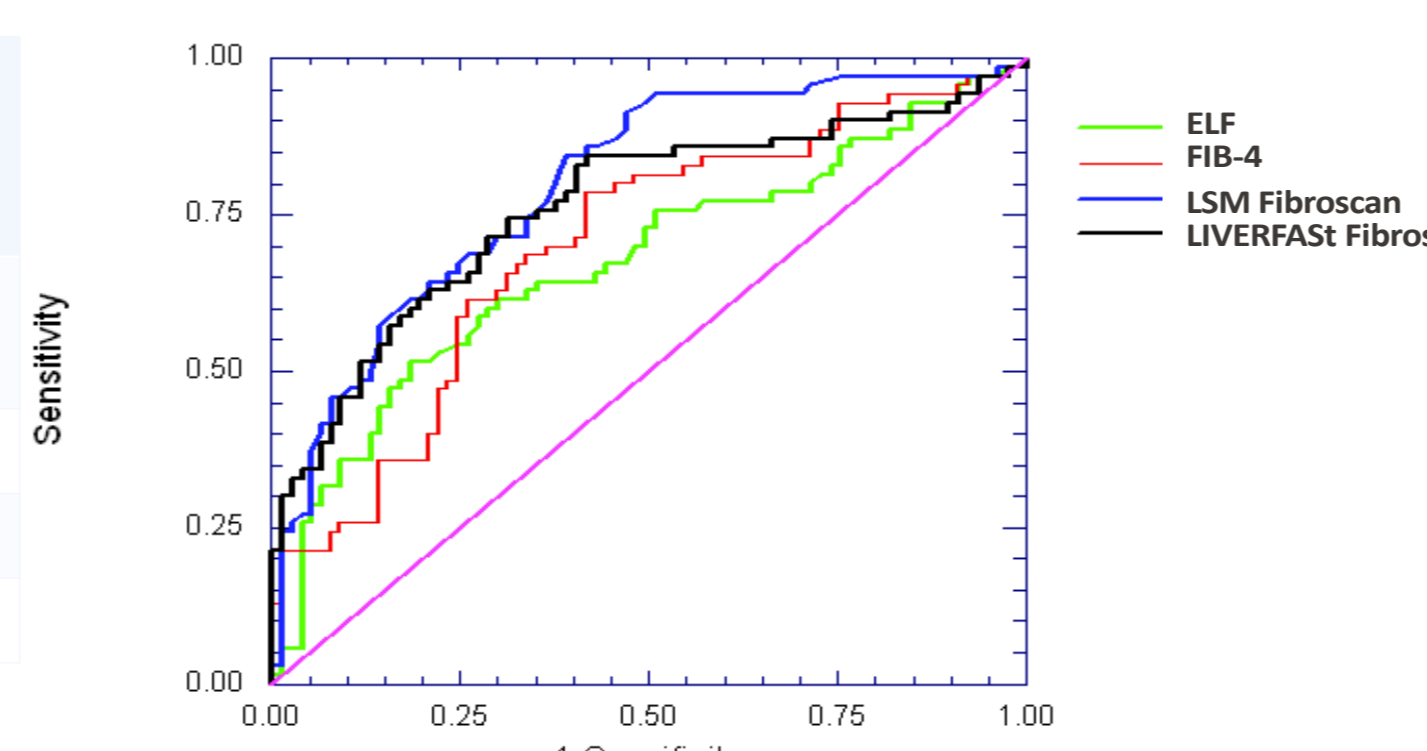


COMPARATIVE PERFORMANCES FOR FIBROSIS BETWEEN NIMs

Overall cohort N=192	AUROC (95%CI) for ADVANCED fibrosis	P value vs. LF
LIVERFAST Fibrosis (LF)	0.81 (.67-.85)	
LSM (VCTE)	0.70 (.62-.77)	ns
FIB-4	0.71 (.63-.77)	p<0.05

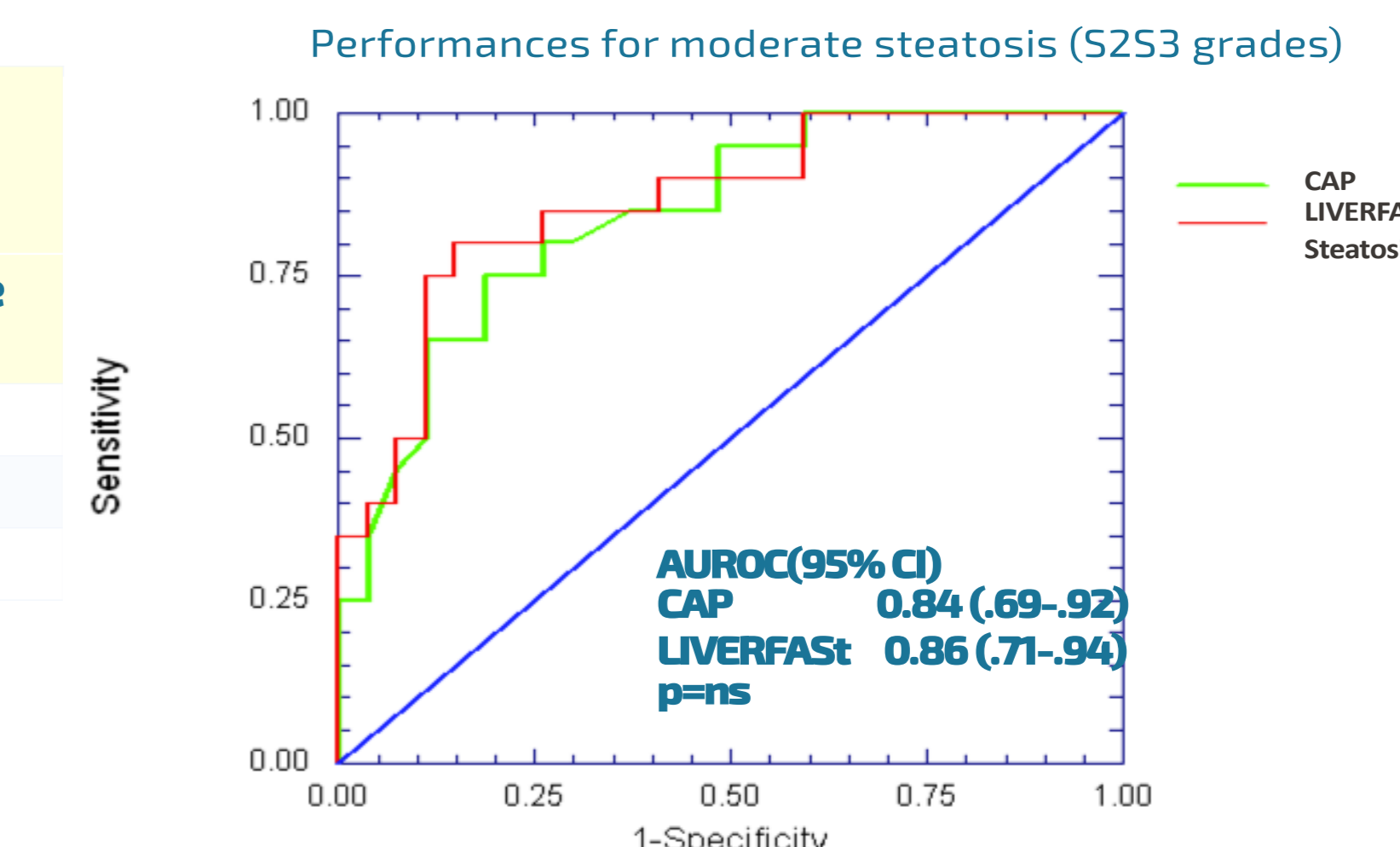


ELF cohort N=147	AUROC (95%CI) for ADVANCED fibrosis	P value vs. LF
LIVERFAST Fibrosis (LF)	0.77 (.61-.79)	
LSM (VCTE)	0.79 (.71-.85)	ns
FIB-4	0.69 (.61-.77)	p<0.01
ELF	0.63 (.53-.71)	p<0.01



COMPARATIVE PERFORMANCES FOR STEATOSIS BETWEEN LIVERFAST AND CAP (Fibroscan)

NAFLD and control cohort (30 NAFLD, 17 controls S0) N=47	AUROC (95%CI)		P value
	LIVERFAST Steatosis	CAP (Fibroscan)	
Mild steatosis ≥S1	0.86 (.70-.93)	0.87 (.73-.94)	ns
Moderate steatosis ≥S2	0.86 (.71-.94)	0.84 (.69-.92)	ns
Marked steatosis S3	0.81 (.62-.93)	0.81 (.64-.91)	ns



CHARACTERISTICS OF INCLUDED PATIENTS

N=192	Medians (range or SE) or %
Male gender, %	52.7%
Median (range) Age, yrs.	50 (20-69)
BMI, Kg/m ²	23.9 (15.2-48.8)
HbA1c	5.5%
Etiologies	
NAFLD	26.4%
CHB	23.9%
CHC	49.8%
Liver biopsy	
Advanced fibrosis	50.2%
Bridging fibrosis	21.8%
Cirrhosis	9.5%
Severe NAI	49.5%
Moderate steatosis	66.8% (among NAFLD)
Fibroscan	
Liver stiffness measurement, kPa	7.5 (0.56-75)
CAP, dB/m	216 (100-400)
LIVERFAST, medians (se)	
Fibrosis score	0.29 (0.03-0.99)
Activity score	0.29 (0.01-0.94)
Steatosis score	0.35 (0.02-1.00)
ELF	
ELF	7.93 (3.97-12.98)
FIB-4	
FIB-4	1.44 (0.14-7.52)

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