

Introduction and Aims

In clinical practice the use of imaging and liver biopsy is changing⁽¹⁾. Risk stratification and prognosis of liver disease is accepted for HCV, HBV etiology and proposed for NAFLD (non alcoholic fatty liver disease) patients through non invasive fibrosis assessment like liver stiffness measurement (LSM) by transient elastography (TE). This assessment can be performed together with controlled attenuation parameter (CAP) for the detection of fatty liver.

Here we aimed:

- to compare CAP/Median results, in a real life experience setting through:
 - recently proposed cut off related to optimal stratification of steatosis⁽²⁾;
 - reliability based on interquartile range (CAP/IQR)⁽³⁾;
- to predict any increase of fibrosis in these NAFLD patients using TE⁽⁴⁾, AISF-SIMG.

Methods

- CAP values obtained by FibroScan ©CAP (Echosense Paris) range from 100 to 400 dB/m, and the final result is the median value of 10 valid measurements (note that CAP is calculated simultaneously with TE LSM in kPa range 0-75).
- Only patients (pts) with 10 valid LSM measurements were included, whereas “poorly reliable” values (TE-IQR/TE-Med >0.30 with TE-Med ≥7.1 kPa) were excluded from the analysis.
- Among 952 patients consecutively examined after primary care referrals in twelve months period, 38 were excluded, i.e.:
 - 3 pts for less than 10 LSM for more than 2.7 cm skin-liver thickness,
 - 35 pts (3.6%) were poorly reliable.
- CAP value groups were defined according to recently proposed cut off⁽²⁾:
 - S0 (<248dB/m), S1 (<268), S2 (<280), S3 (>280).
 - CAP/IQR cut off (<40 value).
- Difference among groups were analyzed by ANOVA test for continuous variable and Chi squared test for categories variable.

Results

WHOLE SAMPLE

Descriptive statistics and differences among CAP value groups were summarize in Table 1:

Table 1: Whole Sample characteristics and group comparisons by Anova or Chi-squared tests

All patients N=914	Gender	F	M	n(%)	n(%)	CUT OFF CAP-median dB/m				Test group comparison		
						Total	S0 ≤248 N=429 (46.9%)	S1 >248 ≤268 N=121 (13.2%)	S2 >268 ≤280 N=64 (7%)		S3 >280 N=300 (32.8)	
				434 (46.9)	238 (55.5)	65 (53.7)	28 (43.8)	103 (34.3)	191 (45.5)	56 (46.3)	197 (65.7)	χ ² =34.0, p<0.001
	Age (years)		mean (SD)	60.5 (13.8)	60.3 (14.5)	59.3 (14.1)	61.1 (14.5)	61.2 (12.6)	F=0.6, p=0.610			
	Diagnosis	NAFLD	n (%)	221 (24.2)	42 (9.8)	32 (26.4)	20 (31.2)	127 (42.3)	χ ² =111.8, p<0.001			
		HCV	n (%)	524 (57.3)	291 (67.8)	69 (57.0)	34 (53.1)	130 (43.3)				
		HBV	n (%)	60 (6.6)	28 (6.5)	3 (4.7)	17 (5.7)	17 (5.7)				
		Other	n (%)	109 (11.9)	68 (15.9)	8 (6.6)	7 (11.0)	26 (8.7)				
	Total measures	mean (SD)		26.7 (16.2)	26.2 (15.5)	28.0 (15.5)	27.0 (18.9)	26.8 (16.9)	F=0.4, p=0.730			
	Valid measures	mean (SD)		22.0 (12.8)	23.1 (13.3)	23.4 (13.3)	22.7 (15.5)	19.5 (10.9)	F=5.5, p=0.001			
	TE kPa,median [IQR]	mean (SD)		8.7 (8.1) [5.2]	8.5 (7.9)	7.5 (5.4)	8.6 (8.5)	9.5 (8.9)	F=2.1, p=0.096			
	TE kPa IQR	mean (SD)		1.5 (2.0)	1.4 (1.6)	1.3 (1.2)	1.5 (1.9)	1.8 (2.6)	F=3.3, p=0.021			
	TE kPa IQR /TE kPa median (%)	mean (SD)		17.0 (8.0)	16.8 (7.9)	16.7 (8.9)	17.3 (7.9)	17.4 (8.8)	F=0.3, p=0.799			
	CAP median (dB/m)	mean (SD)		255 (59.5)	206 (36.9)	257 (5.8)	274 (3.4)	321 (30.9)	F=824, p<0.001			
	CAP IQR (dB/m)	mean (SD)		36.2 (17.7)	39.9 (20.0)	36.5 (15.5)	33.6 (12.4)	31.4 (14.5)	F=14.8, p<0.001			
	CAP IQR (dB/m) CUT OFF>40 (n=283, 31% of all)	mean (SD)		55.2 (18.2)	57.5 (20.2)	52.1 (15.2)	50.0 (14.1)	52.3 (14.1)	F=2.2, p=0.088			

- CAP-median dB/m cut off >280 (S3) was mainly observed in male gender;
- in 24,8% of HCV and 57.4% of NAFLD etiology;
- CAP-IQR>40 occurred in 31% overall
- CAP-IQR>40 occurred in 20% in NAFLD etiology

FIG 1: Stacked barplot of diagnoses by TE-IQR/TE-med cutoff

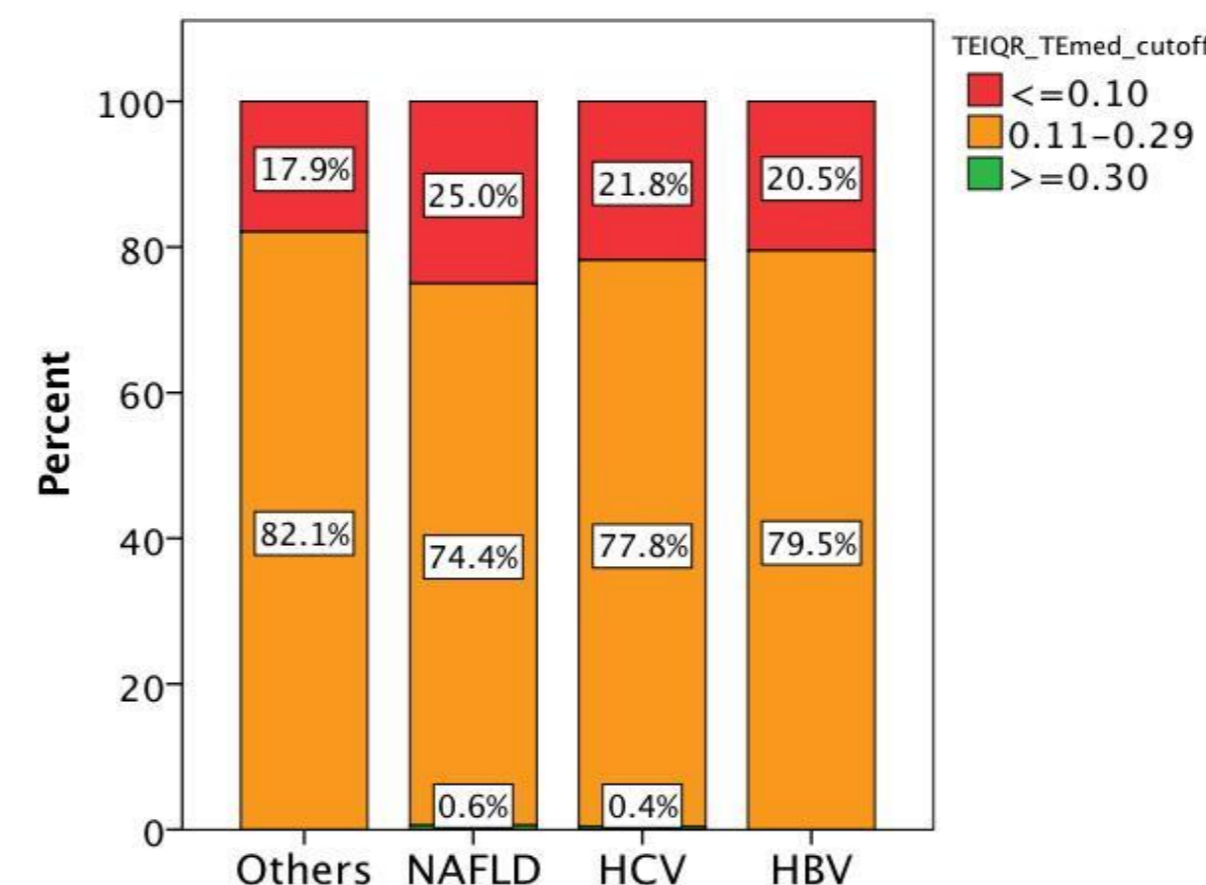
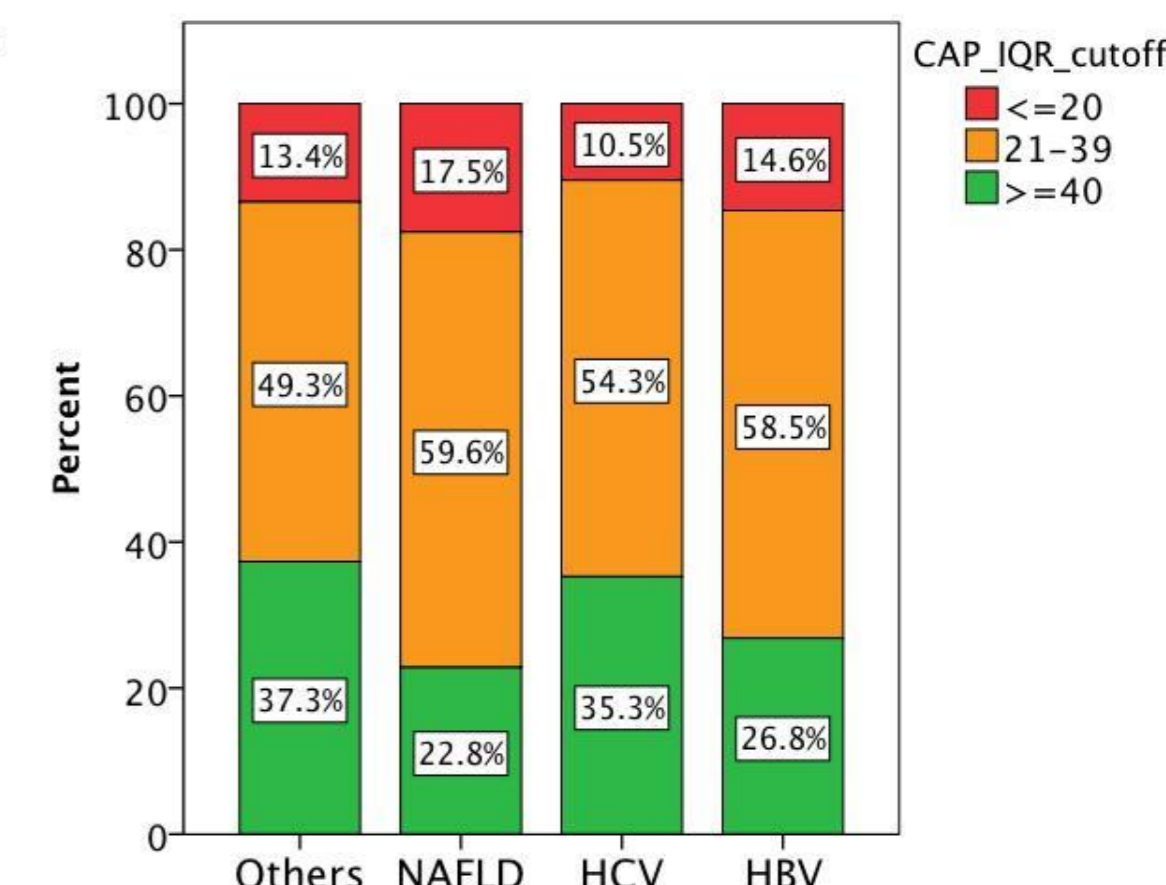


FIG 2: Stacked barplot of diagnoses by CAP-IQR cutoff



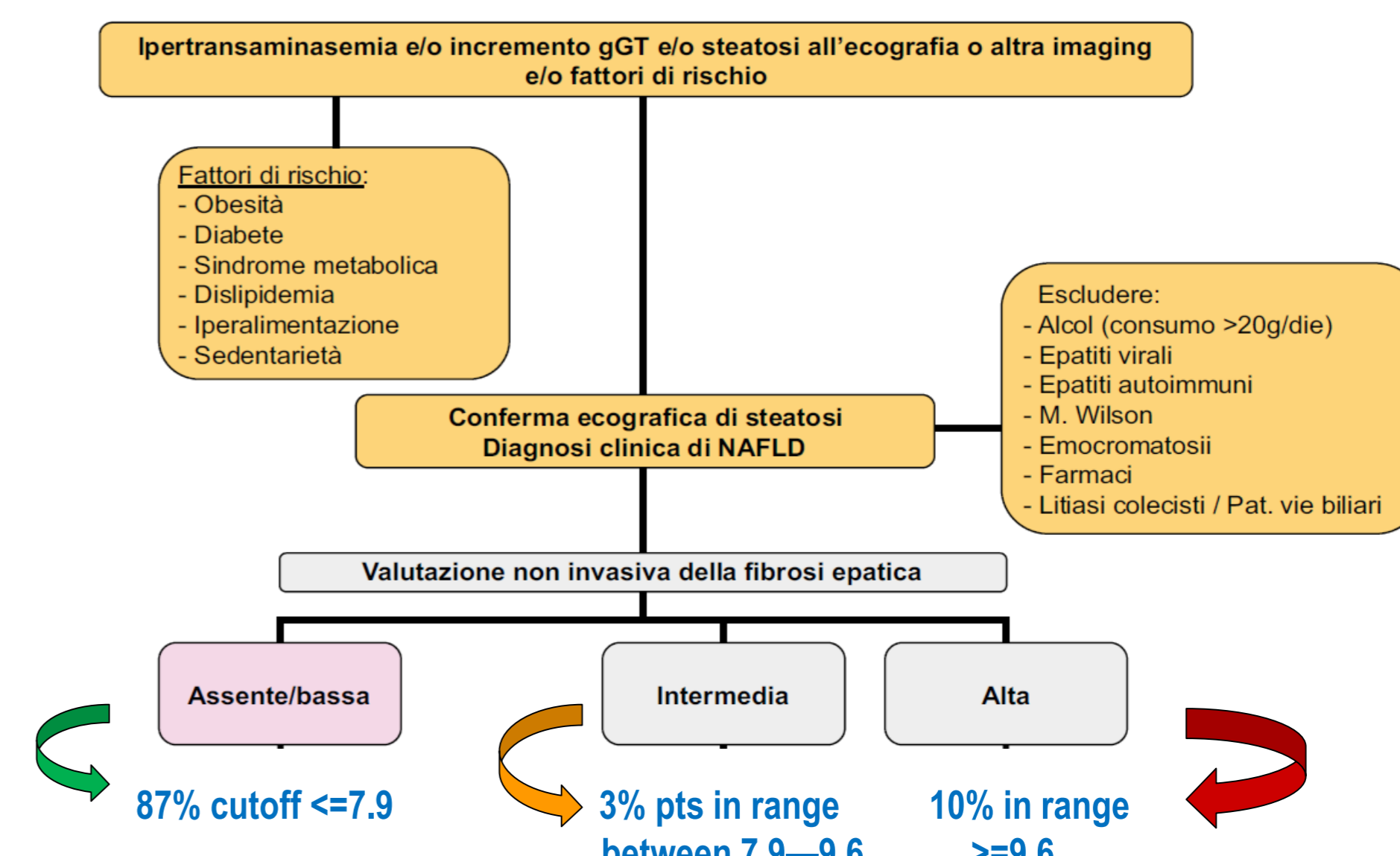
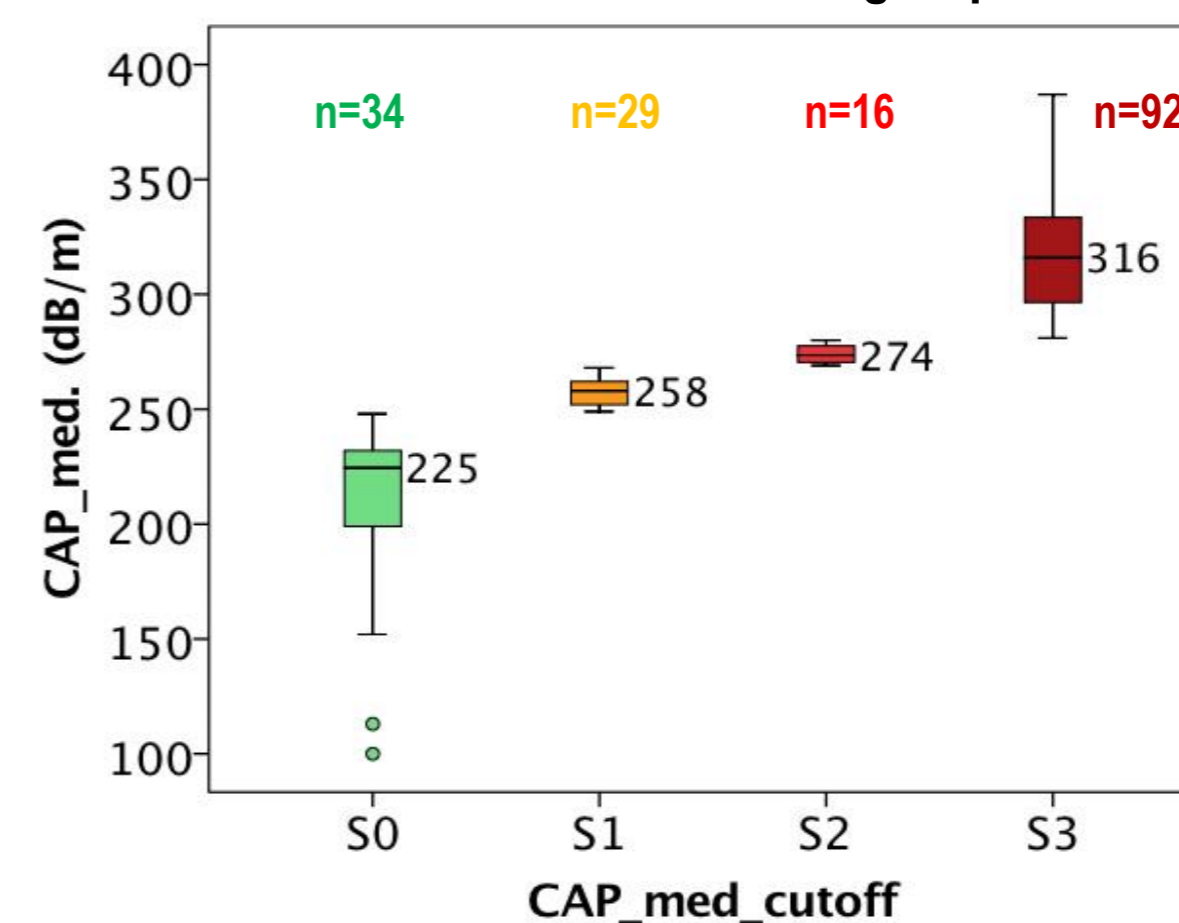
NAFLD SAMPLE

Table 2: NAFLD Sample characteristics and group comparisons by Anova or Chi-squared tests

NAFLD patients N= 221	Gender	F	M	n(%)	n(%)	CUT OFF CAP-median dB/m				Test group comparison
						Total	≤ 248 N=42 (19%)	>248 ≤268 N=32 (15%)	>268 ≤280 N=20 (9%)	
				82 (37.1)	22 (52.4)	16 (50.0)	8 (40.0)	36 (28.7)	χ ² =10.7, p=0.013	
	TE kPa,median	mean(SD) [IQR]		6.0 (4.3) [2.3]	4.7 (2.6)	5.3 (4.1)	5.1 (2.6)	6.8 (4.8)	F=3.4, p=0.019	
	Cut Off									
		kPa ≤ 7.9	n= 192 (87%)	4.8 (1.3)	4.1 (1.1)	4.6 (1.4)	4.4(1.2)	5.1 (1.2)	F=7.9, p<0.001	
		7.9 < kPa < 9.6	n= 6 (3%)	8.8 (0.5)	(-)	---	8.8 (-)	88 (0.6)	F=0.1, p=977	
		kPa ≥ 9.6	n= 23(10%)	15.5 (7.6)	13.1 (2.3)	26.3 (-)	13.8 (-)	15.4 (8.1)	F=0.8, p=0.521	
	TE kPa IQR /TE kPa median (%)	mean (SD)		17.4 (10.3)	19.6 (12.7)	17.7 (13.8)	17.6 (7.6)	16.5 (8.6)	F=1.0, p=0.399	
	CAP median (dB/m)	mean (SD)		288 (56.3)	205 (47.3)	258 (5.8)	274 (3.8)	324 (30.7)	F=165, p<0.001	
	CAP IQR (dB/m)	mean (SD)		31.6 (15.8)	40.5 (21.9)	31.2 (13.6)	32.7 (11.7)	28.7 (13.4)	F=6.3, p<0.001	
	CAP IQR (dB/m) Cut Off >40 (n=45, 20% of NAFLD)	mean (SD)		53.8 (17.6)	58.2 (23.2)	50.3 (12.6)	48.8 (11.9)	51.9 (13.9)	F=0.6, p=0.625	

- TE-kPa median value (<7.9 ; >9.6) defined low and high risk of progression respectively.

The following two plots refer to reliable values of NAFLD group



Conclusions

S3 grade steatosis defined by 280 dB/m cut off occurred in 57% with NAFLD etiology and one of four pts with HCV etiology.

In 19% of clinically diagnosed NAFLD steatosis was not confirmed by CAP values.

In NAFLD group, applying CAP-IQR>40, 20% of pts could have low validity steatosis grade stratification.

The prevalence of high risk of fibrosis progression in clinically diagnosed NAFLD according to AISF-SIMG algorithm was 10% of 221 consecutive pts in real practice.

References

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- Karlas T. et al <http://dx.doi.org/10.1016/j.jhep.2016.12.022>
- Wong VW et al <http://dx.doi.org/10.1016/j.jhep.2017.05.005>
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A. Salmi¹ Liver Unit, San Camillo, Brescia; andrea.salmi@tin.it

Il sottoscritto dichiara di non aver avuto/di aver avuto negli ultimi 12 mesi conflitto d'interesse in relazione a questa presentazione e che la presentazione non contiene/discute discussioni di farmaci in studio o ad uso off-label