Evaluation of different non-invasive models in assessing lean MAFLD among PLWH

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BACKGROUND

This study aimed to investigate prevalence of lean metabolic associated fatty liver disease (lean MAFLD) in people living with HIV(PLWH) and the value of ten diagnostic models in diagnosing MAFLD among this population.

METHODS

- MAFLD was defined according to the 2024 revised edition of the Chinese guidelines for the prevention and treatment of MAFLD.
- Lean MAFLD was defined as MAFLD occurring in patients with a Body Mass Index (BMI) < 24 kg/m².
- Different models including NAFL screening score (NSS) based on the general population were evaluated for diagnosing MAFLD.
- The performance of these models was assessed using the area under the receiver operating characteristic (AUROC) curve.

MAFLD affected up to 23.2% of lean PLWH who reported to be at higher risk of progression.

The performances of all models in PLWH showed moderate value varying from 0.744 to 0.887.

CONCLUSIONS

- We identified a nonnegligible prevalence of MAFLD in lean PLWH.
- Models based on the general population provide limited advantage for diagnosing MAFLD in PLWH, particularly in obese individuals.

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RESULTS

The prevalence of MAFLD in lean HIV patients

Out of these 361 PLWH, 111 were overweight (BMI≥24kg/m2), and 250 were non-overweight(BMI < 24kg/m2). Among the overweight group, 83(74.7%) were diagnosed as MAFLD. The prevalence of MAFLD was up to 23.2% in the non-overweight group(Figure 1).

Correlation between noninvasive diagnosis models and MAFLD diagnosis

Among the total HIV-infected patients, NSS(r=0.65)，ZJU (r=0.63)，FLI (r=0.61)，ST(r=0.57)，LAP(r=0.56)，HSI(r=0.55), K-NAFLD(r=0.52), NAFLD-LFS(r=0.49), VAI(r=0.43) and ION(r=0.41) were significantly associated with MAFLD diagnosis. A positive association was observed between the MAFLD diagnosis and K-NAFLD(r=0.32) in the overweight population. Despite of having a positive association between the other nine models and MAFLD diagnosis in the overall participants, there was no significant association between them in the overweight population. In agreement with results of the total population, all ten indicators correlated positively with MAFLD diagnosis, with Spearman's rank order correlation coefficients ranging from 0.42 to 0.55 in the non-overweight group(Figure 2).

Figure 1

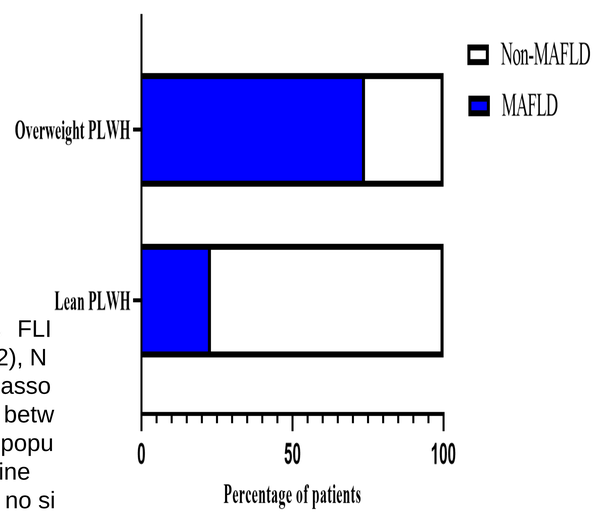


Figure 1 The prevalence of MAFLD in HIV patients with BMI < 24kg/m2(Lean PLWH), and BMI≥24kg/m2 (Overweight PLWH).

Figure 2

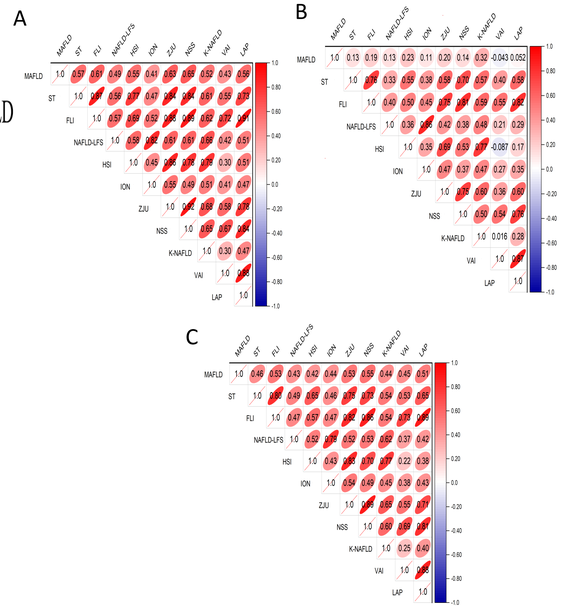


Figure 2 Correlation matrix between models and MAFLD in overall population(A), Overweight group(B), and Non-overweight group (C).

Performance of indicators in diagnosing MAFLD in PLWH

Table1 Different indexes performance in all HIV/AIDS patients

	ST	FLI	NAFLD-LFS	HSI	ION	ZJU	NSS	K-NAFLD	VAI	LAP
AUROC	0.847	0.880	0.808	0.824	0.744	0.873	0.887	0.812	0.773	0.849
SE[a]	0.020	0.018	0.025	0.022	0.027	0.019	0.017	0.023	0.025	0.019
95% CI	0.807-0.888	0.845-0.915	0.760-0.856	0.781-0.868	0.691-0.797	0.836-0.910	0.853-0.921	0.768-0.857	0.725-0.821	0.809-0.888
P value	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Diagnostic performance of these ten noninvasive models for defining MAFLD in total HIV-infected patients was at a moderate level, ranging from 0.74 to 0.88. The NSS had the highest AUROC of 0.887, followed by FLI (AUROC =0.880), ZJU (AUROC = 0.873), LAP (AUROC = 0.849), and ST (AUROC = 0.847).