Prevalence of steatotic liver disease in pregnant South African women living with and without HIV

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BACKGROUND

- The burden of steatotic liver disease (SLD) is rising globally, but there is a dearth of data from child-bearing populations, including pregnant women with HIV (WWH) in Africa.

METHODS

- The ORCHID study enrolled pregnant WWH receiving tenofovir 300mg+lamivudine 300mg/emtricitabine 200mg +dolutegravir 50mg (TLD) and HIV seronegative (HIV-) pregnant women at a primary healthcare facility in South Africa.
- For this cross-sectional analysis using data from enrollment, we included 1836 women (769 WWH and 1067 HIV-) at ≤20 weeks of gestation, age ≥16 years and valid hepatic ultrasound assessment at enrollment.
- SLD was assessed using B-mode ultrasound, comparing echogenicity between the liver and right kidney parenchyma.
- SLD was categorised based on the presence of cardiometabolic risk factors (BMI ≥25 kg/m^2, elevated glucose [fasting plasma glucose ≥5.6 or 2-hour post-load glucose ≥7.8 mmol/L or diabetes medication], elevated blood pressure [≥135/80 mmHg or hypertension medication] and/or dyslipidaemia [triglycerides ≥1.7 or high-density lipoprotein <1.3 mmol/L]) and/or alcohol exposure (defined as Alcohol Use Disorders Identification Test [AUDIT] score >0) into i) metabolic dysfunction-associated steatotic liver disease (MASLD), ii) metabolic and alcohol-related liver disease (MetALD), iii) alcohol-related liver disease (ALD) or iv) cryptogenic SLD.
- Prevalence of SLD was described using summary statistics and logistic regression was used to assess the association between HIV and SLD.

RESULTS

- At enrolment, median age was 28 years (interquartile range [IQR] 24–32) and median GA was 13 weeks (IQR 10–16). 75% of women had a BMI ≥25 kg/m^2 and 19% reported alcohol exposure (Table 1).
- In WWH, median duration on ART was 4.5 overall and 0.7 years for TLD. 27% (n=207) of WWH initiated TLD in pregnancy, among which 40% (n=83) were ART naïve.

Our findings are reassuring, with no association between SLD and HIV in pregnant South African women. Overall, prevalence of SLD was low and largely driven by overweight/obesity.

Table 1. General characteristics of of pregnant women enrolled in ORCHID with valid hepatic ultrasound assessment overall and by HIV serostatus

Characteristic	HIV-	WWH	Total
Observations (N)	1067	769	1836
Median (IQR) age (years)	26 (23–31)	30 (26–35)	28 (24–32)
Median (IQR) Gestational age (weeks)	13 (10–15)	13 (10–16)	13 (10–16)
Median (IQR) ART duration (years)	--	4.5 (1.7–7.8)	--
Median (IQR) TLD duration (years)	--	0.7 (0.06–1.7)	--
ART naïve (%)		83 (11)	
TLD status (%)			
Initiated TLD	--	207 (27)	--
Continued TLD	--	562 (73)	--
HIV RNA viral load <50 copies/mL (%)	--	584 (76)	--
CD4 ≥200 cells/mm^3 (%)	--	688 (89)	--
Median (IQR) BMI (kg/m²)	30 (26–35)	29 (25–34)	29 (25–35)
BMI category (%)			
Underweight (<18.5 kg/m²)	10 (1)	7 (1)	17 (1)
Normal weight (18.5–24.9 kg/m²)	238 (22)	205 (27)	443 (24)
Overweight (25–29.9 kg/m²)	303 (28)	210 (27)	513 (28)
Obese (≥30 kg/m²)	516 (48)	347 (45)	863 (47)
Alcohol exposure (AUDIT >0) (%)	194 (18)	154 (20)	348 (19)

- Prevalence of SLD was 4.1% (n=75, 95% confidence interval [CI] 3.3–5.1%) overall, 3% (95% CI 2–4.5%) among WWH and 4.9% (95% CI 3.7–6.4%) among HIV- women (Table 2).
- Prevalence of SLD categories did not differ by HIV serostatus.
- Among women with SLD, 62.7% (95% CI 50.7–73.3%) had MASLD, 10.7% (95% CI 5.1–20.5%) had MetALD, and 6.7% (95% CI 2.5–15.5%) had ALD.

RESULTS CONTINUED

- 98% of women with MASLD were overweight/obese. Adjusting for age, alcohol exposure and GA, HIV serostatus was not significantly associated with SLD (adjusted odds ratio 0.64, 95% CI 0.38–1.05, Table 3).

Table 2. Frequency and prevalence of SLD and of its categories in pregnant women enrolled in ORCHID by HIV serostatus

Category	HIV- (N=1067)		WWH (N=769)	
	n	Prevalence	n	Prevalence
SLD	52	4.9 (3.7–6.4)	23	3.0 (2.0–4.5)
MASLD	33	3.1 (2.2–4.4)	14	1.8 (1.0–3.1)
MetALD	4	0.4 (0.1–1.0)	3	0.5 (0.2–1.4)
ALD	2	0.2 (0.03–0.8)	3	0.4 (0.1–1.2)
Cryptogenic SLD	13	1.2 (0.7–2.1)	2	0.3 (0.1–1.0)

Prevalence is reported as percentage with 95% confidence interval.

Table 3. Crude and adjusted odds ratios for the association between SLD prevalence and HIV in pregnant women enrolled in ORCHID.

Predictor	Unadjusted		Adjusted	
	OR	95% CI	OR	95% CI
HIV seropositive (Yes)	0.60	0.36–0.98	0.64	0.38–1.05
Age	0.97	0.93–1.01	0.99	0.94–1.03
Alcohol exposure (Yes)	0.89	0.46–1.59	0.91	0.47–1.63
Gestational age	0.93	0.87–0.99	0.93	0.87–1.00

All adjusting variables are included in the table.

CONCLUSIONS

- In one of the largest studies of hepatic steatosis and HIV in pregnant women in Africa, our findings were reassuring, with no association between HIV and SLD. Overall, the prevalence of SLD was low and largely comprised women with overweight/obesity and alcohol use.

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