Prevalence and Correlates of Structural Lung Abnormalities Among People With HIV in Uganda

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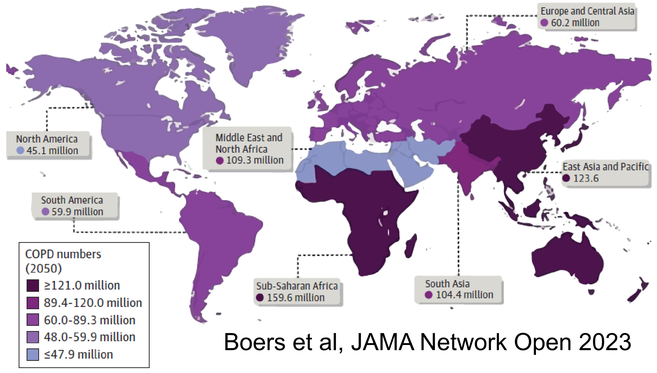
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BACKGROUND

- Chronic lung disease is a major cause of morbidity and mortality among people with HIV (PWH).
- COPD affects 480 million people and will reach nearly 600 million people by 2050.
- Sub-Saharan Africa accounts for 3/4 of the 41 million PWH and will be most affected by COPD by 2050 (Fig 1).

Figure 1: Projected global COPD cases by 2050



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- We aimed to determine the prevalence and correlates of CT-defined structural lung abnormalities (SLA) among people with and without HIV in Uganda.

METHODS

- We analyzed non-contrast chest CT images of 564 participants in an observational cohort in Uganda.
- PWH were at least 40 years old and on ART for ≥3 years
- PWoH were age- and sex-similar to PWH and living in the clinical catchment area.
- Participants completed study questionnaires, tuberculin skin testing, and chest CT scans.
- Structural lung abnormalities were classified via visual inspection using Fleischner society definitions.
- Multivariable logistic regression used to identify correlates of SLA and SLA sub-types.

More than two-thirds of older people in Uganda, including 70% of people with HIV (PWH), have signs of lung damage on chest CT scan. Lung disease screening should be prioritized to improve the health of older PWH in similar settings.

RESULTS

Table 1. Baseline characteristics of study participants by HIV status

Variable	Total cohort, n (%)	PWoH (N=292), n (%)	PWH (N=272), n (%)	p-value
Age, median (IQR), years	57 (53 – 61)	57 (53–61)	57 (53–61)	0.44
Male sex	287 (51)	147 (50)	140 (52)	0.79
No education	286 (51)	155 (53)	131 (48)	0.66
Higher & highest SES	279 (50)	139 (48)	140 (52)	0.36
Former smoker	187 (33)	91 (31)	96 (35)	0.23
Firewood use	**487 (86)**	**271 (93)**	**216 (79)**	**<0.001**
Overweight & Obese	**215 (39)**	**125 (43)**	**90 (33)**	**0.038**
Positive TST	118 (24)	70 (26)	48 (21)	0.18
Tuberculosis history	**38 (7)**	**2 (1)**	**36 (13)**	**<0.001**
Respiratory symptoms	126 (22)	64 (22)	62 (23)	0.80

Table 2. Multivariable logistic regression of factors associated with fibrosis, emphysema, and bronchiectasis

Factor	Fibrosis aOR (95% CI), p	Emphysema aOR (95% CI), p	Bronchiectasis aOR (95% CI), p
Age (per year)	**1.05 (1.00–1.09), 0.02**	1.02 (0.99–1.06), 0.13	**1.06 (1.02–1.11), 0.004**
Male sex	1.67 (0.81–3.42), 0.16	**1.71 (1.06–2.76), 0.03**	1.74 (0.84–3.61), 0.14
PWH	1.17 (0.61–2.26), 0.64	**1.81 (1.17–2.78), 0.007**	1.29 (0.67–2.50), 0.45
TST positive	1.14 (0.58–2.26), 0.70	0.83 (0.51–1.35), 0.45	1.30 (0.66–2.55), 0.45
*Higher SES**	0.92 (0.49–1.73), 0.79	0.81 (0.53–1.25), 0.34	0.79 (0.41–1.50), 0.47
*Current smoker**	1.14 (0.40–3.25), 0.81	1.82 (0.88–3.74), 0.10	1.35 (0.51–3.58), 0.55
Underweight	**3.31 (1.48–7.38), 0.003**	1.15 (0.59–2.23), 0.69	**2.97 (1.31–6.72), 0.009**
*Firewood use**	0.80 (0.33–1.92), 0.62	1.10 (0.60–2.03), 0.76	0.70 (0.29–1.68), 0.43
History of TB	**8.01 (3.30–19.45), <0.001**	1.48 (0.68–3.25), 0.33	**14.60 (5.91–36.06), <0.001**
Respiratory symptoms	**2.35 (1.22–4.54), 0.01**	**1.84 (1.13–2.98), 0.01**	1.92 (0.97–3.78), 0.06

***Reference categories:** Lower SES, non-smoker, normal BMI, PWoH, charcoal use

Figure 2: Prevalence of Structural Lung Abnormalities in People with HIV vs People without HIV

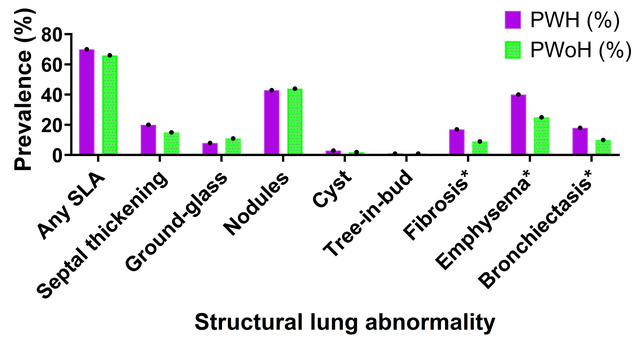
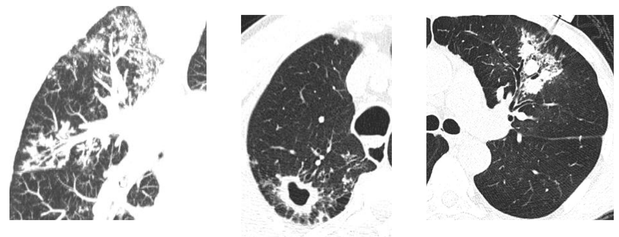


Figure 3. Representative images from the CAD study showing some of the structural lung abnormalities



Tree-in bud nodules cavitation Nodular consolidation

CONCLUSIONS

- Structural lung disease is common among older adults in Uganda irrespective of HIV status.
- PWH are more likely to have emphysema, fibrosis & bronchiectasis.
- Correlates of structural lung disease subtypes included low BMI, older age, male sex, prior TB and presence of respiratory symptoms.
- Need to integrate lung disease screening into routine clinical care.

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