

Prevalence of chronic obstructive pulmonary disease in an HIV infected population

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BACKGROUND

Chronic obstructive pulmonary airways disease (COPD) is common, yet a large proportion of those living with COPD in the general UK population are undiagnosed.

It is recognised that earlier diagnosis may lead to improved outcome, reduced exacerbations and therefore reduce the number of emergency hospital admissions.

The combination of an ageing HIV population with high smoking rates means COPD will be an important cause of morbidity and mortality in the HIV population.

To date there has been no UK based study investigating the prevalence of COPD among HIV-positive patients in the HAART era.

OBJECTIVES

To measure prevalence of COPD in an HIV-positive outpatient population.

To correlate the severity of obstruction with risk factors to include smoking history, HAART use and HIV parameters.

MATERIALS & METHODS

Patients over the age of 30 with HIV were recruited from outpatient clinic between February 2012 and March 2013.

Patients were only excluded if spirometry was contraindicated.

All patients were formally consented and completed two questionnaires regarding risk factors and respiratory symptoms, to include the St George's Respiratory Questionnaire, a validated tool in assessing COPD.

Patients were weighted and measured and underwent post-bronchodilator spirometry testing. Diagnosis of COPD was made when $FEV1/FVC < 0.7$.

HIV demographics were obtained from a clinical database.

Any patients with abnormal spirometry results were followed up by a consultant respiratory physician.

RESULTS

Demographic and HIV Baseline Data

A total of 133 participants were recruited. Of these 92.5% were male, 86.5% were Caucasian and 7.5% were African. 90% of participants were on a HAART regime and 25% of them had ever had an AIDS defining illness. Other demographic and HIV data is summarised in table one.

Data	Mean	Min	Max
Age	49	30	89
HIV duration (days)	3914	27	10022
CD4	610	99	1396
CD4%	28.5	5	52
CD8	1058	175	3616
CD8%	47	21	83
Viral Load	9061	40	505234

Findings

In the general population the prevalence of diagnosed COPD is 1.6% (1)

In our cohort the prevalence of COPD is 15.0%.

The duration of HIV in days, was found to be significantly associated with a lower FEV1/FVC ratio ($p=0.002$), as shown in figure one below. This association remained significant after adjusting for age.

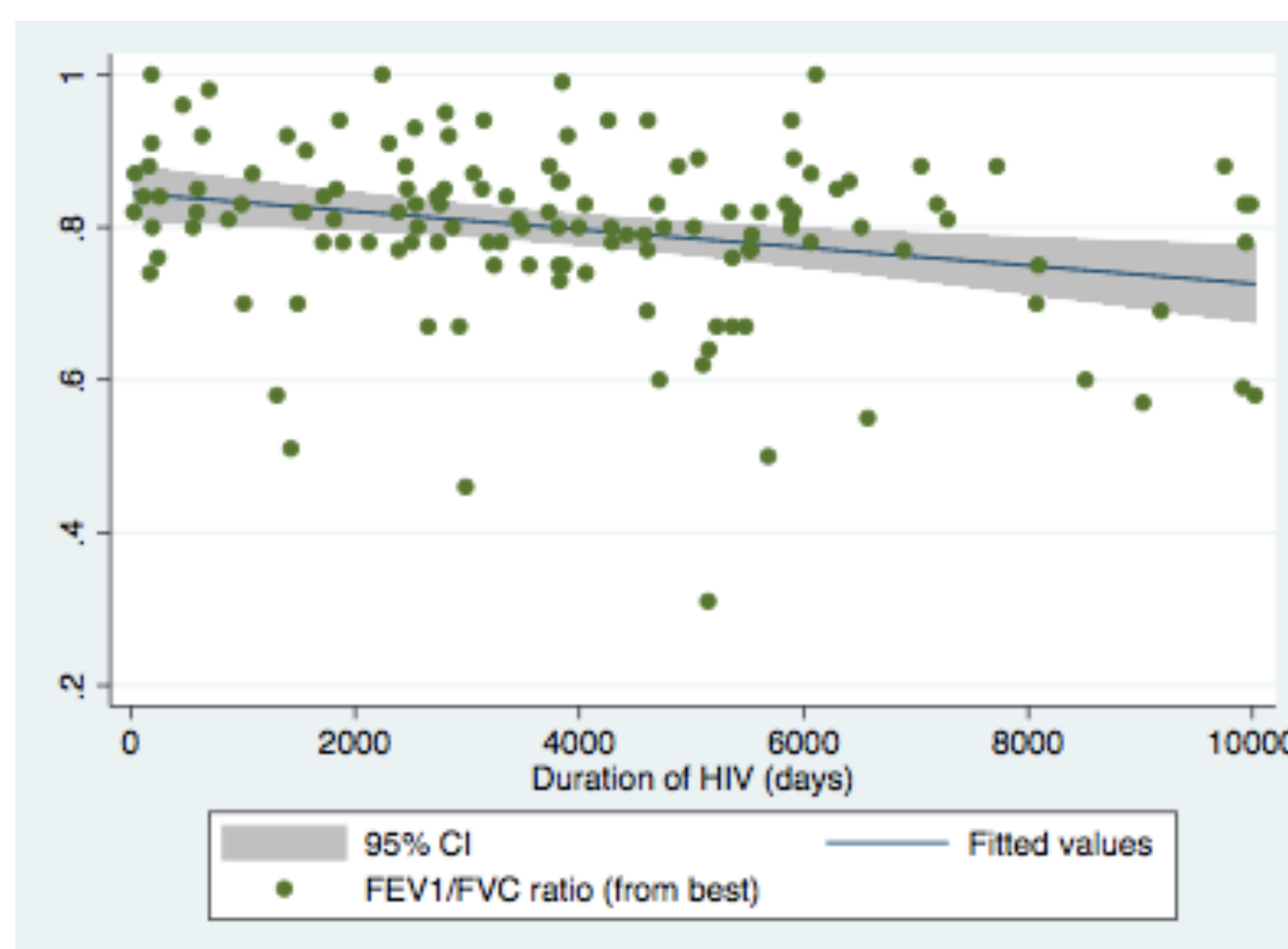


Figure One: Scatter graph showing the association between HIV duration (days) and FEV1/FVC ratio with 95% confidence intervals shown.

There was a significant association between COPD diagnosis and smoking illicit substances ($p=0.025$)

Increasing age was also strongly associated with declining FEV1/FVC ratio ($p=0.02$).

Smoking and HIV parameters were not found to be significantly associated with FEV1/FVC ratio.

DISCUSSION

This study has found that there is a much greater prevalence of COPD amongst our HIV-positive cohort than there is in the general population.

It has also found that FEV1/FVC ratio is directly correlated to the duration (in days) of HIV infection. Although no other HIV parameters were significant.

Although there were high rates of smoking in our cohort (over 70% were ex- or current smokers) our study found no association between smoking and COPD. We also noted that there was no significant association between HAART use and COPD.

This suggests that HIV infection itself, not HAART, as has been suggested by various researchers, is directly responsible for causing the lung changes seen in COPD. (2,3) It also suggests that tobacco smoking is a less important risk factor in the HIV-positive population compared to the HIV-negative population.

There are various hypothesised mechanisms by which HIV may cause COPD; including increased colonisation of the respiratory tract with microorganisms, especially *Pneumocystis jirovecii* and increased inflammatory cytokines in the lungs. (4,5)

It has been shown that COPD is associated with poorer physical and mental health in HIV-positive individuals. (6)

CONCLUSIONS

This research demonstrates the importance of screening for COPD in HIV-positive outpatients to ensure that COPD is diagnosed early and managed effectively to ensure the best quality of life possible for HIV-positive individuals.

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