

Care Burden Derived from the Introduction of an Early Lung Cancer Screening Program in High-Risk HIV-Infected Patients

Journal of the International
Association of Providers of AIDS Care
Volume 18: 1-2
© The Author(s) 2019
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/2325958219839077
journals.sagepub.com/home/jia



Simona Cioaia¹, Carlos Tornero¹, Eugenio Sanchez²,
and Mariajose Alos²

Abstract

We describe the care burden derived from a lung cancer screening program in high-risk patients with HIV. In a well-selected group with the described criteria, one annual low-dose thoracic computed tomographic exploration can be applied to 7.2% of the patients attended (95% confidence interval: 4.2-9.6), with at least one follow-up exploration in another 1.3%, with the generation of at least 2 extra visits for explanation of the protocol and results. If smoking habit does not change over the next 2 years, another 4.3% of the patients will have met the inclusion criteria. Early detection of lung cancer with low-dose thoracic computed tomographic could be of interest in HIV-infected patients because of the increased of risk but would imply an increase in care burden that must be taken into account.

Keywords

lung cancer, screening

Date received: 10 June 2017; revised: 4 November 2017; accepted: 6 April 2018.

What do we already know About this topic?

Lung cancer is the cause of important morbidity-mortality in HIV infected individuals and annual low-dose thoracic computed tomographic screening could be of interest but would imply an increase in care burden.

How does your research contribute to the field?

LDCT in a well selected group can be applied to under 10% of all HIV-infected patients.

Lung cancer is the cause of important morbidity-mortality that could be reduced by annual low-dose thoracic computed tomographic (LDCT) screening of high-risk patients.¹ HIV-infected individuals are at an increased risk of developing lung cancer, which moreover tends to manifest at a slighter earlier age and in more advanced stages of the disease.²⁻⁵ Early detection therefore could be of interest in this scenario but would imply an increase in care burden that must be taken into account. We describe our experience during the first year with a program of this kind.

Between March 2016 and February 2017, the HIV-infected patients followed up in our units were invited to participate in an LDCT lung cancer screening program. Candidates for inclusion were required to be older than 45 years, smokers of over 30 packs-year, with regular follow-up and undetectable viremia during the last year. We did not include patients without active smoking, although because of the mean age of the patients and pack-years inclusion criteria it is unlikely that a high number without active smoking could meet the inclusion criteria. Patients with suspect nodules were entered in the general lung nodule management protocol. We describe the number of patients offered to participate versus those who finally attended, the reasons for exclusion, the degree of acceptance, adherence to protocol, and the number of explorations performed and extra consultations generated.

¹ Internal Medicine, Hospital Francesc Borja Gandia, Spain

² Radiology Department, Hospital Francesc Borja Gandia, Spain

Corresponding Author:

Carlos Tornero, Hospital Francesc de Borja, Paseo de la Medicina 6, Gandia 46702, Spain.

Email: tornero_car@gva.es



During the 1-year study period, we attended 373 (68% males) HIV-infected patients with a mean age of 46.5 ± 10.6 years, of which 212 (57%) were older than age 45. Fifty-five percent were active smokers (mean 15 ± 16.3 packs-year). Sixty-three (17%) patients met the criteria referred to age and smoking risk.

Thirty-four of these patients were invited to form part of the protocol. Four of them initially declined and another 3 failed to return for the subsequent visits. The rest of the participants were excluded due to detectable viremia or nonadherence to the visits during the previous year.

Baseline LDCT was performed in 22 patients, with 3 more under follow-up. Two and 4 patients are pending follow-up and baseline exploration, respectively. Thus, at least 1 LDCT exploration will be made in 7.2% of the patients who attended (95% confidence interval: 4.2-9.6), with at least 1 follow-up exploration in another 1.3%. If smoking habit does not change over the next 2 years, another 16 patients will have met the inclusion criteria referred to age and smoking risk (ie, another 4.3% of the patients).

Following first screening performed in the context of usual scheduled follow-up, a visit was established to explain the protocol and formalize informed consent, with at least 1 other visit to explain the results and provide counseling on smoking cessation.

Comments

The increase in incidence of lung cancer among HIV-infected individuals has generated interest in extending screening strategies to this population,⁶⁻⁸ with the accumulation of information on their usefulness. Variable results have been obtained, with the recording of a relevant findings rate of up to 2%. However, little information is available on the associated care burden—this aspect being useful for planning the introduction of screening protocols of this kind. The inclusion criteria vary among studies. In our strategy, emphasis was placed on earlier age⁵ and smoking risk versus current or past immune depression or the CD4/CD8 ratio which, although also associated to increased risk, are not always easy to establish. On the other hand, it does not seem that the computed tomography findings differ from those obtained in non-HIV-infected or nonimmune depressed individuals; only in patients with low CD4 (<200), CT findings may well have an increased incidence of asymptomatic nodules.⁹ We also have been very demanding in requiring strict adherence to follow-up and virological control, though even so there were losses of radiological visits.

The relatively low number of patients included, to be a monocentric study, and the adoption of strict inclusion criteria

to avoid maximum recruitment losses in an expensive technique are limitations to this study.

In our experience, LDCT lung cancer screening based on the described criteria can be applied to under 10% of all HIV-infected patients, with the generation of at least 2 extra visits for explanation of the protocol and results. It is necessary to select the most implicated patients in order to avoid losses and offer LDCT screening to those patients who may benefit most from the strategy.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

1. National Lung Screening Trial Research Team, Aberle DR, Adams AM, Berg CD, et al. Reduced lung cancer mortality with low-dose computed tomographic screening. *N Engl J Med*. 2011;365(5):395–409.
2. Kirk GD, Merlo C, O' Driscoll P, et al. HIV infection is associated with an increased risk for lung cancer, independent of smoking. *Clin Infect Dis*. 2007;45(1):103–110.
3. Shiels MS, Cole SR, Mehta SH, Kirk GD. Lung cancer incidence and mortality among HIV-infected and HIV-uninfected injection drug users. *J Acquir Immune Defic Syndr*. 2010;55(4):510–515.
4. Sigel K, Wisnivesky J, Gordon K, et al. HIV as an independent risk factor for incident lung cancer. *AIDS*. 2012;26(8):1017–1025.
5. Shiels MS, Althoff KN, Pfeiffer RM, et al. HIV infection, immunosuppression, and age at diagnosis of non-AIDS-defining cancers. *Clin Infect Dis*. 2017;64(4):468–475.
6. Hulbert A, Hooker CM, Keruly JC, et al. Prospective CT screening for lung cancer in a high-risk population: HIV-positive smokers. *J Thorac Oncol*. 2014;9(6):752–759.
7. Makinson A, Eymard-Duvernay S, Raffi F, et al. Feasibility and efficacy of early lung cancer diagnosis with chest computed tomography in HIV-infected smokers. *AIDS*. 2016;30(4):573–582.
8. Valencia ME, Pirogova T, Romera D, et al. Hallazgos radiológicos en la tomografía computarizada torácica basal en un grupo de pacientes incluidos en un estudio prospectivo de detección precoz del carcinoma pulmonar P-O72 VII Congreso nacional de Gesida [in Spanish]. Donostia. 29-11 al 2-12- 2016.
9. Sigel K, Wisnivesky J, Shahrir S, et al. Findings in asymptomatic HIV-infected patients undergoing chest computed tomography testing: implications for lung cancer screening. *AIDS*. 2014;28(7):1007–1014.