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Editorial

Lung cancer screening in people with HIV: A missed opportunity for better outcomes?

Cribado de cáncer de pulmón en personas con VIH: ¿una oportunidad perdida para mejorar los resultados?

Non-AIDS-defining cancers have emerged as the leading cause of mortality among people with HIV (PWH), with lung cancer being the most prevalent and the primary contributor to cancer-related mortality in this population.[1,2] Lung cancer, also the leading cause of cancer-related deaths in the general population, remains a major concern, with over two-thirds of cases diagnosed at incurable stages and a 5-year overall survival rate of only 23.6% in Spain.[3] The situation is even more critical for PWH, who experience disproportionately higher incidence and mortality rates, are diagnosed at younger ages, and often present with advanced-stage disease.[4] Delayed diagnosis and poorer outcomes after diagnosis underscore the critical need for effective prevention and early detection strategies in this vulnerable group.[5]

Lung cancer, fortunately, is a screenable malignancy, and the use of low-dose computed tomography (LDCT) has demonstrated significant mortality reduction among high-risk individuals through pivotal trials. This benefit is largely attributed to LDCT's ability to detect cancers at earlier, more treatable stages. Reflecting this evidence, the US Preventive Services Task Force (USPSTF) recommends annual LDCT screening for adults aged 50–80 years with a smoking history of at least 20 pack-years or who have quit smoking within the past 15 years.[6] However, these criteria have not been validated for PWH, as they were excluded from major trials that informed these guidelines.

A retrospective analysis of PWH in the Women's Interagency HIV Study and the Multicenter AIDS Cohort Study found that only 44% of women and 63% of men with lung cancer would be eligible for screening applying the USPSTF criteria.[7] Lowering the age and smoking history thresholds improved sensitivity, suggesting that PWH may require tailored screening approaches. In addition to a lower sensitivity, concerns about higher false-positive rates in PWH, and the resulting unnecessary invasive procedures, have also been raised. However, available data do not support these concerns,[8] suggesting that LDCT screening may be as effective and safe for PWH as it is for the general population. Unfortunately, direct evidence remains limited, primarily derived from small observational studies with heterogeneous inclusion criteria and short follow-up periods.[8–10]

The multicenter study by Valencia et al. represents a significant step forward in understanding the role of lung cancer screening in PWH.[11] This prospective study evaluated LDCT-based screening in 371 PWH who were heavy smokers (≥20 pack-years), aged over 45 years, and had experienced severe immunosuppression (nadir CD4+ <200 mm^3). Over four years, 329 participants completed the initial LDCT, and 206 adhered to annual follow-ups. Remarkably, nine lung cancers were detected, all at early, treatable stages. While the lack of a control group limits comparisons, these results contrast sharply with the advanced-stage diagnoses typical in PWH. Early detection significantly improves treatment options and survival rates, underscoring the potential of lung cancer screening to alter the natural history of the disease in PWH. Despite these promising findings, the authors highlighted a number of limitations. The study's narrow inclusion criteria, targeting only those with severe immunosuppression, may limit generalizability to the broader PWH population. Additionally, adherence to annual screenings decreased significantly over time, exacerbated by the COVID-19 pandemic. Sustained engagement with screening programs is a critical issue that must be addressed to maximize benefits.

Lung cancer screening in PWH faces several challenges. Unlike in the United States, lung cancer screening in Europe is not yet integrated into national healthcare systems, as it is for other cancers. Initiatives like the Spanish Cancer Screening, Smoking Cessation, and Respiratory Assessment (CASSANDRA) pilot project aim to demonstrate the feasibility, viability, and cost-effectiveness of lung cancer screening programs. These initiatives seek to promote broader implementation and enhance adherence to screening guidelines, including those established by HIV scientific societies, which have aligned with USPSTF criteria.

The unique risk profile of PWH demands tailored screening strategies. Beyond their higher smoking prevalence, PWH face additional risk factors, including prolonged immunosuppression and immune activation, which likely contribute to increased cancer susceptibility. These factors suggest that screening criteria designed for the general population may not be sensitive enough for PWH. Adapted screening strategies, such as lowering age thresholds,

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modifying smoking history requirements, and incorporating criteria specific to women, who face a disproportionately higher excess risk than men,[12] could improve effectiveness.

Economic considerations represent another challenge. While evaluations in the general population have shown that LDCT screening is cost-effective,[13] similar modeling studies suggest comparable results for PWH with well-controlled infection.[14] Considering the higher burden of lung cancer in PWH and their increasing life expectancy, screening programs may offer even greater cost-effectiveness for this population. However, clinical research is essential to validate these projections and refine cost-effectiveness assessments tailored to HIV-specific strategies. The ongoing multicenter IMPAC-Neo trial in Spain compares standard and tailored cancer screening strategies in PWH, incorporating cost-utility analysis as one of its primary endpoints. The trial's findings are expected to provide critical perspectives on optimizing screening protocols and evaluating the economic feasibility of targeted approaches for PWH.[15]

Finally, despite the theoretical benefits, the implementation of lung cancer screening in PWH has been slow.[16] Surveys of healthcare providers reveal limited prioritization of lung cancer screening in this population, with only a 20% of adherence to clinical practice recommendations.[17] Scarcity of resources and unawareness of screening recommendations were the main arguments for this low rate, to which competing demands in HIV care, combined with the perception that cancer screening falls outside the scope of routine HIV management, may also contribute to this gap. Furthermore, although data are limited, current evidence also indicates low uptake of lung cancer screening among PWH, and lower adherence to follow-up compared to the general population.[18] Barriers from the patient perspective include limited understanding of screening benefits, logistical challenges, and competing health and socioeconomic concerns.[19] Interventions to improve adherence might include patient education, digital reminders, and mobile health technologies. Shared decision-making tools tailored to PWH could further improve uptake and adherence.[20] Pilot trials suggest these tools enhance patient-provider discussions and align screening decisions with patient preferences.

The high incidence of lung cancer in PWH, coupled with their increased mortality risk, underscores the urgency of implementing effective screening programs. The study by Valencia et al. demonstrates the potential of lung cancer screening to identify the disease at early, treatable stages in this population. Although existing evidence supports the use of LDCT for PWH, further research is needed to optimize screening criteria, improve adherence, and evaluate the cost-effectiveness of tailored approaches. Obviously, smoking cessation programs should complement screening efforts, but prevention cannot rely solely on reducing tobacco use. Many high-risk individuals meet screening criteria even after quitting smoking, emphasizing the importance of LDCT screening as a critical component of comprehensive lung cancer prevention.

By overcoming implementation barriers and tailoring screening strategies to the unique needs of this vulnerable population, lung cancer screening has the potential to significantly enhance outcomes and improve the quality of life for people with HIV.

References

1. Suárez-García I, Gutierrez F, Pérez-Molina JA, Moreno S, Aldamiz T, Valencia Ortega E, et al. Mortality due to non-AIDS-defining cancers among people living with HIV in Spain over 18 years of follow-up. J Cancer Res Clin Oncol. 2023;149:18161–71, http://dx.doi.org/10.1007/s00432-023-05500-9.
2. García-Abellán J, Del Río L, García JA, Padilla S, Vivancos MJ, Del Romero J, et al. Risk of cancer in HIV-infected patients in Spain, 2004–2015. The CoRIS cohort study. Enferm Infecc Microbiol Clin (Engl Ed). 2019;37:502–8, http://dx.doi.org/10.1016/j.eimc.2018.11.011.
3. Candal-Pedreira C, Ruano-Ravina A, Calvo de Juan V, Cobo M, Cantero A, Rodríguez-Abreu D, et al. Analysis of diagnostic delay and its impact on lung cancer survival: results from the Spanish Thoracic Tumor Registry. Arch Bronconeumol. 2024;60 Suppl. 2:S38–45, http://dx.doi.org/10.1016/j.arbres.2024.07.006.
4. Masiá M, Gutiérrez-Ortiz de la Tabla A, Gutiérrez F. Cancer screening in people living with HIV. Cancer Med. 2023;12:20590–603, http://dx.doi.org/10.1002/cam4.6585.
5. Hysell K, Yusuf R, Barakat L, Virata M, Gan G, Deng Y, et al. Decreased overall survival in HIV-associated non-small-cell lung cancer. Clin Lung Cancer. 2021;22:e498–505, http://dx.doi.org/10.1016/j.cllc.2020.11.006.
6. US Preventive Services Task Force. Screening for lung cancer: US preventive services task force recommendation statement. JAMA. 2021;325:962–70, http://dx.doi.org/10.1001/jama.2021.1117.
7. Sellers SA, Edmonds A, Ramirez C, Cribbs SK, Ofotokun I, Huang L, et al. Optimal lung cancer screening criteria among persons living with HIV. J Acquir Immune Defic Syndr. 2022;90:184–92, http://dx.doi.org/10.1097/QAI.0000000000002930.
8. Makinson A, Eymard-Duvernay S, Raffi F, Abgrall S, Bommart S, Zucman D, et al. Feasibility and efficacy of early lung cancer diagnosis with chest computed tomography in HIV-infected smokers. AIDS. 2016;30:573–82, http://dx.doi.org/10.1097/QAD.0000000000000943.
9. Díaz-Álvarez J, Roiz P, Gorospe L, Ayala A, Pérez-Pinto S, Martínez-Sanz J, et al. Implementation of a lung cancer screening initiative in HIV-infected subjects. PLoS One. 2021;16, http://dx.doi.org/10.1371/journal.pone.0260069, e0260069.
10. Hulbert A, Hooker CM, Keruly JC, Brown T, Horton K, Fishman E, et al. Prospective CT screening for lung cancer in a high-risk population: HIV-positive smokers. J Thorac Oncol. 2014;9:752–9, http://dx.doi.org/10.1097/JTO.0000000000000161.
11. Valencia ME, Pirogova T, Romera D, Montero M, Tasías M, Sanz J, et al. Prospective study for the early detection of lung carcinoma in patients with HIV infection (GESIDA study 8815). Enferm Infecc Microbiol Clin (Engl Ed). 2025;43:125–32.
12. Haas CB, Engels EA, Horner MJ, Freedman ND, Luo Q, Gershman S, et al. Trends and risk of lung cancer among people living with HIV in the USA: a population-based registry linkage study. Lancet HIV. 2022;9:e700–8, http://dx.doi.org/10.1016/S2352-3018(22)00219-3.
13. Grover H, King W, Bhattarai N, Moloney E, Sharp L, Fuller L. Systematic review of the cost-effectiveness of screening for lung cancer with low dose computed tomography. Lung Cancer. 2022;170:20–33, http://dx.doi.org/10.1016/j.lungcan.2022.05.005.
14. Kong CY, Sigel K, Criss SD, Sheehan DF, Triplette M, Silverberg MJ, et al. Benefits and harms of lung cancer screening in HIV-infected individuals with CD4+ cell count at least 500 cells/μl. AIDS. 2018;32:1333–42, http://dx.doi.org/10.1097/QAD.0000000000001818.
15. Gutiérrez F, López L, Galera C, Tiraboschi JM, Portu J, García-Fraile L, et al. Early detection of cancer and precancerous lesions in persons with HIV through a comprehensive cancer screening protocol. Clin Infect Dis. 2024:ciae359, http://dx.doi.org/10.1093/cid/ciae359 [in press].
16. Lopez W, Sayles H, Bares SH, Fadul N. Low rates of referrals for lung cancer screening in patients with human immunodeficiency virus: a correlational study. Cancer Control. 2022;29, http://dx.doi.org/10.1177/10732748221103624, 10732748221103624.
17. Gutiérrez F, Padilla S, García-Abellán J, Gutiérrez-Ortiz de la Tabla A, Ledesma C, Masiá M. Cancer screening in people with HIV: implementation in clinical practice and barriers perceived by medical specialists in Spain. Enferm Infecc Microbiol Clin (Engl Ed). 2024;42:563–9, http://dx.doi.org/10.1016/j.eimce.2024.01.007.
18. Islam JY, Yang S, Schabath M, Vadaparampil ST, Lou X, Wu Y, et al. Lung cancer screening adherence among people with HIV treated at an integrated health system in Florida. AIDS Res Hum Retroviruses. 2023;39:482–4, http://dx.doi.org/10.1089/AID.2022.0158.
19. Triplette M, Brown MC, Snidarich M, Budak JZ, Giustini N, Murphy N, et al. Lung cancer screening in people with HIV: a mixed-methods study of patient and provider perspectives. Am J Prev Med. 2023;65:608–17, http://dx.doi.org/10.1016/j.amepre.2023.05.001.
20. Brown MC, Snidarich M, Budak JZ, Murphy N, Giustini N, Romine PE, et al. Adaptation of a tailored lung cancer screening decision aid for people with HIV. CHEST Pulm. 2024;2:100044, http://dx.doi.org/10.1016/j.chpulm.2024.100044.

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