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Lung Cancer Prevention in Latin America in the Era of CT Screening

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Editorial

The goal of early disease detection is simple, but extremely important. While primary prevention aims to protect the individual from the disease by eliminating risk factors; early detection (case-finding) is aimed at the discovery and cure of diseases at asymptomatic, subclinical stages [1]. There are published criteria to justify population screening for any particular disease [2]; these include dealing with a major health problem and being able to treat it in specialized centers. The screened disease should be well understood, with clear advantages to approach early disease instead of advanced cases. In addition, case-finding should be a continuing process and not a "once and for all" project [3]. Fortunately, with the publication of the results of the National Lung Screening Trial (NLST) [4], lung cancer fulfilled all the criteria for a population at risk screening program, and it is approved as a public policy in the United States and in many other developed countries.

In Latin America (LA) the majority of the countries are facing an epidemiological transition; thereby the disease burden is shifting from infectious diseases to chronic conditions, including different types of cancer. The proportion of new cancer cases diagnosed in less developed countries is increasing and it is expected that more than 60% will occur in these areas by 2030. This is related to the increasing trends in cancer rates and expected increases in life expectancy worldwide [5]. A corresponding escalation in lung cancer rates can be seen in most of these countries. However, a relative culture of silence is common with the disease; letting lung cancer as a stigmatized disease and viewed as a death sentence.

Obviously, lung cancer prevention must be centered on smoking cessation strategies; and the majority of the civilized countries have adopted some actions in ratification of the signatures of the World Health Organization Framework Convention on Tobacco Control (FCTC) [6]. Therefore, tobacco control is one of the most important components of any lung cancer prevention program, and should include systematic and specific actions to facilitate access into effective program to aid a sustainable smoking cessation process for individuals seeking health assistance [7,8].

Tobacco-related deaths number 400,000 annually in the United States and 8.6 million suffer tobacco-induced illness, and there are 4.8 million deaths worldwide, thus making tobacco use the world's leading cause of preventable death. Tobacco abuse treatment requires a skilled multidisciplinary program applied individually or in groups, depending on the demand of smokers and the size of the health care team involved, both strategies are proven to increase the cessation rate among program participants [9].

In Brazil, and certainly most of LA countries, lung cancer is diagnosed as advanced disease in approximately 90% of cases. A secondary opportunity for lung cancer prevention is the low dose lung cancer CT (LDCT) screening, detecting early stage disease to prevent death in more than 20% of those. Unfortunately, income inequalities and deficient healthcare system are major obstacles for an effective LDCT screening program anywhere.

Regional initiatives are emerging to promote changes within the private and public health systems, to provide better quality of care and enhanced access to primary and secondary prevention on the topic of lung cancer in Brazil. In this scenario, the Brazilian early lung cancer detection program (BRELT1) is the first prevention program in South America with published results in 2016.

We have learned that a suitable program is based on a solid structure and dynamic process of feedback among medical and non-medical personnel to reach the objectives. BRELT1 became active in 2013, with the goal of recruiting individuals at high risk for lung cancer using LDCT screening and a comprehensive smoking cessation program. It was designed to achieve specific goals of standardization of lung CT screening at our institution. Proper planning, from the definition of the objectives of the program, led to the targeting of actions with parameters for performance analysis, identification of critical points, stimulation of multidisciplinary and interdisciplinary performance for better utilization of physical, technological and human resources. A major issue in Brazil is the high incidence of granulomatous disease, which is a common problem in the whole region.

The inclusion and exclusion criteria were based on the National Lung Cancer Screening Trial (NLST) [4]. The management of CT findings was based on the NCCN Guidelines Lung Cancer Screening [10] Fleischner Society [11], and IELCAP protocol for data collection and analysis [12]. The first stage of the program, however, was the proper community outreach, considering that cancer prevention is still incipient in many cultural aspects, informational material must be specifically tailored to the media market to assure that information about essential components of prevention and early detection was correctly subscribed.

Individuals with abnormal tests were informed about the need of multidisciplinary evaluation and additional tests, in accordance with pre-established protocol. The range of options included interval repeat LDCT, contrast enhanced CT or PET CT for further risk stratification in low to intermediate risk findings, while tissue sampling techniques including image guided biopsy, bronchoscopy or VATS was pursued in those with high risk findings.

The results of the Brazilian screening program showed that the prevalence of positive LDCT in Brazil was higher compared to other studies, including NLST. However, only 3.1% of the patients required invasive biopsy, similar to other studies. This suggests that the prevalence of granulomatous disease didn't elevate the number of false

positive results with a high suspicious for lung cancer, avoiding an unnecessary invasive procedure [13].

Lung cancer, despite being one of the most lethal tumors, until recently lacked a clear mandate to conduct population screening. So, to implement a screening program requires a significant change in organizational culture and also in engaging the at risk patients who are smokers. The medical community should be well informed of the potential risks and benefits of lung cancer screening and health professionals could serve as advocators and ambassadors of such programs. Studies have been conducted to better understand the relationship between smoking cessation programs and cancer screening; however, primary prevention must be associated with early detection programs for individuals at high risk.

One of the greatest challenges of modern medicine, with the growing demand for high-cost technology is finding ways to provide the benefit to a greater number of persons without exponentially increasing costs. The automation of services and provision of program services with lower cost personnel (non-medical consultations, less frequent visits, etc.) may be feasible forms of population screening in the future. Latin American countries should engage to adapt cancer screening platforms to each of their realities, following the gain of benefits already been obtained in all developed countries with the same approach.

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