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ORIGINAL ARTICLE

Smoking and its influence on lung cancer in an adult population of Ambato, Ecuador

El tabaquismo y su influencia en el cáncer de pulmón en una población adulta de Ambato, Ecuador

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ABSTRACT

Introduction: smoking has a high incidence in lung cancer and causes increasing mortality every day if this pathology is diagnosed in advanced clinical stages.
Objective: determine the influence that smoking has on lung cancer in adults from 2019 to 2022, General Hospital of the Ecuadorian Institute of Social Security, Ambato.
Methods: observational, descriptive cross-sectional study to determine the influence of tobacco consumption on lung cancer in adults from 2019 to 2022. The universe, 32 patients with a diagnosis of lung cancer, in any of its variants, and four doctors coincide with the sample based on intentional non-probabilistic sampling. Graphs and percentage data were used for comparison and better understanding.
Results: 65,6 % of patients diagnosed with lung cancer smoked more than one pack a day before the disease was detected. On the other hand, 21,9 % had smoked two packs of cigarettes a day. A percentage of 56,3 % patients had started smoking at 12 years of age and as a second option we have a percentage of 37,5 % of patients who have started smoking at 20 years of age.
Conclusions: smoking has been widely studied as a cause of pulmonary carcinomatosis, and it is well established that the risk of developing the disease increases with an earlier age of onset, greater number and years of smoking, and genetic predisposition.

Keywords: Smoking; Lung Cancer; Treatment.

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RESUMEN

Introducción: el tabaquismo tiene una gran incidencia en el cáncer de pulmón y provoca cada día mayor mortalidad si se diagnostica esta patología en estadios clínicos avanzados.
Objetivo: determinar la influencia que tiene el tabaquismo en el cáncer de pulmón en personas adultas desde el año 2019 al 2022, Hospital General del Instituto Ecuatoriano de Seguridad Social, Ambato.
Métodos: estudio observacional, descriptivo de corte transversal para conocer la influencia del consumo de tabaco en el cáncer de pulmón en personas adultas desde el año 2019 al 2022. El universo, 32 pacientes con diagnóstico de cáncer de pulmón, en cualquiera de sus variantes, y cuatro médicos coincide con la muestra a partir de un muestreo no probabilístico tipo intencional. Se utilizaron gráficos y datos porcentuales para su comparación y mejor comprensión.
Resultados: El 65,6 % de los pacientes con diagnóstico de cáncer de pulmón, fumaban más de una cajetilla diaria antes de detectarse la enfermedad. Por otro lado, el 21,9 % había fumado dos cajetillas de cigarrillos diarias. Un porcentaje de 56,3 % pacientes había empezado a fumar a partir de los 12 años de edad y como segunda opción tenemos con un porcentaje del 37,5 % a los pacientes que han empezado a fumar desde los 20 años.
Conclusiones: el tabaquismo ha sido ampliamente estudiado como causa de la carcinomatosis pulmonar, y está bien establecido que el riesgo de desarrollar la enfermedad aumenta con una edad más temprana de inicio, mayor número y años de tabaquismo y predisposición genética.

Palabras clave: Tabaquismo; Cáncer de Pulmón; Tratamiento.

INTRODUCTION

The symptoms of this cancer are varied and nonspecific in the early stages, when people go to the doctor, it is usually at stage IIIB or IV, which means that the five-year survival rate is very low. Researchers have identified several risk factors that can increase your chances of developing lung cancer. Thus, lung cancer leads to increased prevention campaigns; promotion of healthy lifestyles; avoiding secondhand smoke; avoiding exposure to environmental toxins; promoting carcinogen care and occupational protection.[1]

Reports of lung cancer in the late 19th century are anecdotal. The incidence rate stood at 3 per 100,000 in the early decades of the last century and increased dramatically in the 1970s to 446 per 100,000 men aged 55 to 74 years. This increase is unmatched by other epidemics secondary to human behavior. Although tobacco use has existed for centuries, the invention of James Bonsack's cigar-making machine in 1882 sparked consumption. Therefore, we can be sure that this device is the deadliest device ever created, surpassing guns.[2]

Currently, studies are not recommended on a preventive basis. Several studies have shown that repeated use of low-dose CT scans can help in the early diagnosis of lung cancer, thus improving prognosis. But it is still under investigation whether it is possible that these low-dose CT scans can also classify tumors and, in fact, reduce lung cancer mortality. At this time it is necessary that patients at high risk for cancer or suspected of having lung cancer should have a CT scan and bronchoscopy.[3]

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In general, NSCLC patients with regional or distant metastatic nodules have a poor prognosis. However, a specific group of patients with synchronous or metachronous metastatic lesions that survive long after resection of the primary lesion and its metastases, mostly located in the brain and adrenal glands, is currently under discussion.[4]

It is by far the most common cancer in developed countries today and the leading cause of death in both men and women. At the time of diagnosis, more than 40 % of patients already have locally advanced disease, a stage at which the probability of cure is low and the overall prognosis is poor, with a five-year survival rate of 15 %.[5]

The Ki-67 proliferation index is not currently part of the diagnostic criteria, but it is of importance to differentiate carcinoids from neuroendocrine carcinomas when we are talking about a smaller biopsy. At this time, we do not have the availability of biomarkers with predictive value in PNETs and neither the study of PD-L1 nor that of tumor mutational load are indicated. There are malignant epithelial neoplasms of high-grade neuroendocrine differentiation called neuroendocrine carcinomas of the lung which are divided into large cell neuroendocrine carcinoma (LCNEC) and small cell lung carcinoma (SCLC), by far the most frequent of all neuroendocrine lung tumors.[6]

Smoking has been extensively studied as a cause of PC, and it is well established that the risk of developing the disease increases with earlier age of onset, greater number and years of smoking, and genetic predisposition. TI is the most objective measure of the intensity of a person's exposure to tobacco smoke. The higher the TI, the higher the risk of developing PC, and the risk is more evident for TIs with more than 20 packs/year.[7]

Environmental pollution from incomplete combustion of fossil fuels appears to increase the risk of PC, while exposure to aerosol particles from wood smoke plays an important role as a risk factor for the development of lung cancer and other lung diseases. As a public health problem, PC has a high economic cost for both health sector institutions and the private sector, with an average cost of more than 100.000 pesos per patient per year in some centers.[7]

This situation is partly due to the inability of health services to provide timely diagnosis and treatment, which results in long hospital stays, in most cases, clinical deterioration due to the presence of comorbidities related to the disease or treatment with cytotoxic drugs. It is well known that patients diagnosed at an earlier clinical stage have a higher response rate to treatment, close to 70 %. In contrast, only 15 % of patients had a partial response in the advanced stage, with a lower survival rate. INER in Mexico City identified mutations in the EGFR gene by automated PCR analysis, and although it was one of the great advances in oncology at the time, we now know that it is not the only one that can be used as a therapeutic target.[8]

Advances in PC therapy based on NSG technology for the search and identification of somatic mutations, and the collaborative work of the Institute's medical oncologists, researchers, molecular biologists and pulmonologists with expertise in PC, have improved the accessibility of these tools that can document diseases to a great extent chronifying pathology.[9]

The (IARC) produces evidence-based reports on substances that may increase the risk of cancer in humans. Since 1971, the Society has evaluated more than 900 factors, including chemicals, complex mixtures, occupational exposures, physical factors, biological factors and lifestyle factors. In addition, it is stratified according to the following risk groups: Carcinogenic to humans (Group 1), possibly carcinogenic to humans (Group 2A), possibly carcinogenic to humans (Group 2B), not classifiable. [9]

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Globally, tobacco use, including direct and passive smoking, kills approximately 6 million people each year. By 2020, this number is estimated to increase to 7,5 million. The diseases associated with this addiction are well known: lung cancer, 71 %; respiratory disease (including chronic obstructive pulmonary disease), 42 %; and cardiovascular disease, almost 10 %, making smoking the most important public health problem. Chronic obstructive pulmonary disease (COPD) is a lung disease that causes shortness of breath, coughing and mucus production. These episodes are extremely depressing, can last from days to months, and sometimes lead to death.[10]

Therefore, the objective of the research was: to determine the influence that smoking has on lung cancer in adults from 2019 to 2022, General Hospital of the Ecuadorian Institute of Social Security, Ambato.

METHODS

Observational, descriptive, cross-sectional study to know the influence of smoking on lung cancer in adult persons from the year 2019 to 2022. The influence that smoking has on the appearance of lung cancer and how the disease will affect the family and social life of the people who present it was defined, in addition some important and relevant aspects of this disease were detailed.

The universe, 32 patients with a diagnosis of lung cancer, in any of its variants, and 4 physicians coincided with the sample from a non-probabilistic purposive sampling. An interview was applied to the treating physicians, and a survey was applied to adult men and women diagnosed with lung cancer.

The variables used in the study were: respiratory symptomatology, chest pain, occurrence of hematemesis, daily cigarette consumption, age of onset of the harmful habit.

The research was carried out in the Public Hospital (IESS), Ambato; this is in charge of applying the General Compulsory Insurance System, which is part of the national Social Security system. The ethical issues published in the Declaration of Helsinki and patient privacy were taken into account.

RESULTS

There is an average of 15 cases per month that are admitted with lung cancer symptomatology with respect to the data obtained, with a percentage of 75 %, as second place we have more than 20 cases per month with 15,6 % to finally have as last place 9,4 % representing the 10 cases per month that are received in the health center. (Figure 1).

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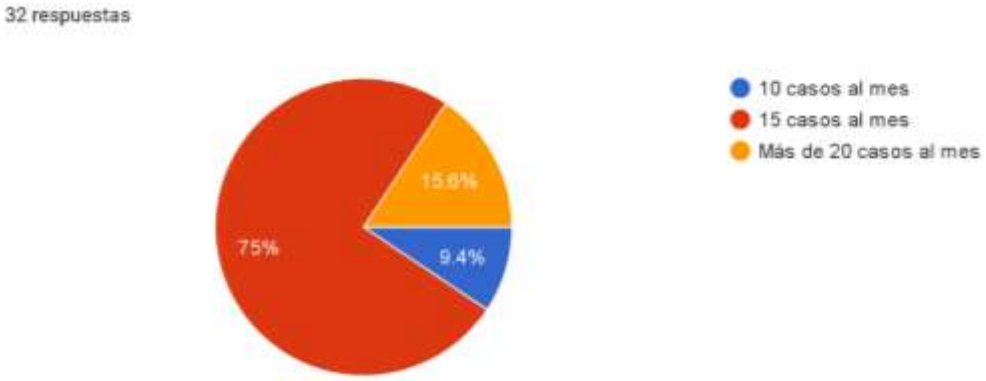

Fig. 1 Relationship of admissions with respiratory symptomatology in a month.

There were 81,3 % of patients with chest pain when taking deep breaths and 18,8 % who have not presented this symptomatology (Figure 2).

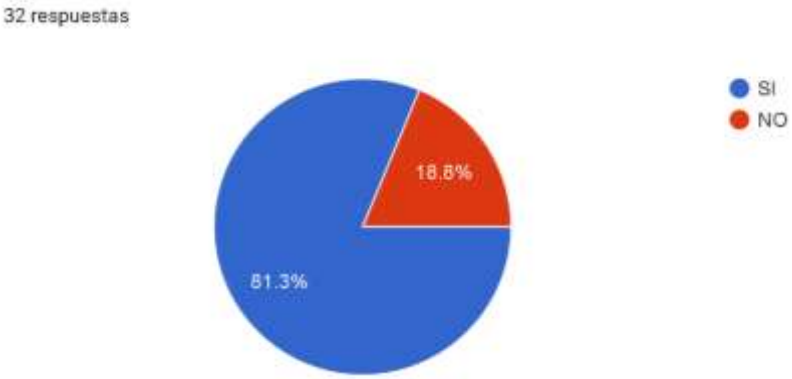

Fig. 2 Relationship between chest pain and deep breathing.

As for the presence of hematemesis there was a percentage of 65,6 %, being very characteristic of lung cancer. On the other hand, cough with phlegm and simple cough presented a low percentage, 28,1 % (Figure 3).

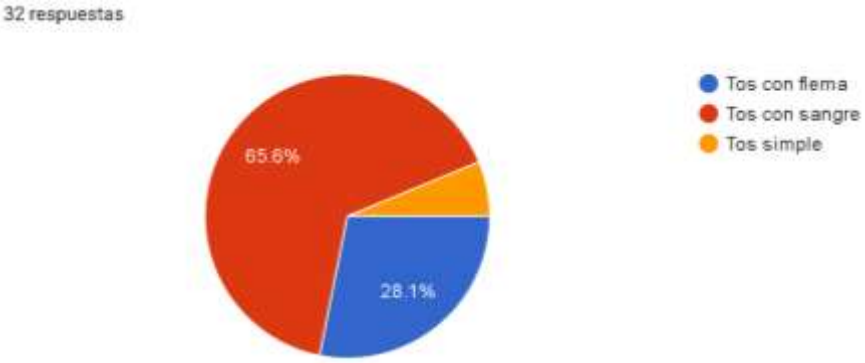

Fig. 3 Distribution of the sample according to the occurrence of hematemesis.

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Rev Ciencias Médicas. 2024; 28(S1): e6494

65,6 % of the patients diagnosed with lung cancer smoked more than one pack of cigarettes a day before the disease was detected. On the other hand, 21,9 % had smoked two packs of cigarettes a day, which is obviously also a high number of cigarettes smoked per day, which of course has repercussions on the lungs, preventing the person from breathing normally (Figure 4).

Distribution of the sample according to the consumption of cigarettes per day.

A percentage of 56,3 % of the patients had started smoking from the age of 12 years and as a second option we have with a percentage of 37,5 % the patients who have started smoking from the age of 20 years (Figure 5).

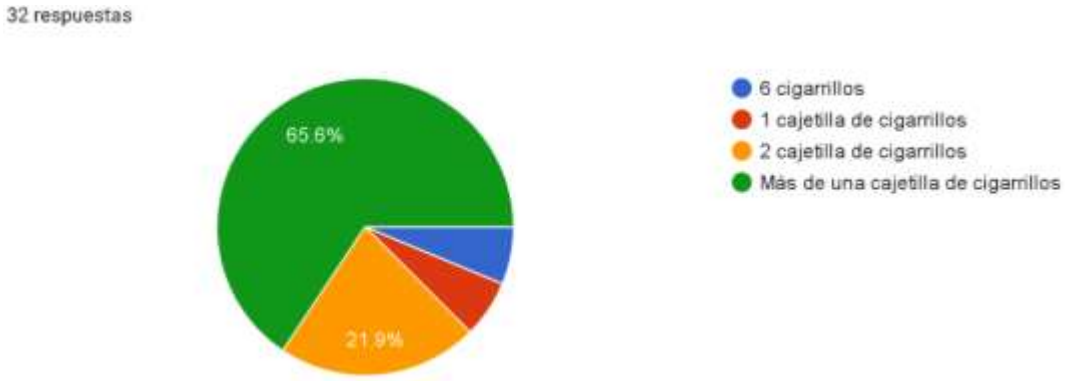

Fig. 5 Distribution of the sample according to the age at which they started smoking.

DISCUSSION

The warning figures on tobacco use show the difference between men and women: for every woman who smokes, four men smoke worldwide. The explanation for this fact lies in the dynamics of the rewarding effect of dopamine, which is better activated in males then we have that this research coincides with our results as it was shown that our surveyed patients were mostly male to be exact 25 out of 32 patients.[11]

The impact of postoperative pulmonary rehabilitation on patients with physical activity (PA) in oncology patients after lung resection as a result there was no significant difference between the two groups in the amount of time spent sedentary or slightly active after surgery. At the same time the period spent in moderate to vigorous PA in the control group was significantly reduced, however, the rehabilitation group spent more time in this type of PA postoperatively than preoperatively, and, in addition, the time spent in moderate to vigorous PA during the reduced period was greater than that of the rehabilitation group in the control group.[12]

Another parameter evaluated was dyspnea, which worsened in the control group, although it did not change in the rehabilitation group, which is why it differs from our results, since our research was based on the influence of smoking and its context in the disease, but not on its treatment or rehabilitation.[12]

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Rev Ciencias Médicas. 2024; 28(S1): e6494

The mortality rate for lung cancer has shown a changing trend in the last two decades, both men and women showed an upward trend in the first half of the year, reaching 12,5 and 6,9 per 100,000 inhabitants, respectively, and then declining to 10,6 and 100,000 per 100,000 inhabitants 6,3 inhabitants residents are men and women.[13]
This decline has been associated with a continuous decrease in tobacco use in Colombia: in 1996, smoking rates were 29 % for men and 14 % for women 2020. This figure was reduced by more than 40 % for both men and women, to 17 % and 7,6 % respectively, and therefore coincides with our results, since Ecuador is considered one of the countries with the highest lung cancer mortality rate, and Ambato is among the cities with the highest consumption.[13]

According to mortality data from the World Cancer Observatory,[14] 1.008.000 people worldwide died from lung cancer in 2020, and Chile joins 88 other countries in ranking lung cancer as the leading cause of cancer death. However, in Latin America, countries such as Guatemala, Honduras, Nicaragua and Costa Rica have the sixth to tenth highest lung cancer mortality rates. Although NSCLC ranks first in mortality, it is the most advanced histological subtype in the implementation of precision medicine, especially adenocarcinoma. Accordingly, it coincides with our research since most of our surveyed patients presented the most severe case which is adenocarcinoma, making it difficult for physicians in their treatment and recovery process.

All patients with lung cancer should be included in a rehabilitation program, whether they are surgical or non-surgical, TNM stage, or are undergoing chemotherapy or radiation treatment. All these patients could benefit from these interventions, so there are contraindications for them not to implement an individualized plan.[15]

The possible relative contraindications are mental or behavioral alterations affecting coordination, acute or unstable cardiovascular pathology limiting sports performance, or disorders or alterations of the locomotor apparatus incompatible with muscle training, but as mentioned above, this is relative because rehabilitation programs can be adjusted to include these patients, this is relative because the rehabilitation programs can be adjusted to include these patients, which is why it coincides with our results, since the main rehabilitation method is the support group of patients who carry the disease since they were detected until the day they were able to overcome it or as other patients who did not recover but must carry the disease.[15]

CONCLUSIONS

Smoking has been extensively studied as a cause of pulmonary carcinomatosis, and it is well established that the risk of developing the disease increases with earlier age of onset, greater number and years of smoking, and genetic predisposition.

Conflict of interest statement
The authors declare that there are no conflicts of interest.

Authors' contributions
EPLN: conceptualization, data curation, formal analysis, research, methodology, supervision, original draft-writing, draft-revising and editing.
LGE: conceptualization, data curation, formal analysis, research, original drafting, drafting-revising and editing.
QSSI: conceptualization, data curation, formal analysis, research, original drafting, drafting-revising and editing.

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ARCG: conceptualization, data curation, formal analysis, research, original drafting, drafting-revising and editing.
VHCL: methodological analysis, data curation, writing.
PLRJ: methodological analysis, data curation, writing, editing.

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