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The Respiratory Harms of Cannabis

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Abstract

Our study reviews the respiratory harms of pure cannabis consumption in our context. It was conducted in the Pulmonology Department of 20 August Hospital and covers the period from January 2012 to March 2022. A total of 18 cases of pure cannabis users, aged between 26 and 76 years (average age 58 years), all male, were included in our analysis among 120 patients seen in COPD consultations.

Clinically, pleuro-pulmonary history and comorbidities were reported in 36% and 29% of cases, respectively. All patients were symptomatic, with dyspnea being the main symptom (100%). Various paraclinical examinations helped characterize the different identified pathological entities: 10 cases of cancer, 5 cases of COPD, and one case with both cancer and COPD.

Cannabis cessation, the first step in treatment, was successful in 75% of cases. All our patients received awareness sessions during their hospitalization, and 12 of them benefited from additional follow-up in addiction consultations. Medical treatment included intensive respiratory physiotherapy, appropriate antibiotic therapy, and improvement of the patient's nutritional status. Specific treatment involved a total of 10 patients undergoing surgery or receiving palliative care. One patient in this subgroup was lost to follow-up. Unfortunately, 8 patients from our cohort passed away, while two cases, both from the COPD subgroup, showed good progression.

Introduction

The relationship between cannabis and pulmonary diseases is difficult to establish, as cannabis is often smoked mixed with tobacco (joint), and cannabis smokers frequently also smoke tobacco cigarettes.

Cannabis is a psychoactive plant, mainly smoked alone or, more commonly, mixed with tobacco. It is available in the form of mixed leaves and flowers (herb, marijuana, kif) or resin (hashish, chit), and more rarely as oils.

Morocco is not spared from this scourge, yet few studies have focused on specific topics such as the respiratory harms of cannabis.

Results :

Among the 120 patients initially evaluated, only 18 were included in this study, according to the inclusion criteria. These participants, exclusively male, had an average age of 48 years and were all chronic pure cannabis users, with a consumption duration ranging from 12 to 50 years. These histories highlight the potential impact of prolonged use on respiratory health.

Regarding pleuro-pulmonary medical history, 4 patients had bronchial dilation with a sequelae appearance, while 5 had a history of pulmonary tuberculosis. Concerning general comorbidities, 4 cases of hypertension, 2 cases of diabetes, and 1 case of coronary artery disease were recorded.

All patients in this study exhibited functional respiratory symptoms, with no asymptomatic cases observed. The clinical symptomatology was mainly dominated by respiratory signs, often associated. The predominant symptoms were dyspnea and chest pain, which were the main symptoms in our series.

During clinical examination, rhonchi were observed in 3 patients, while 4 others had wheezing. The remaining patients had a normal pleuropulmonary examination. Additionally, other abnormalities were noted, including 5 cases of digital clubbing, 3 cases of peripheral lymphadenopathy, and 1 case with signs of pulmonary hypertension (Table 3).

As part of the diagnostic assessment, all patients underwent extensive paraclinical examinations. Standard radiographs revealed pulmonary abnormalities such as hilar, axillary, and mediastinal opacities, thoracic distensions, and parenchymal hyperlucencies (Table 4). Thoracic CT scans confirmed and refined these abnormalities, revealing various pathological aspects (Table 5).

Pulmonary function tests (PFTs), performed in 12 patients, showed ventilatory obstruction in 70% of cases, with an FEV1/FVC ratio below 70% (Table 6). Flexible bronchoscopy was also performed in all patients. The endoscopic results were primarily dominated by tumoral infiltrations, followed by tumoral stenosis.

For staging bronchogenic carcinomas, each patient underwent an abdominal ultrasound, a brain CT scan, and a bone scan to investigate possible metastases.

Two main pathologies linked to cannabis consumption were identified in our series: chronic obstructive pulmonary disease (COPD) and bronchial cancer.

Patient management relied on two main components. The first step was cannabis cessation, considered essential for improving overall care. Then, specific treatments were implemented, tailored to the identified pathologies in each patient.

Patient follow-up was limited due to the severity of associated conditions. On average, the follow-up period did not exceed one month. Among the 18 patients, 9 passed away, 5 showed favorable progress, and 4 were lost to follow-up.

Discussion :

It is well-known that drugs in general affect respiration in a detrimental way, both at the macroscopic and cellular levels (61).

Cannabis is the second most smoked substance after tobacco. Since the primary route of cannabis consumption is through the inhalation of smoke from a rolled cigarette (joint) or a pipe, there are justified concerns regarding its potentially harmful effects on the lungs, by analogy to the well-known consequences of smoking, including COPD, lung cancer, and an increased risk of lower respiratory tract infections (91).

These concerns arise from the fact that cannabis contains volatile components similar to those found in tobacco (ammonia, hydrocyanic acid, and nitrosamines), as well as other compounds (phenols, naphthalene, benzopyrene, and benzathracene, which are pro-carcinogenic), with the major exceptions being nicotine (found only in tobacco) and THC, the major psychoactive ingredient in cannabis, as well as several other cannabinoid compounds found exclusively in cannabis (40, 67).

The majority of compounds common to both substances have toxic effects on respiratory tissue. Therefore, the similarity of these compounds raises the possibility, which is further justified, that cannabis could be a risk factor for the development of COPD and lung cancer (91).

Several studies have been conducted to compare the effects of cannabis with those of tobacco. Since the amount of tobacco smoked by the majority of smokers (about 20 cigarettes per day or more) usually exceeds the amount smoked by cannabis users (typically no more than a few joints per day), it is possible that differences in the effects of regular tobacco use versus regular cannabis use are observed, at least in part due to the difference in the quantity smoked between the two substances (113).

The level of lung exposure to the components of each substance is determined not only by the number of cigarettes or joints smoked but also by the differences in consumption techniques between the two substances. For example, regular cannabis users take deep puffs, inhale the smoke more deeply into their lungs, and hold their breath about four times longer than regular tobacco smokers (113) (108).

These differences in smoking techniques are responsible for a fourfold increase in the amount of tar deposited in the respiratory tracts of cannabis users compared to tobacco smokers who consume the same quantity (113).

Cannabis consumption itself causes both microscopic and visible damage to the large airways, which is consistently associated with an increased likelihood of chronic bronchitis symptoms that resolve after cessation (Table 13) (106).

Conclusion :

At the conclusion of our study, the respiratory effects of cannabis can impair breathing, which may negatively affect daily life in certain circumstances (63).

Moreover, although the evidence for an association between cannabis and lung cancer is both conflicting and paradoxical, the fact that cannabis contains many carcinogens also found in tobacco, in and of itself, warrants further in-depth research.