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Research Article

CIGARETTE SMOKING AS A RISK FACTOR FOR PULMONARY TUBERCULOSIS

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Abstract:

Objectives: This research study aimed to find out the relationship between smoking of cigarettes and the pulmonary TB.

Methodology: This transverse research study conducted in Jinnah Hospital, in Lahore city located South of Punjab and in the middle of the country Pakistan. We reviewed the medical charts of the patients from TB between 2016 to the year of 2018. Total 61 patients having age from 15 to 96 years with confirm pulmonary TB were the part of case group & one hundred and twenty two persons with matched age & gender with no TB (patients getting treatment in other wards of hospital) were the part of the control group. We collected the information about the smoking condition, amount of the cigarettes smoked in a day and smoking duration from the medical charts of the participants. SPSS. 22 was in use for the comparison of the collected information of both groups. Chi-square test was in use for the comparison of the rate of the smoking of cigarettes in both groups.

Results: Out of total sixty one patients, 68.90% (n: 42) patients were smoker, whereas out of total one hundred and twenty two controls, 18.0% (n: 22) persons were smoker. The proposed OR (Odds Ratio) of the association between habit of cigarette smoking & TB was 10.10 with CI of 95%. The average pocket-year of smoked cigarette (Twenty per pocket) in patients & controls persons were 15.90 ± 13.70 & 13.50 ± 9.10 correspondingly.

Conclusion: The results of this research study concluded that there is strong association between pulmonary TB and habit of cigarette smoking. Therefore, smoking of cigarette is a positive risk factor for the acquisition of the tuberculosis.

Key Words: Pulmonary, tuberculosis, smoking, cigarette, TB, methodology, acquisition, SPSS, comparison, controls.

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INTRODUCTION:

The smoking of cigarette in the duration of exposure to the tubercle bacilli is likely to create TB [1]. The rate of incidence of TB from 27 to 50 per 100,000 people is much important in our country Pakistan [2, 3]. The method of direct treatment has reduced the transmission of tuberculosis and its rate of prevalence, but tuberculosis is still a major issue of health in our country [4, 5]. There is impairment in the normal clearance of the secretions due to tobacco exposure on the surface of tracheobronchial mucosa which may permit the contributory organism, Mycobacterium tuberculosis, to find itself free from the 1st level of the defenses of host, which restrict the bacilli from reaching alveoli [6].

Smoke disturbs the operation of the macrophages of pulmonary alveolar, which are the target of the infection of *M. tuberculosis* and it also produce a vital initial defense against the organisms as bacteria [7]. Nicotine disturbs the intra-cellular killing of the *M. tuberculosis* [8]. Inclining towards the complications of smoking like cancer, heart diseases & infections has relation to the quantity of the smoked cigarettes, the expression is possible with pack-year. The health complications are highly prevalent in heavy smokers (greater than twenty five pack-years) than the light smokers (with less than twenty five pack-years) [9]. there is no survey whether the risk of TB increases with the increase of smoking rate [10].

The research studies of past on the relationship between cigarette smoking & tuberculosis displayed that there was very high risk of tuberculosis in smokers irrespective of positivity of AFB, ages adjustment, kind of the research study, social & economic condition or the choice for the selection of controls [11-19]. The prevalence of smoking is increasing in our country where TB is also available with high occurrence [2-4, 20, 21]. This is much necessary for the policy makers of the health care department to manage the programs to control the use of cigarette to decrease the impacts of tuberculosis in our country. There are very few research studies to assess the impact of the smoking on tuberculosis. We conducted this research study in Lahore, a city located in Punjab. This research study carried out to determine the influence the smoking on the occurrence of tuberculosis in our population.

METHODOLOGY:

This research study was a retroactive research study conducted in Jinnah Hospital, Lahore. We reviewed the medical files of the patients with confirm TB & patients from other wards with no TB as controls from the year of 2016 to the year of 2018. The ethical committee of the hospital gave the permission to conduct this research study. We collected the information from their medical files as traits of demography, habit of cigarette smoking, duration of smoking, amount of the cigarette per day, imprisonment, status of HIV, addiction of drug & other clinical complications. Total 61 patients suffering from tuberculosis & 122 persons with matched age and gender were the part of control group with no TB were the part of this research study.

The confirm patients of TB in accordance with the criteria of the national tuberculosis program were the part of case group. We expressed the quantity of the cigarette smoked by the case group in pack-year. The patients with incomplete data in both groups were not the part of this research study. SPSS V. 16 was in use for the comparison between both groups. Chi-square test was in use for the comparison of the rate of cigarette smoking among the participants of both groups. P value of less than .050 was significant with confidence interval of 95%.

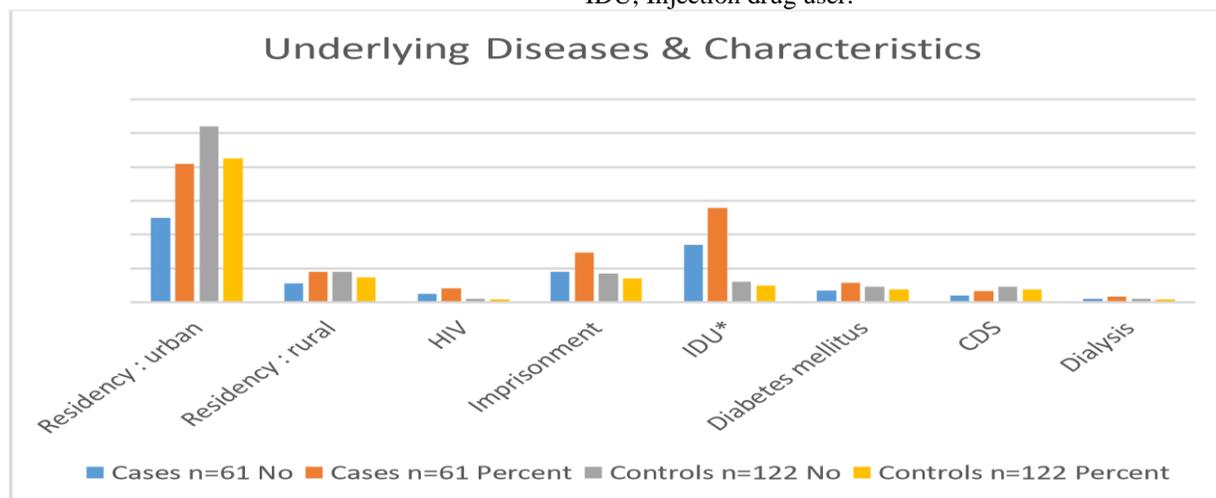
RESULTS:

Total 61 patients with average age of 41.70 ± 17.80 years & one hundred and twenty two controls with an average age of 40.70 ± 15.80 years were the part of this research study. Out of 61 patients, 68.90% (n: 42) were smokers. Out of total one hundred and twenty two controls, 18.0% (n: 22) persons were smokers. The proposed OR of relationship habit of cigarette smoking & TB was 10.10. The average amount of the cigarettes used by patients and controls was 8.90 ± 7.70 & 7.30 ± 7.10 correspondingly. The average of pocket-year of the smoked cigarette (Twenty per pocket) in patients & controls were 15.90 ± 13.70 & 13.50 ± 9.10 correspondingly. The important information about the participants is available in Table-1. We found a significant disparity in the infection of HIV, the drug use with injections & imprisonment between the participants of both groups.

Table-I: Underlying diseases and characteristics of cases and controls

| Variables | Cases n=61 | | Controls n=122 | | P value |
|-------------------|------------|---------|----------------|---------|---------|
| | No | Percent | No | Percent | |
| Residency : urban | 50.0 | 81.90 | 104.0 | 85.20 | 0.3500 |
| Residency : rural | 11.0 | 18.10 | 18.0 | 14.80 | |
| HIV | 5.0 | 8.20 | 2.0 | 1.60 | 0.0400 |
| Imprisonment | 18.0 | 29.50 | 17.0 | 13.90 | 0.0100 |
| IDU* | 34.0 | 55.70 | 12.0 | 9.80 | <0.0001 |
| Diabetes mellitus | 7.0 | 11.50 | 9.0 | 7.40 | 0.2500 |
| CDS | 4.0 | 6.50 | 9.0 | 7.40 | 0.5500 |
| Dialysis | 2.0 | 3.30 | 2.0 | 1.60 | 0.4000 |

IDU; Injection drug user.



DISCUSSION

This was the 1st research study about this topic in our country. The current research study displayed that smoking of cigarette is an important factor of risk for TB. This finding shows that it is necessary for the policy makers of our country to develop the methods for the control of the use of cigarettes to reduce the prevalence of TB in our country. A survey on the current published research studies displayed that smoking of cigarettes is a strong risk factor for tuberculosis showing a difference in the OR in various regions ranging from 2.10 to 3.13 [10-13, 15-19]. There is possible explanation of strong relationship between cigarette smoking & tuberculosis in this research study. The availability of the other factors of risks like infection of HIV, imprisonment & use of drugs through injections may be the reason behind the development of tuberculosis in our patients.

Another research study conducted in our country stated that the prevalence of tuberculosis & its rate of mortality was the outcome of drug usage through injections, imprisonment & infection of HIV [22]. The

high occurrence of the smoking of cigarette in the patients of tuberculosis is due to their life styles and addiction or to spend time in prison. The occurrence of the smoking was also very high in his research study which is not much amazing. We also discovered that the prevalence of tuberculosis was high in males in comparison with the females. This finding is much similar with the research studies of the past. In this region of the country, people were more addict to smoking as well as having exposure to the smoke of cigarettes due to high prevalence. The hospitalized persons in the ward of infectious diseases were present with high risk of smoking in comparison with the control (68.90% vs 18.0%). There is requirement of high attention towards the high occurrence of cigarette smoking in the patients of tuberculosis to control and prohibit the act of cigarette smoking among general population as well as patients of tuberculosis.

There are some limitations of this research study as this was a retroactive research study and we compared the patients of tuberculosis with the non-TB patients & analyzed the rate of occurrence of smoking in both

groups so, there is requirement of the future research studys on large size of sample to consolidate the finding of this research study.

CONCLUSION:

The results of this research study displayed that rate of occurrence of smoking in patients of tuberculosis in this particular region is much prevalent in comparison with the expectations. There is strong association of TB with the act of cigarette smoking. The relationship is not depending upon the dependency of the development of tuberculosis.

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