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SECTION 20. Medicine.

PREVALENCE OF BYSSINOSIS IN THE WORKERS OF TEXTILE MILL

Abstract: *Objective: This study was conducted to know prevalence of byssinosis among the workers of textile mills. Byssinosis is a disease of respiratory system which occurs due to cotton fibers inhalation for a long period of time as occurs in workers of cotton industry.*

Setting: This study was performed on the workers of a textile mill (Mehmood Textiles Mills) in Multan city of Pakistan.

Materials and Methods: This is a cross sectional type of study. In this study 120 workers of the Mill were involved. Time duration of study was from January 2017 to September 2017. Workers were classified into two groups, one for those having respiratory problems and other for healthy normal workers.

Results: Study group was consisted of 120 cases. Among them, 25(20.83%) were having Byssinosis. These cases were suffering from respiratory problems. PEER (peak expiratory flow rate) was determined of each case using peak flow meter to evaluate for respiratory problems. In 120 cases, 30(25%) had value of PEER below normal level. It was found that among 25 cases of byssinosis, 23(92%) were working in areas of severe cotton dust in the Mill. PEER value of other 90(75%) cases was within normal range.

Conclusion: Byssinosis is a common respiratory disease among the workers of textile mills who are exposed to cotton dust for a prolonged time daily and those who work in most dusty areas of the mill.

Key words: cotton dust, textile mills, Byssinosis, PEER

Language: English

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INTRODUCTION

Many diseases are related to occupation of a person. Byssinosis is one of the occupational disease of respiratory system. This occurs due to inhalation of cotton dust. Which people work in Fiber industries, cotton industries or textile mills they are likely to have this disease. Not all the workers of textile mills get this disease. Only those workers suffer from this who work in most dusty environment of the mill for most of the time in a day. More dealing with cotton fibers increases risk of this respiratory problem. Which workers do duties in relatively less dusty environment they have low risk of getting disease. In 1831 J P Kay first time diagnosed this disease. He did study on English workers of textile industry who were exposed to cotton fibers. He also named this disease as spinners phthisis.^{1,2} In 1955 an other scientist named Werner

told that early symptoms of Byssinosis are chest tightness followed by respiratory distress and asthma latter on. Other names of this disease are cotton card-rom asthma and stripper's asthma. This disease is prevalent in the whole world. Cotton fibers play main role in the development of this disease. Other factors include bacteria and fungus in the air which when inhaled cause complex reaction in the walls of alveoli and causes this disease.³ Just controlling cotton dust in the air does not remove the risk completely but it is necessary to remove bacteria and fungus from the environment as much as possible. Decreasing air level of cotton dust reduces incidence of respiratory diseases. Now in modern world natural fiber is being replaced by synthetic fiber which has low risk of Byssinosis. But in developing countries still natural fiber is used mostly in industries. In Pakistan use of natural cotton fiber is very common



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and that's why risk risk of this disease is high as well. Textile industry is a big business in Pakistan and further textile mills are being built to improve economy of the country. Hence more development of this industry is causing more risk of Byssinosis. Purpose of this study was to highlight this issue so that necessary steps may be taken to control this disease and to protect the workers.

SUBJECTS AND METHODS

This is a cross sectional study done on 120 workers of a textile mill located in Multan city of Pakistan. These workers were performing their duties in different areas of the mill. Their nature of work was little bit different but our concern was the environment in which they were working. A predesigned proforma with relevant questions was made. Proper consent was taken from the management of the Mill for this study. Informed consent was taken from the workers as well. PEER was determined of each case with Wright's peak flow meter and data was recorded. Cases were divided into two groups. Diseased cases were put into group-A and Healthy cases were put into group-b. Age of workers was ranging from 20-55 years. Various symptoms related to respiratory system were recorded such as chest tightness, cough, wheeze and difficulty in breathing. Air sampling for PEER was taken at 5.5 feet height. PEER was determined in percentage by the following formula.

$$\frac{\text{Observed value}}{\text{predictive value of PEER}} \times 100$$

Data was entered in tabulated form and expressed in the form of charts. Normal value of PEER is 8 100%. In this study 30 workers had this

value below 80%. They also had respiratory symptoms. PEER value can also be used to monitor patients with Byssinosis or asthma and effect of treatment can also be checked by this. Its value gives information about the progress of disease and prognosis of treatment.

RESULTS

In this study 120 workers were included. Age of these workers was 20-55 years with mean age of 36.5 years. Peak expiratory flow of each worker was determined using peak flow meter. Among them 30(25%) workers had PEER below normal level. Out of these 30 cases 25(83.3%) were suffering from Byssinosis and having cough, sputum, wheezing, tightness of chest and difficulty in breathing. Out of 120 workers 90(75%) were normal with no respiratory complaints. Prevalence of Byssinosis was 20.8%. Mostly workers with below normal PEER was lying in age group of 50 years or above. Most of the Byssinotic cases were having age from 41 to 50 years. One case was from 20-30 years age group, 6 cases from 31-40 years group, 10 cases from 41-50 years and 8 cases from above 50 years age group. Among 30 cases with PEER below normal, 25 were having Byssinosis and others 5 were suffering from chronic bronchitis, tuberculosis etc. It was found that with the increase of age risk of respiratory disease increases. About 57% cases of Byssinosis were found in the workers having age above 50 years. In young age it is less common. All these workers were males. There is need to conduct such study on females as well so that difference of gender on the expression and prevalence of disease may be studied. Still much work is needed to be done in this field.

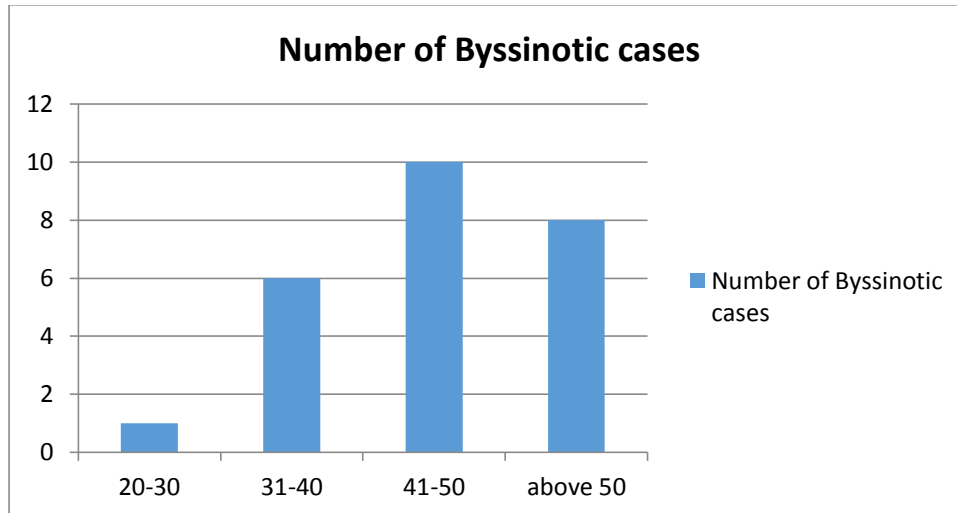
Table-1

Showing age wise distribution of diseased cases

Age of Workers (years)	Number of cases	Number of cases with PEER below normal level
20-30	28	2(7.1%)
31-40	52	9(17.3%)
41-50	26	11(42.3%)
Above 50	14	8(57.1%)

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DISCUSSION

With the passage of time industries are expanding. Meanwhile occupational related diseases are increasing. People working in textile or cotton industries are much exposed to cotton fibers. These workers have respiratory diseases more frequently than other people. Cotton fibers produce complex reaction in alveoli so causing Byssinosis. Symptoms of this disease are chest tightness, cough, wheezing and difficulty in respiration. Those workers are more prone to this disease which work in most dusty areas of the mill and work for prolong period of time so causing more contact with cotton dust. According to this study prevalence of Byssinosis was 20.8% and 4.1% cases were having other complications of lungs. While 75% cases were normal having no respiratory symptoms. PEER(peak expiratory flow rate) of all study subjects was determined using peak flow meter. Another study done in United States found Byssinosis incidence 15-50% in textile workers. Other studies done in Sweden, turkey and Pakistan found its prevalence 19%, 14.2% and 22.5% respectively.^{1,4,5} These studies show that Byssinosis is prevalent in developed countries as well. Those workers are on high risk whose work is to handle cotton fibers than other workers which work in clean environment. Besides cotton fibers there are few other factors which increase risk of Byssinosis such as smoking and dusty atmosphere.⁶ This is because smoke of cigarette aggravates complications of lungs hence increasing risk of Byssinosis.⁷ Old age is more susceptible for getting disease due to decreased

immunity and most important reason if they have spent much time in dusty environment. Proper steps should be taken to avoid such disease in workers. These steps include checkup of workers on monthly basis involving history, complete examination and relevant investigations. Their duty hours in a dusty environment should be reduced with replacement of healthy normal atmosphere. They should wear face masks.⁷ They should be checked for any respiratory complication. Their lung function tests should be done at least once a month. There may be such cases which have disease without much prominent symptoms or which are in initial stage of disease. Diseased person should be monitored and shifted to dust free environment. There are many other diseases which present like byssinosis apparently such as chronic bronchitis, pulmonary tuberculosis, COPD and bronchiectasis etc. Breathing exercise in patients help much by reducing respiratory symptoms.

CONCLUSION

Our study concluded that Byssinosis is a common disease among the workers of textile mills which work in a dusty atmosphere and who use to handle cotton fibers are on high risk. PEER value is very helpful in diagnosis Byssinosis and monitoring severity of disease and checking prognosis of it. It is also useful in evaluating outcome of the treatment. Byssinosis is more common in old age group. This can be prevented by taking appropriate steps like safety measures and periodical checkups.

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