International Journal of Allied Medical Sciences and Clinical Research (IJAMSCR)

ISSN:2347-6567

IJAMSCR |Volume 9 | Issue 3 | Jul - Sep – 2021
www.ijamscr.com

Review Study *Medical research*

Byssinosis – A review on brown lung disease

Prof. Ebenezer David[1*], Mouli Kanth.C.S[2], Dheepa Anand[2], Brindha Preethi.S[2], Anu.P.S[2] Monisha.K.M[2]

[1]*Professor Department Of Pharmacology, PG Studies, Cheran college Of Pharmacy, C.I.H.S, Coimbatore, India.*
[2]*Students Department Of Pharmacology Cheran college Of Pharmacy, C.I.H.S, Coimbatore, India.*

***Corresponding Author**: **Prof.Ebenezer David**
Email id: ed_pharmacologist@aol.com

ABSTRACT

Byssinosis is a relatively uncommon lung condition. Brown lung disease is a condition that is exacerbated by inhaling hemp, flax, or cotton particles. It's a form of work-related asthma. Byssinosis is almost exclusively found in people who work with unprocessed cotton in the United States. The people who open cotton bales during the first stage of processing are the most vulnerable. Grain worker's lung is another form of byssinosis that affects people who work with grains. While guidelines and legislation in the United States have helped to reduce the number of people who contract byssinosis, it is still prevalent in developing countries where safety measures are lacking.

Keywords: Byssinosis, lung disease, hemp, brown lung disease, grain worker's.

INTRODUCTION

Brown Lung Disease or Monday Fever are other names for Byssinosis. Cotton dust exposure in poorly ventilated working conditions causes byssinosis, an occupational lung disease. (a) Byssinosis is a disease that affects workers in the yarn and cloth manufacturing industries. Cotton dust is now believed to be the direct cause of the disease, with some suspecting endotoxins derived from the cell walls of gram-negative bacteria that develop on cotton as the causative agents. Although bacterial endotoxin is a likely cause, the absence of similar symptoms in workers in other industries exposed to endotoxins makes this uncertain.(2)

In the 81 byssinosis-related deaths recorded in the United States between 1990 and 1999, 48 percent of the victims' death certificates mentioned a job in the yarn, thread, and fabric industry. (3) During the Industrial Revolution, this disease was very common. This disease is most commonly found in young girls who work in mills or other textile factories. Between 1996 and 2005, North Carolina accounted for about 37% of all byssinosis deaths in the United States, with 31 cases, followed by South Carolina with 8 cases and Georgia with 7 cases. (4) The word "brown lung" is misleading, as affected people's lungs are not brown. (5)

ETIOLOGY

Byssinosis is caused by exposure to cotton dust during the spinning and manufacturing process. Exposure to jute, flax, and hemp fibres, on the other hand, has been linked to its growth. Endotoxin released from bacteria's cell walls inside textile fibres has been linked to byssinosis symptoms in recent studies. Smokers are at a higher risk of developing the condition. (6) and (7).

EPIDEMIOLOGY

The Centers for Disease Control (CDC) reports a substantial decrease in the number of byssinosis-

related deaths from 1979 to 2010, although no detailed epidemiological data is available. According to some older records, the prevalence of byssinosis in the United Kingdom is about 4%. Byssinosis is not uncommon outside of North America. Byssinosis is popular in countries with thriving cotton industries, such as India, Pakistan, Nepal, Sri Lanka, and Bangladesh. In addition to the cotton industry, exposure to jute, hemp, and flex also cause byssinosis. The general population in these countries also smokes heavily which tends to exacerbate the symptoms. Despite modernization and introducing better working environments, byssinosis still is common in many parts of Pakistan, India, Indonesia, Ethiopia, Turkey, and Sudan.(8),(9)

PATHOPHYSIOLOGY

Cotton dust, as well as the amount of endotoxin in the workplace, are both linked to pathogenesis. This endotoxin is a lipopolysaccharide that can be present in the outer membrane of gram-negative bacteria found in cotton dust. With studies showing a decrease in FEV1 with endotoxin exposure, exposure has been implicated as a key mediator of respiratory disease among these workers. However, this is not consistent, and there appears to be a range of responses, with those with polymorphisms in the tumour necrosis factor (TNF) gene experiencing a greater decline in FEV1. (10),(11),(12).



Fig 1: Brown lung disease

SYMPTOMS

Byssinosis symptoms usually occur at the start of the workweek and gradually improve by the end of the week. If you are exposed to dust particles for an extended period of time, you can develop symptoms that last for the entire week. Byssinosis signs include chest tightness, wheezing, and coughing, which are close to asthma symptoms. Fever, muscle and joint pain, shivering, tiredness, and a dry cough are some of the flu-like symptoms that can occur in the extreme case. When the patient is no longer exposed to dust, the signs of byssinosis normally disappear. If the exposure is prolonged, however, lung function may be permanently harmed.

CAUSES AND RISK FACTORS

Textile workers are the most susceptible to byssinosis. Inhalation of raw flax, hemp, cotton dust, and other related materials causes it. Byssinosis is more likely to occur if you smoke. A family history of asthma or allergies can also put you at risk.

DIAGNOSING

To diagnose byssinosis, the doctor will inquire about recent activities and the nature of work in order to decide whether or not the patient has been exposed to textile dust. The doctor will most likely conduct a physical exam to check the patient's lungs and could prescribe a chest X-ray and CT scan. Pulmonary function tests are often commonly used to check the condition of the lungs. During the workweek, the doctor can send you a peak flow metre to measure your lungs. This metre measures how easily a patient's lungs can remove air. This metre will assist the doctor in determining when and where the patient is exposed if the breathing changes over the day or week.

TREATMENT

Byssinosis is primarily treated by avoiding toxic dust contact. Bronchodilators can be prescribed by

the doctor to alleviate mild to moderate symptoms. These medications aid in the opening of constricted airways. Inhaled corticosteroids can be prescribed in more serious cases of byssinosis. These aid in the reduction of lung inflammation. These medications, on the other hand, may cause fungal infections in the mouth and throat. By rinsing your mouth after inhaling the drug, you can lower the risk. If the patient's blood oxygen levels are low, supplemental oxygen therapy may be required. A nebulizer or other respiratory medication may be prescribed for chronic byssinosis. Physical activity and breathing exercises can also help to improve lung function and symptoms. It's possible that the patient would have to leave their work. Even if symptoms improve by the end of the week, damage to the lungs continues to accumulate. Long-term exposure to cotton, hemp, and flax dust can result in irreversible lung damage.(13)

LONG-TERM OUTLOOK

Byssinosis typically goes away after the exposure is over. It's not considered a life-threatening or chronic disease. However, it's important to identify the cause of byssinosis. This can keep it from returning once it's treated.

CONCLUSION

Byssinosis is difficult to diagnose and treat, and it is best managed by a multidisciplinary team that includes a primary care physician, internist, pulmonologist, nurse practitioner, pathologist, and radiologist. The most important aspect of treatment is to keep the patient safe from further exposure. Byssinosis can be avoided. Wear a mask when working, particularly if you're working near dust, if your job puts you in danger. In the United States, employers are required by law to protect you from unsafe goods at work. The employer is expected to provide protective equipment to workers in accordance with the Occupational Safety and Health Administration's guidelines (OSHA). This means that if workers deal with cloth dust, OSHA needs them to provide them with a respirator or mask. Quitting smoking will also lower the risk of byssinosis if the patient is a smoker.

REFERENCES

[1]. Hollander, AG (December 1953). Byssinosis. Chest. American College of Chest Physicians. 24 (6): 674–678. doi:10.1378/chest.24.6.674. PMID 13107566. Archived from the original on 2007-10-24. Retrieved 2008-01-31.

[2]. Newman, Lee S. (June 2008). Byssinosis. Merck Manuals: online medical dictionary. Merck & Co. Retrieved 2009-06-15.

[3]. Section 4. Byssinosis and Related Exposures. The Work-Related Lung Disease Surveillance Report, 2002. National Institute for Occupational Safety and Health. 2003.

[4]. Byssinosis: Number of deaths by state, U.S. residents age 15 and over, 1996-2005. National Institute for Occupational Safety and Health. March 2009. Retrieved 2013-02-14.

[5]. Barry S. Levy; David H. Wegman; Sherry L. Baron; Rosemary K. Sokas (2011). Occupational and environmental health recognizing and preventing disease and injury (6th ed.). New York: Oxford University Press. p. 416.

[6]. Mittal R, Gupta P, Chhabra SK. Occupational bronchiolitis induced by cotton dust exposure in a nonsmoker. Indian J Occup Environ Med. 2016 May-Aug;20(2):118-120.

[7]. Dangi BM, Bhise AR. Cotton dust exposure: Analysis of pulmonary function and respiratory symptoms. Lung India. 2017 Mar-Apr;34(2):144-149.

[8]. Er M, Emri SA, Demir AU, Thorne PS, Karakoca Y, Bilir N, Baris IY. Byssinosis and COPD rates among factory workers manufacturing hemp and jute. Int J Occup Med Environ Health. 2016;29(1):55-68.

[9]. Khan AW, Moshammer HM, Kundi M. Industrial hygiene, occupational safety and respiratory symptoms in the Pakistani cotton industry. BMJ Open. 2015 Apr 02;5(4):e007266.

[10]. Lai PS, Christiani DC. Long-term respiratory health effects in textile workers. CurrOpinPulm Med. 2013 Mar;19(2):152-7.

[11]. Hinson AV, Schlünssen V, Agodokpessi G, Sigsgaards T, Fayomi B. The prevalence of byssinosis among cotton workers in the north of Benin. Int J Occup Environ Med. 2014 Oct;5(4):194-200.

[12]. Zhang H, Hang J, Wang X, Zhou W, Sun B, Dai H, Su L, Christiani DC. TNF polymorphisms modify endotoxin exposure-associated longitudinal lung function decline. Occup Environ Med. 2007 Jun;64(6):409-13.

[13]. https://www.ncbi.nlm.nih.gov/books/NBK519549/