International Journal of Pulmonary & Respiratory Sciences
ISSN: 2573-2234

Juniper Publishers
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Case Report
Volume 5 Issue 4 - December 2021
DOI: 10.19080/IJOPRS.2021.05.555667

Int J Pul & Res Sci
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Bullous Lung Disease in Young IV Drug Abuser: A Case Report

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Submission: November 23, 2021; **Published:** December 15, 2021

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Abstract

Drug abuse is defined as the non-medical "recreational" use of drugs that may result in physical or psychological dependence. Complications resulting from intravenous drug abuse affect the lung more frequently than any other organ. Drug abusers are also at risk from a wide range of pulmonary complications not directly related to infection. Non-infectious disorders may mimic more common pulmonary disease and may lead to respiratory insufficiency. Reports have documented evidence of emphysema with or without bullae formation in users of intravenous drugs. Most cases have been in drug abusers who inject medications intended for oral use and have occurred in association with intravenous talcosis. Bullous degeneration has been reported in intravenous opiate abuse presenting with pneumothorax or localized chest pain possibly due to air trapping. We encountered a unique case of bilateral upper lobe bullae in a young intravenous heroin abuser presented to us with right-sided hydropneumothorax.

Keywords: Intravenous drug abuse; Bullous lung disease; Pneumothorax; Pulmonary complications; Chest tube

Key Message: Bullous lung disease is a rare complication of IV drug abuse.

Abbreviations: AIDS: Immunodeficiency Syndrome; GBE: Giant Bullous Emphysema; BE: Bullous Emphysema; COPD: Chronic Obstructive Pulmonary Disease

Introduction

Substance abuse is one of the major concerns in the world today as millions of people are abusing legal and illegal drugs for recreational purposes. Pulmonary complications of intravenous (IV) drug abuse include infections, airway and interstitial disease, respiratory failure, pulmonary edema, and the acquired immunodeficiency syndrome (AIDS) [1,2]. Occasional reports have documented radiological, physiological, and pathological evidence of emphysema with or without bullae formation in intravenous drug abusers mostly in drug abusers injecting medications intended for oral use and have occurred in association with intravenous talcosis [3]. Pulmonary talcosis is a well-known complication of intravenous heroin use. In contrast to the lower lobe bullae in talcosis, one series included 10 cases with upper lobe bullae (average age 36-70 years) in a radiological survey of 387 drug misusers having severe airway obstruction [4].

Giant bullous emphysema (GBE) is first described by Roberts et al. as bullae radiologically occupying more than 30% of one or both hemithorax without compressing the surrounding lung parenchyma [5]. GBE mostly occurs due to alveolar wall destruction leading to enlargement of distal airspaces and terminal bronchioles [6]. Bullous emphysema (BE) can be caused by chronic obstructive pulmonary disease (COPD) due to tobacco smoke, alpha-1 antitrypsin deficiency [7], and rarely, due to illicit substance use. GBE due to illicit drug use usually spares the central lung parenchyma and is commonly seen in the upper lung fields and periphery [8]. Here we present a case of a young male intravenous heroin abuser who presented in our hospital with a complaint of chest pain and dyspnea found to have bilateral upper lobe bullae and right sided hydropneumothorax.

Case Report

A 20 years old male presented to us with a complaint of progressive breathlessness for 1month, right sided chest pain, and fever for 15 days. The patient was an intravenous drug abuser, chronic smoker, and chronic alcoholic for 6 years. No history of asthma, diabetes mellitus, hypertension, or tuberculosis. On examination pallor was present, no clubbing, no cyanosis, no lymphadenopathy. Spo_2 was 85% and the respiratory rate was 30/min. On auscultation bilateral decreased breath sounds in suprascapular, interscapular, infraclavicular, and mammary area

and right side intrascapular and inframammary area. Occasional Ronchi were present bilaterally along with succussion splash was present on the right side.

On laboratory investigation: hemoglobin: 9.2, total leucocyte Count: 14000 differential leucocyte count: 75, 22, 0, 3; Erythrocyte sedimentation rate: 42, liver function test and renal function test were within normal limits. HIV status was negative and anti-HCV was positive. The pleural fluid analysis showed an exudative picture with glucose 65gms, protein 3.5, and neutrophilic predominance. Gram stain culture sensitivity showed pseudomonas aeruginosa growth. Sputum for acid-fast bacilli and CBNAAT for Pulmonary TB showed a negative result. X-ray chest (Figure 1) showed right-sided hydropneumothorax, left-sided large hyperluscent area. Chest tube intubation was done in right 6th intercostal space.

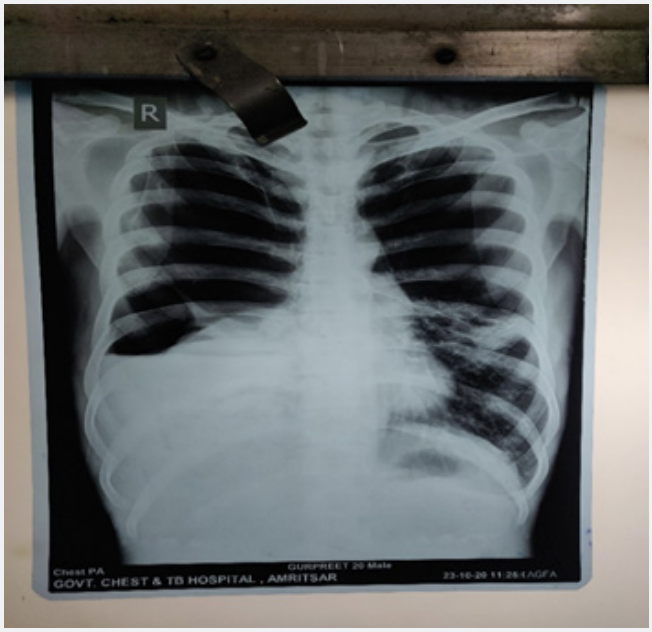

Figure 1: X-ray chest.

Figure 2: Post intubation x-ray.

How to cite this article: Amanpreet K, Amit G, Naveen P.Bullous Lung Disease in Young IV Drug Abuser: A Case Report. Int J Pul & Res Sci. 2021; 5(4): 555667. DOI: 10.19080/IJOPRS.2021.05.555667

Post intubation x-ray (Figure 2) showed right sided hydropneumothorax, with chest tube in situ, communicating with bullae on the right upper and middle zone. Left-sided large bullous lesion involving upper zone. CECT Chest (Figure 3) revealed consolidation with partial collapse of right lower lobe is seen with internal breakdown resulting in bronchiectatic and small cavitatory changes. Lung Parenchyma is distorted with the formation of large bullae in both upper lobes largest of 13x12x10cm on the right side and 12x10x7 cm left upper lobe. Mild pneumothorax is noted. Paraseptal and centriacinar emphysematous changes are seen in the remaining lung parenchyma. Multiple enlarged lymph nodes, pretracheal, paratracheal, bilateral hilar and subcarinal regions, largest measuring 12*8mm in size. Minimal right-sided pleural effusion.

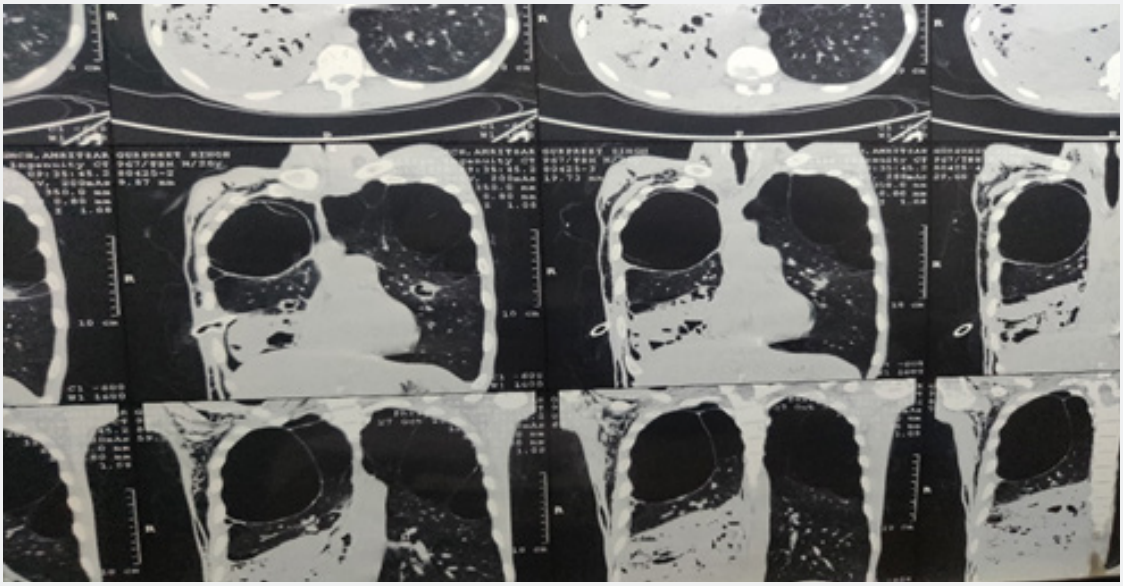

Figure 3: CECT Chest.

Alpha 1 antitrypsin level - within normal limits. The patient was diagnosed as a case of bullous lung disease due to IV drug abuse and pyopneumothorax. Chest tube drainage of pus was done and antibiotics according to culture sensitivity were given but the patient failed to improve and thus referred to the cardiothoracic surgery department for surgical management of bullae.

Discussion

The medical consequences of IV drug abuse frequently affect the lungs. The effects may be a direct effect of the drug or indirect effects owing to the method of administration or the presence of contaminants. The effects may be infectious or noninfectious in etiology and can affect the parenchyma, pleura, or mediastinum. Bullous lung disease is a rare complication of IV drug abuse. Bullae may develop from known complications of intravenous drug abuse; for example, foreign-body granulomas could produce pulmonary fibrosis and micro bullae [9]. Subsequent coalescence of these micro bullae leads to the formation of large bullae. Alternatively, septic or foreign body emboli may damage the pulmonary capillary bed to form thin-walled cavities. Repeated intravenous drug abuse would increase the numbers of these cavities, and their coalescence would result in large bullae.

Conclusion

Finding of large (bilateral) upper lobe bullous pulmonary damage in young intravenous drug user, strongly implicated drug abuse in the pathogenesis of those bullae. Whatever the explanation, this complication of intravenous injection of the drug may represent a clue to the pathogenesis of the much more common form of emphysema. Therefore, Chest physicians need to be aware of the ways in which such drug abuse results in pulmonary disease and to remember that not all drug abusers will admit to their use of drugs.

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DOI: 10.19080/IJOPRS.2021.05.555667

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