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Case Report

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HIV PATIENT AFFECTED BY CYSTIC BRONCHIECTASIS WITH SECONDARY INFECTION TO COR PULMONALE – A RARE CASE REPORT.

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ABSTRACT

Bronchiectasis is an uncommon chronic obstructive lung illness characterised by inflamed and readily collapsible airways, results in air flow blockage. Bronchiectasis is a well-known and irreversible source of chronic respiratory illness in HIV-positive children(toddlers) and adolescents. A 20-year-old female came with her follow up advice for advanced cystic bronchiectasis with cor pulmonale and also post covid sequel with severe pulmonary arterial hypertension for 1 year of regular follow-up. Her first clinical presentation was fever, cough for 1 week, and breathlessness for 3 days. Upper lobe of bilateral lungs and cardiac abnormalities were detected through high-resolution computed tomography (HRCT) and 2D echocardiography respectively. Suggestions were made to continue antibiotics, chest physiotherapy, postural drainage, continue oxygen supplementation, high protein diet, and will require antibiotic prophylaxis on discharge. This rare case report suggests the necessity of early diagnosis in adolescents with recurring respiratory symptoms, since early diagnosis is critical for early management.

KEYWORDS: Pulmonary arterial hypertension, cystic bronchiectasis, Cor pulmonale, HIV, Covid-19.

INTRODUCTION

Bronchiectasis is an uncommon infectious disorder characterized by impaired and persistent dilation of one or more conducting bronchi or airways. It is considered as chronic obstructive lung illness characterised by inflamed and readily collapsible airways, resulting in air flow blockage with shortness of breath, decreased clearance of secretions (sometimes with severe cough), and, in rare cases, hemoptysis. Severe instances can lead to gradual deterioration, including respiratory failure.[1]

Despite the fact that the number of HIV-infected children born is reducing owing to the growth of mother-to-child transmission prevention strategies, an increasing proportion of human immunodeficiency virus infected toddlers are surviving to adolescence due to the widespread use of antiretroviral medicine. Bronchiectasis is a well-known and irreversible source of chronic respiratory illness in HIV-positive children(toddlers) and adolescents. In the pre-ART era, a research from the United States found that 6% of 749 chronic human immunodeficiency virus children with no prior lung illness acquired radiographic or histologic examination confirmed bronchiectasis after an average of six years of follow-up. Pulmonary hypertension in human immunodeficiency virus infected children and young adults is uncommon.[2] Bronchiectasis is becoming more common, with current rates ranging from 53 to 566 instances per 100,000 people, depending on the demographic analysed.[3]

People who have severe bronchiectasis may experience wheezing or breathlessness. They develop to cor pulmonale or severe respiratory failure have lethargy, apathy, and increased shortness of breath, especially during exercise. An infection and inflammation can spread to the lungs' tiny alveoli, causing pneumonia, scarring, and loss of functional lung tissue. Severe fibrosis and destruction of lung tissue can eventually place a strain on the right side of the heart as it tries to pump blood through the altered lung tissue. Cor pulmonale is a kind of heart failure caused by right-sided cardiac strain.[4]

HIV is linked to a higher risk of TB as well as recurring viral and bacterial lung infections. Some data shows that HIV predisposes people to bronchiectasis even if they are not infected, most likely owing to human immunodeficiency virus-mediated impairments in innate immunity and accompanying airway neutrophilic inflammation. Bronchiectasis can also occur in teenagers as a late complication of lymphocytic interstitial

pneumonitis (LIP). Bronchiectasis causes a considerable number of serious lung difficulties, a worse health and wellbeing, and an increased chance of death.[2]

CASE REPORT

A 20-year-old female came with her follow up advice for advanced cystic bronchiectasis with cor pulmonale and also post covid sequel with severe PAH for 1 year of regular follow-up.Her first clinical presentation was fever, cough for 1 week, and breathlessness for 3 days. A chest radiograph was taken which showed bilateral bronchiectasis changes with multiple abscesses. Later she had many acute admissions related to HIV infection, breathlessness, fever, cough, which led to aggressive medical therapy. She subsequently had three admissions prior with one HRCT chest showing multiple variable sized hypodense cystic lesions in bilateral lung fields which appear to be in continuity with the bronchiectasis. Ground glass opacities in the upper lobe of bilateral lungs. Two episodes of two dimensional echocardiography (2D-Echo) showed mild mitral and severe grade II tricuspid regurgitation. There was the right atrium and right ventricular dilatation. Her ejection fraction was estimated to be 60% with severe pulmonary arterial hypertension with PASP of 72mmhg.

During the last admission for fever since 8days, cough since 10days with past medical history of HIV infection on 'TLE' regimen since 15years, cystic bronchiectasis since 10years with corpulmonale and post Covid-19 status 1year back. Respiratory system evaluation includes added sounds with occasional crepitation. The 2 dimensional echocardiography showed right atrium and right ventricle dilation, grade II tricuspid regurgitation with PASP – 108mmHg, severe pulmonary arterial hypertension, mild right ventricular dysfunction with ejection fraction of 60%. gram stain report of pus cells to epithelial cells ratio more than 2.5, few gram positive cocci in short chains seen. On day of admission patient's vitals were elevated pulse rate of 90bpm, below the normal range blood pressure of 100/60mmHg,saturation of oxygen fall to 87% on RA, and her respiratory rate of 16cpm, slightly elevated white blood cells, peripheral smear test was having impression of normocytic normochromic with neutrophilic leucocytosis.

On the day of admission the patient was on therapy of Inj. Penicillin+ Tazobactam 4.5g TID, Anti-retroviral therapy (TLE), Tab. trimethoprim OD, Inj Ranitidine 150mg BD, Tab. Acetaminophen 500mg TID, Syp. Tus Q 5 ml TID, Inj. Metrogyl 500ml TID. Patient was sent for pulmonologist advice the next day of her admission the suggestions were made to continue antibiotics, chest physiotherapy, postural drainage, continue oxygen supplementation, high protein diet, and will require antibiotic prophylaxis on discharge. She was weaned off ventilator support, fairly comfortable and hemodynamically stable on day of discharge.

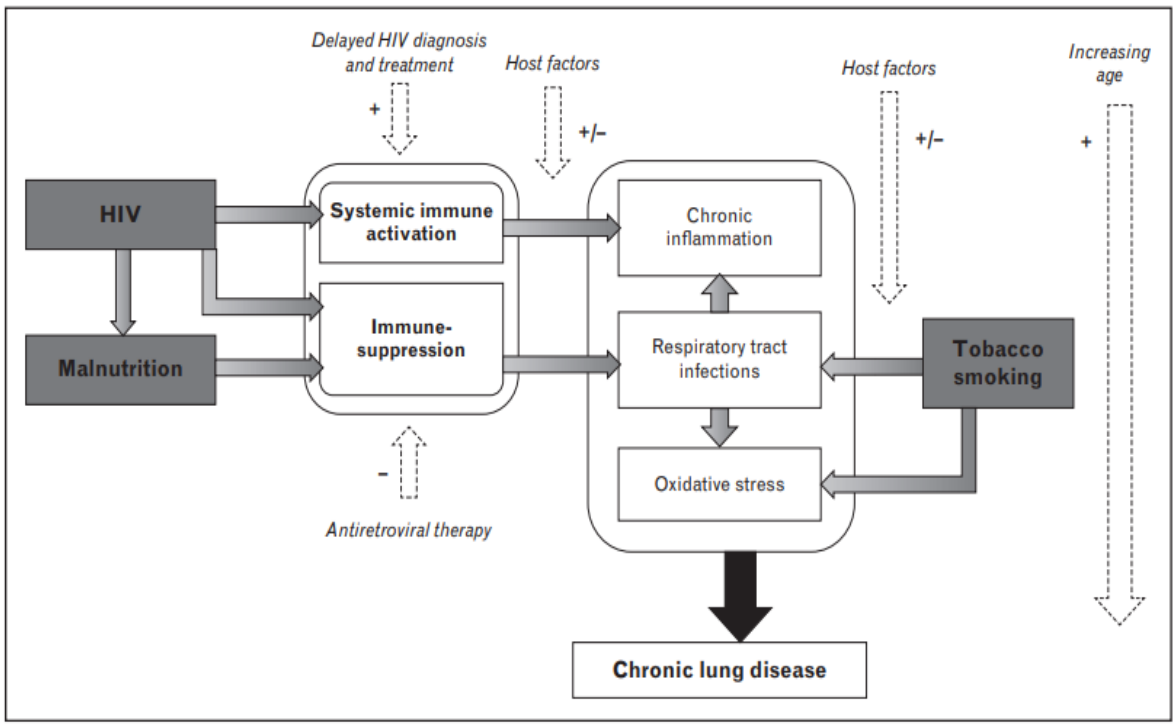

Figure 1: Etiopathogenesis of chronic respiratory disease in human immunodeficiency virus adolescents (+ (increase risk), - (decrease risk).[2]

DISCUSSION

Bronchiectasis can occur in HIV patients affected of bronchial damage caused by viruses, bacteria, pathogens, fungi, or protozoal pneumonia. This infection, in turn, would weaken local defences, allowing for further harm, and a constant cycle would emerge. The most prevalent pathogens, as with bacterial pneumonia in HIV patients,

are Haemophilus influenzae and Streptococcus pneumoniae, as well as P aeruginosa.[5]

People living with HIV (PLWH) appear to have compromised pulmonary mucosal immunity against human immunodeficiency virus and elevated levels of programmed cell death 1 (PD-1), a hallmark of immunological activity and fatigue. CD4+ T cell frequencies and absolute numbers were shown to be lower in the bronchoalveolar lavage (BAL) of PLWH with COPD.[6,7,8]

HIV infection has a significant impact on both systemic and pulmonary immunity. Despite successful ART, changes in inflammation and immunological function continue and may have an influence on the mycobiome. COPD is a significant cause of chronic respiratory impairment in human immunodeficiency virus infected individuals, and human immunodeficiency virus infection is a separate risk factor for COPD.[7]

When compared to uninfected individuals, people with pulmonary arterial hypertension (PAH) have worse survival chances. The CD4 T cells are the helper T cells count as the sole significant predictor of survival. Rather than immune-deficiency issues, pulmonary arterial hypertension accounts for almost two-thirds of all deaths.[6,8]

The chest radiography has a limited diagnostic value, a comparable clinical history should raise the possibility of additional investigation. Despite this, a chest x-ray is routinely used as the initial imaging test with a clinical suspicion of NCFB (non-cystic fibrosis bronchiectasis), and some studies suggest that it is seldom completely negative in instances with clinically relevant abnormalities.[9] In our inquiry, a radiography diagnosis of bronchiectasis in a child was made with caution because to radiological regression of lesions with multiple abscesses. Any child with a persistent wet cough that continues after 4 weeks of oral antibiotic therapy should be evaluated with high-resolution computed tomography, as per Goyal and colleagues.[10] In our study, a 9-year-old girl had HRCT, which revealed several variable-sized hypodense cystic lesions in bilateral lung fields that appear to be continuous with the bronchial lumen. Ground glass opacities in the upper lobes of both lungs.

Researchers have reached a tipping point in their studies of HIV-related lung disease, and the development of less toxic combination ART has led to more long-term and robust immune function recovery. At the moment, there is a huge knowledge gap about whether lung disease develops rapidly prior to medication or if sickness advances rapidly even when on combination ART.[6]

Chronic wet cough, like in our case, is the most common manifestation of paediatric bronchiectasis, followed by shortness of breath, a mild temperature (101°F), and a poor quality of life. Despite the fact that a chest x-ray revealed bilateral bronchiectasis alterations with several abscesses. According to van der Bruggen-Bogaarts et al.,[9], While a chest X-ray has limited diagnostic value in the absence of a sufficient clinical history and additional investigations, it can be used as the principal imaging test in the progressive accumulation of questionable patients.. As per Goyal and colleagues[10], High-resolution computed tomography (HRCT) is the standard modality for diagnosing and stratifying the severity of bronchiectasis based on the Bhalla score, which is a widely recognised score in children. In this sense, our patient showed severe illness with bilateral bronchiectatic alterations as well as several varied sized hypodense cystic lesions in bilateral lung fields that seemed to be in continuity with the bronchial lumen. Ground glass opacities in the upper lobes of both lungs. Given these circumstances, the patient was referred to a pulmonologist, who advised him to continue antibiotics, chest physiotherapy, postural drainage, oxygen supplementation, a high protein diet, and antibiotic prophylaxis upon release.

Management of Human immunodeficiency virus infection with combination ART has been associated with positive outcomes, particularly in terms of reducing infectious pulmonary consequences. HIV infection changes airway epithelial cell function by decreasing cell-cell adhesion and boosting the expression of inflammatory mediators.[1,6] Because bilateral bronchiectasis is associated with greater morbidity and mortality, we will monitor our patient with clinical assessments, chest x-rays every 3 months, and a chest CT scan every year for the next two years. Our patient's symptoms have completely gone away.

CONCLUSION

The study demonstrated the necessity for a bronchiectasis action management strategy to inform and educate parents on exacerbation management. It has emphasized the necessity of early diagnosis in adolescents with recurring respiratory symptoms, since early diagnosis is critical for early management. Neglected pediatric bronchitis has a high morbidity and death rate and should be regarded as a differential diagnosis.

Bronchiectasis can cause significant symptomatology in HIV-positive people. The frequency of chronic pulmonary illnesses in this age group is predicted to climb as more human immunodeficiency virus infected children reach adolescence. More study is vitally needed to find the most effective diagnostic and treatment options.

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Conflict of Interest
"**The authors declare no conflict of interest**."

REFERENCES

1. Francisco Talavera, Daniel R Ouellette. Bronchiectasis: Practice Essentials, Background, Pathophysiology, 2022; Emedicine.medscape.com. https://emedicine.medscape.com/article/296961-overview.
2. Attia, E., Miller, R., & Ferrand, R. Bronchiectasis and other chronic lung diseases in adolescents living with HIV. Current Opinion In Infectious Diseases, 2017; 30(1): 21-30. https://doi.org/10.1097/qco.0000000000000325
3. Contarini, M., Finch, S., Chalmers, J. Bronchiectasis: a case-based approach to investigation and management. European Respiratory Review, 2018; 27(149): 180016. https://doi.org/10.1183/16000617.0016-2018.
4. Bronchiectasis - Lung and Airway Disorders - MSD Manual Consumer Version. MSD Manual Consumer Version. 2022. Retrieved 18 March 2022, from https://www.msdmanuals.com/en-in/home/lung-and-airway-disorders/bronchiectasis-and-atelectasis/bronchiectasis.
5. Verghese A, Al-Samman M, Nabhan D, Naylor AD, Rivera M. Bacterial Bronchitis and Bronchiectasis in Human Immunodeficiency Virus Infection. Arch Intern Med, 1994; 154(18): 2086–2091. doi:10.1001/archinte.1994.00420180096011.
6. Presti R, Flores S, Palmer B, Atkinson J, Lesko C, Lau B et al. Mechanisms Underlying HIV-Associated Noninfectious Lung Disease. Chest, 2017; 152(5): 1053-1060.
7. Cui L, Lucht L, Tipton L, Rogers M, Fitch A, Kessinger C et al. Topographic Diversity of the Respiratory Tract Mycobiome and Alteration in HIV and Lung Disease. American Journal of Respiratory and Critical Care Medicine, 2015; 191(8): 932-942.
8. Veena Dronamraju, Navneet Singh, Justin Poon, et al. Assessment of Bronchiectasis in HIV Patients among an Urban Population. Case Reports in Pulmonology, 2020; 7. https://doi.org/10.1155/2020/8903809.
9. Van der Bruggen-Bogaarts, B. A., van der Bruggen, H. M., van Waes, P. F. Screening for bronchiectasis. A comparative study between chest radiography and high-resolution CT. Chest, 1996; 109(3): 608–11. https://doi.org/10.1378/chest.109.3.608.
10. Goyal, V., Grimwood, K., Marchant, J., Masters, I. B., & Chang, A. B. Does failed chronic wet cough response to antibiotics predict bronchiectasis?. Archives of disease in childhood, 2014; 99(6): 522–5. https://doi.org/10.1136/archdischild-2013-304793.