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Case Report

Bronchiectasis and Human Immunodeficiency Virus Type 2 (HIV) Incidentally Discovered in an Adolescent: A Case Report

Ali Moussa Mahaman Laouali[1]*, Maïga Soumaïla[1], Zoundi Lydia Rosine[1], Saidou Chaibou Nassirou[2], Ngo Ngue Clémence[1], Ousmane Dembelé[1], Badoum Giselle[1,3], Ouédraogo Martial[1,3] and Diallo Ismael[2,3]

[1]*Department of Pulmonology, Yalgado Ouédraogo University Hospital Center, Burkina Faso*

[2]*Department of Infectious Diseases, Yalgado Ouédraogo University Hospital Center, Burkina Faso*

[3]*Unit of Training and Research in Health Sciences (UFR-SDS), Joseph Ki Zerbo University, Ouagadougou, Burkina Faso*

***Corresponding Author:** Ali Moussa Mahaman Laouali, Pulmonology Department, Yalgado Ouédraogo University Hospital, Ouagadougou, Burkina Faso.

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Abstract

Bronchiectasis is an inflammatory process that alters the airways, specifically the diameters of the bronchi, in an irreversible manner. The diagnosis can be suspected clinically and confirmation relies on imaging. It can be responsible for significant morbidity. The etiologies are multiple, but the association of HIV-2 and bronchiectasis in an adolescent is a very rare form. We present a case of bronchiectasis and HIV-2 discovered incidentally in an adolescent. It is important for clinicians to know the diagnostic elements, its severity, and to conduct an etiological investigation as part of proper management. The management must be multidisciplinary.

Keywords: *Bronchiectasis; Human Immunodeficiency Virus (HIV); Adolescent; Burkina Faso*

Introduction

Bronchial dilation or bronchiectasis was described by Laennec in 1819 [1]. It is an inflammatory process in the airways, leading to a permanent and irreversible increase in the diameter of one or more bronchial territories located between the 4th and 8th bronchial divisions [2]. Indeed, the diagnosis can be suspected clinically, and confirmation relies on imaging; being responsible for significant morbidity, it is important to recognize it and guide the etiological diagnosis using a chest CT scan, which is the reference examination [3]. Epidemiological studies reveal that the prevalence as well as the number of hospitalizations were constantly increasing, regardless of the country's economic level [4]. This pathology can appear at any age but is often rare in children; its diagnosis is often delayed. The symptoms can go unnoticed or be confused with other respiratory diseases. The association of human immunodeficiency virus type 2 (HIV 2) and bronchiectasis in an adolescent is a rare, underestimated, and underdiagnosed form. In Burkina Faso, there is no data on bronchiectasis and HIV-2 in adolescents. It is in this context that we report a case of bronchiectasis and HIV-2 discovered incidentally in an adolescent hospitalized in the pneumology and phthisiology department of the Yalgado Ouédraogo University Hospital Center in Ouagadougou (Burkina Faso).

Observation

This was a 16-year-old adolescent, a student, non-smoker, with several consultations for a chronic pneumonia with no improvement since December 2023. Moreover, there is consanguinity among both parents, and they appear to be in good health. He was admitted to the service in April 2024 for a productive cough bringing up greenish sputum predominantly in the morning (bronchorrhea) associated with stage IV dyspnea according to the modified Medical Research Council, evolving in an acute and febrile context. The general examination upon admission revealed: a general condition stage III according to the World Health Organization. a clear consciousness with a Glasgow score of 15/15, conjunctivae and mucous membranes non-icteric, no cyanosis, no clubbing, nor edema of the lower limbs. He presented signs of respiratory distress, a systemic inflammatory response syndrome (hyperthermia at 38°C, blood pressure at 95/62 mmHg, tachycardia at 145 beats/minute, tachypnoea at 56 cycles/minute), and peripheral oxygen saturation at 94% under 4 l/min of oxygen. A bilateral pulmonary consolidation syndrome and wheezing.

The frontal chest X-ray showed a bronchial syndrome with thickening of the bronchi associated with lumens surrounded by opacities, more marked basal to the left pulmonary hemifield (Figure 1).

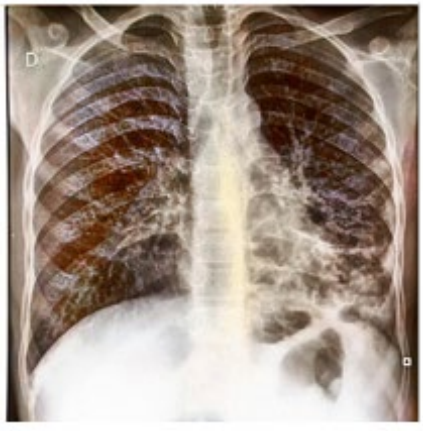

Figure 1: *Frontal chest x-ray showing lumens surrounded by opacities more marked basal to the left pulmonary hemifield.*

The chest CT scan showed areas of alveolar consolidation affecting the left upper and lower lobes, diffuse cystic dilation of the bronchi (in the middle and lower left lobes) associated with bronchial wall thickening. (Figure 2).

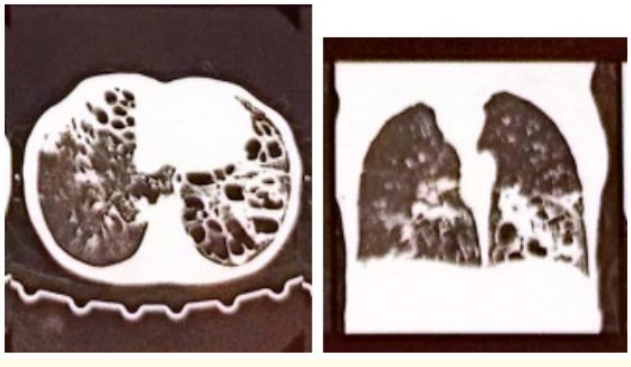

Figure 2: *Parenchymal window of the chest CT scan (Transverse and frontal sections) showing diffuse cystic dilatations of the bronchi associated with bronchial wall thickening.*

In the laboratory results, there was leukocytosis at 15,810/mm^3 with neutrophilic predominance, moderate microcytic hypochromic anaemia at 8.7 g/dl, and a normal platelet count at 381,000/mm^3. The C-reactive protein was elevated at 57.38 mg/l. The intradermal tuberculin reaction was non-reactive and the rapid diagnostic test for COVID-19 was negative. The serology for the human immunodeficiency virus (HIV) came back positive for type 2. The confirmation test WESTERN BLOT had detected the presence of anti-HIV-2 antibodies. The CD4 count was 261 cells/µl. The cystic fibrosis test was negative.

The diagnosis of bronchiectasis secondary to HIV-2 in an adolescent was made.

He received oxygen therapy via a 2 l/min nasal cannula, followed by regression, amoxicillin-clavulanic acid antibiotic therapy 1g every 8 hours, injectable corticosteroids 8 mg/24h, nebulization sessions, and respiratory physiotherapy. The progress was favourable after 7 days. He was discharged and then followed up at the day hospital for his HIV 2. An appointment for an outpatient pulmonology consultation for the follow-up of bronchiectasis.

Discussion

Bronchiectasis is an underestimated pathology in developing countries; its incidence remains largely unknown [5].

The pathophysiology involves an interaction between the host's inflammatory response, pathogens, and the environment [6]. The bronchial walls are damaged by an acute or chronic insult, leading to progressive dilation of the bronchial wall and obstruction of airflow in the bronchi [7]. This injurious process leads to an alteration of the mucociliary clearance, contributing to infection, inflammation, and damage to the bronchial wall. Unlike what is observed in adults, the lesions can be reversible in children depending on the cause, especially when they are quickly diagnosed and managed [8-10].

However, it is a rare pathology, often acquired, whose etiology is not found in 30 to 50% of cases, and is mainly observed in 75% of patients over 50 years old with a female predominance [11,12]. The diagnosis of idiopathic bronchiectasis will be made if all examinations do not reveal an etiology.

Zouiter S., *et al*. had listed several etiologies of bronchiectasis in children [5]. Boncoungou K., *et al*. found 2 cases of bronchiectasis and HIV infections [13]. Steven FJC., *et al*. had listed some risk factors for bronchiectasis, such as intravenous drug use, repeated pulmonary infections, malnutrition, and infection by the human immunodeficiency virus [14].

The diagnosis is difficult with a chest X-ray, as it overlooks early or localized forms. The classic radiographic semiology consists of rosette or rail images [3]. The thoracic CT scan remains the reference examination to this day for diagnosis and severity assessment; it plays an important role in etiological orientation. It shows the classic "ring sign" appearance [3]. It allows for the search of other signs such as bronchial wall thickening, mucoid impactions, ventilatory disorders ranging from subsegmental atelectasis to complete lobar collapse, signs of small airway involvement like mosaic perfusion and bronchiolar micronodules with or without a tree-in-bud appearance. Thus, localized and diffuse lesions are distinguished [15]. Depending on the degree, they are classified into 3 groups: cylindrical, which correspond to moderate dilation with bronchial walls remaining parallel; moniliform or varicose, which correspond to more significant and irregular dilation combining dilations and constrictions; and cystic, which correspond to the major degree of dilation [3,15]. The general treatment depends on the etiology, and it most often relies on respiratory physiotherapy and probabilistic antibiotic therapy, which is then adjusted based on the results of the antibiogram [5].

Conclusion

Bronchiectasis and HIV-2 is a rare form in an adolescent, faced with enormous diagnostic and therapeutic management difficulties. It is important for clinicians to know the diagnostic elements and its severity. The chest CT scan remains the reference examination, associated with additional tests in the context of etiological research. The management must be multidisciplinary.

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