

Idiopathic Pulmonary Fibrosis with Comorbidities at Benue State University Teaching Hospital Makurdi, Nigeria: A Report of 2 Cases with Literature Review

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ABSTRACT

Background: Idiopathic pulmonary fibrosis (IPF) is an interstitial lung disease due to extensive lung scarring with poor prognosis that is considered rare. Few cases have been reported in Nigeria. **Aim:** To present 2 cases of Idiopathic Pulmonary Fibrosis occurring with comorbidities in our center. **Method:** A review of the case folders of 2 patients who presented with chronic dry cough and breathlessness who had radiologically confirmed diagnosis of IPF. **Results:** The two patients presented with dry cough. Both had clinical and High-resolution computed tomography (HRCT) evidence of Idiopathic pulmonary fibrosis. There was delay in referral and diagnostic challenges. They also had comorbidities. Treatment was given for comorbidities but no definitive treatment was available. **Conclusion:** We reported 2 cases of radiologically confirmed Idiopathic pulmonary fibrosis who also had comorbidities. There was delay in referral to a pulmonologist and also diagnostic challenges due non-availability of the necessary diagnostic facilities. The disease may not be as rare as reported in Africa. We recommend that clinicians should be more alert to the existence of this condition and have a high index of suspicion in to be able to make early diagnosis.

Keywords: Comorbidities, Diffuse parenchymal lung disease, Idiopathic pulmonary fibrosis

INTRODUCTION

Idiopathic Pulmonary Fibrosis (IPF) is a chronic and progressive interstitial lung disease of unknown aetiology characterized by the irreversible scarring of lung tissue. [1,2] It

predominantly affects individuals FROM the age of 50 years, with a higher prevalence among the elderly. Insidious onset progressive dyspnea and dry cough which are non-specific are the main symptoms with patients succumbing within 3-5years after diagnosis. [1,3] Many potential risk factors such as age, cigarette smoking, environmental exposures, and a genetic predisposition have been identified as contributors to disease. Others include workplace exposures, such as those agriculture and construction industries. [4, 5] The disease often coexists with various comorbidities. Gastroesophageal reflux disease (GERD), cardiovascular diseases, and autoimmune disorders have been linked to which have been to its aetiology. [6, 7, 8] Previously thought to be rare, the prevalence has been shown to be on the increase worldwide. [9, 10] There is a paucity of literature in Africa where the disease still reported to be rare. [11] Only few cases have been reported in literature in Nigeria. [12, 13] We present two Nigerian females who presented with chronic dry cough and were found to have radiological evidence of idiopathic pulmonary fibrosis and with comorbidities.

CASE 1

Mrs E.R, A 69 years female Christian retiree from Makurdi, Benue state presented to the chest clinic with complaints of cough, easy fatiguability, of 2 years duration. The cough was of insidious onset but became intractable and a source of embarrassment to her in public. It was aggravated by talking, exertion, inhalation of fumes and smoke and relieved by rest. It was mostly dry with only occasional scanty, mucoid sputum. She experienced on and off nasal congestion, throat irritation but no nasal itching or sneezing. She had no haemoptysis, pleuritic chest pain, difficulty in breathing, orthopnoea, paroxysmal nocturnal dyspnoea or leg swelling although she felt easily tired on moderate exertion. There was no fever, drenching night sweats or weight loss. Review of other systems was unremarkable. She was hypertensive for 10years which was controlled with diuretics, and was not on any angiotensin converting enzyme inhibitor (ACEI). There was no previous tuberculosis treatment, asthma, or other lung disease and no occupational exposures. She did not smoke or have a family history of similar illness. Several investigations were carried out and treatments offered to her over the 2-year period without relief before her referral.

On examination she was an elderly, well preserved woman, afebrile, not pale, acyanosed, no peripheral lymphadenopathy, digital clubbing and no pedal oedema. She had engorged nasal turbinates. Her pulse rate was 64beats /minute full and regular; Blood Pressure was 130/80mmHg, JVP not elevated, and Apex beat was at 6 LICs, on MCL, non-heaving with normal S1 and S2 heart sounds. Her respiratory rate was 14cycles/minute with a centrally placed tracheal, equal chest expansion and dull percussion note in both lung bases. There were reduced breath sounds and fine end inspiratory crepitations (velcro sounds) in both lung bases. Examination of other systems was normal. Based on the clinical features, a provisional diagnosis of diffuse parenchymal lung disease, chronic sinusitis and hypertension was made. Echocardiography showed left ventricular hypertrophy with grade 1 diastolic dysfunction. The Sputum MCS yielded growth of streptococcus sensitive to ofloxacin, ceftriaxone and ceftaxidime. A High-resolution Computed Tomogram (HRCT) of her chest showed bilateral reticular, nodular and irregular densities in the sub-pleural and basal distribution. Few sub-pleural tiny cystic changes were seen on the right as well as bilateral lower lobe consolidation with air bronchogram sign, worse on the right (Figure 1,2). HRCT of paranasal sinus showed they were all well pneumatized and normal. The inferior and middle nasal turbinates were mildly engorged.



Figure 1: Coronal view of High-resolution CT scan of the chest of case 1 showing bilateral predominantly lower zone, sub pleural reticular opacities with fibrotic changes.



Figure 2: Axial view of CT scan of the chest at the level of left ventricle demonstrating similar sub-pleural reticular opacities with cystic changes.

Spirometry showed a restrictive pattern of lung disease while her SPO2 was normal on room air at 96%. (Table1)

Table1: Spirometry Result

Parameter	Predicted	Measured	% of predicted
FEV1	2.17	0.99	46
FVC	2.87	1.23	43
FEV1/FVC	76.1	80.5	106

PEF	5.5	3.50	64
F25-75	1.86	0.18	10
Quality Grade B.			
Repeatability FVC, FEV1, PEF Interpretation: Restrictive pattern			

Based on the investigation findings a diagnosis of Idiopathic pulmonary fibrosis with Chronic Rhinitis and hypertensive heart disease was made.

In consultation with the ENT surgeon, she was placed on montelukast/levocetirizine 1 tablet daily, Fluticasone nasal spray b.d and steam inhalation. Her cough and nasal congestion resolved after 4weeks of treatment. She was subsequently commenced on a course of prednisolone for her idiopathic pulmonary fibrosis which she discontinued after a month because of the severe adverse effects. On her last visit, she was stable and asymptomatic though the chest signs were still same.

CASE 2

Y M, a 49-year-old married civil servant presented to our chest clinic as referral with difficulty breathing of 6months duration which was insidious and progressed to being present at rest. There was orthopnea or paroxysmal nocturnal dyspnea as she was uncomfortable in all positions. She also reported dry cough of 5months duration which was aggravated by, fumes, smoke and dust; retrosternal chest pain and lower chest tightness, worse with coughing. There was associated generalized aches in her body and profound tiredness. No personal or family history of asthma and no previous diagnosis of tuberculosis or any other lung diseases. She was diagnosed HIV positive and placed highly active anti-retroviral therapy (HAART) since 2008. There was no smoking or any occupational exposures. Since onset of illness, she has had extensive investigations in another which excluded heart disease as the cause of her symptoms

On examination: She was a middle-aged woman, ill looking and breathless at rest with peripheral cyanosis. No pallor, icterus, finger clubbing, pedal oedema or peripheral lymphadenopathy. Her pulse rate was 120/min regular and small volume, BP-100/70mmHg. JVP was not elevated while cardiac apex was impalpable. The heart sounds-normal S1 and 22. No S3 gallop rhythm or murmurs were present. Respiratory examination -Severely dyspneic with respiratory rate of 28 cycles/min and SPO2 of 96% at rest. The chest was symmetrical with bibasilar dull percussion note. Auscultation revealed bibasilar broncho-vesicular breath sounds and fine end inspiratory crepitations in same areas. There was mild epigastric tenderness. The other systemic examinations were normal. A clinical diagnosis of diffuse parenchymal lung disease most likely Idiopathic Pulmonary Fibrosis was made.

She had High resolution computed tomogram (HRCT) of the chest which showed bilateral widespread reticular densities, with honeycombing worse in lower lobes in sub pleural and basal distribution. There were ground glass appearances and bronchiectatic changes in the lower lobes. There was mild cardiomegaly. No pleural or pericardial effusion was seen (Figures 2a, 2b, 3). Appearances were consistent with pulmonary fibrosis with usual interstitial pneumonia (idiopathic pulmonary fibrosis). An earlier search for mycobacterium tuberculosis using GeneXpert sputum analysis was negative. Electrolytes, urea and creatinine and full blood counts normal. Echocardiography and cardiac catheterization were carried out prior to her referral to the pulmonologist were normal with no evidence of pulmonary hypertension.

Spirometry was attempted unsuccessfully because of severe dyspnea. She was placed on analgesics and antacids for symptomatic relief of her pains as well as PRN oxygen. She is on follow-up follow her up in the chest clinic while arranging for procurement and commencement of Nintedanib.

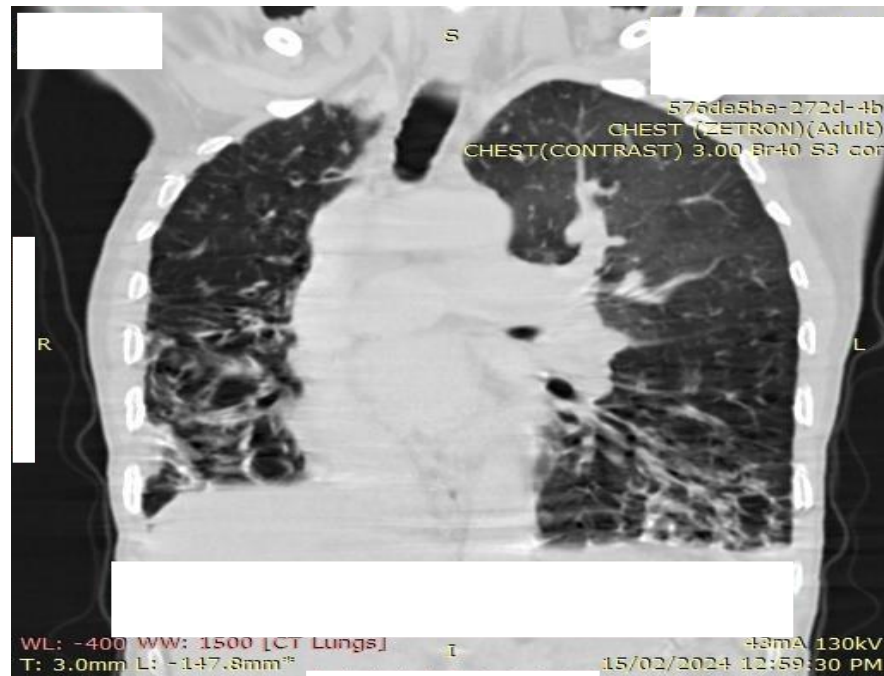


Figure 2a: Coronal view of CT scan of the chest of Case 2 showing fibro-cystic and bronchoectatic changes predominantly in the lower lung zones.

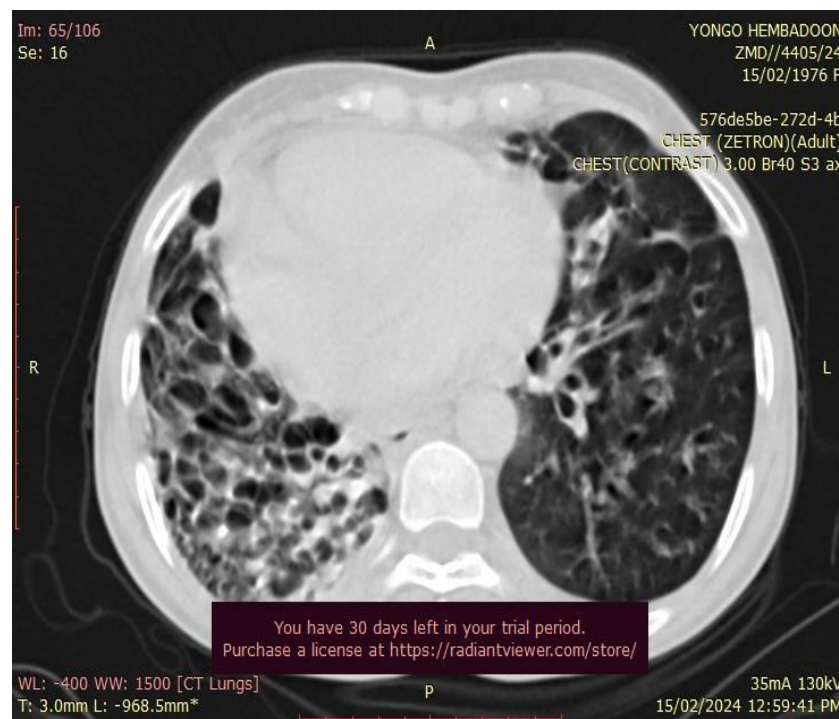


Figure 2b HRCT of case 2 showing sub pleural involvement worse on the right.

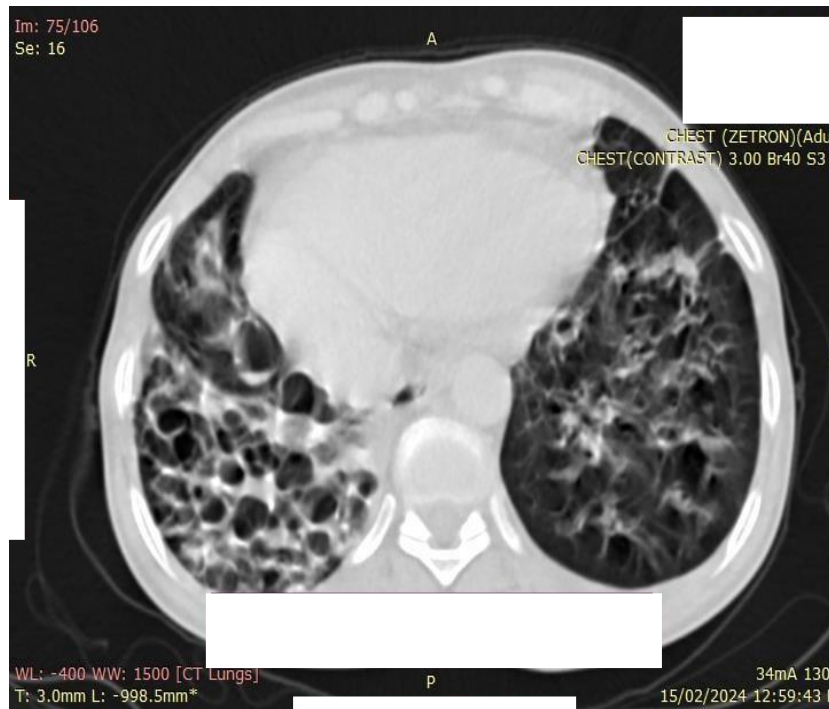


Figure 3: Axial view of the CT scan of the chest of the second patient at the level of the ventricles demonstrating similar cystic bronchiectasis, with background fibrosis.

DISCUSSION

Idiopathic pulmonary fibrosis has variable incidence and prevalence worldwide. [5] As shown in data from the United States where the prevalence was 494 cases per 100,000 in 2011 among adults over the age of 65 years, which was twice as high as the prevalence recorded 10 years earlier, prevalence of the disease is increasing. [9] However it is still rarely reported in Africa. This may be due to low level of suspicion by clinicians and paucity of diagnostic facilities. [12, 14]

The disease commonly starts from the age 50 years and increases incidence in incidence with each additional decade of life. The two cases reported here also fall near or within this age group. The clinical presentation of IPF can be diverse, often reflecting the insidious onset and gradual progression of the disease. [15] Patients commonly report a persistent, non-productive cough and progressive dyspnea. The insidious onset and non-specificity of these symptoms often leads to delayed diagnosis, as they may be initially attributed to aging or other common respiratory conditions. [3] It may also be asymptomatic and found incidentally. [16] The two cases also confirm the delay in diagnosis as it took 6months to two years to arrive at the diagnosis. The patients were subjected to several investigations and treatments for other conditions prior to their referral. The history of predominantly dry cough with no breathlessness in the index case and severe breathlessness and cough in case 2 are indicative of the varying severity of the two cardinal symptoms of the disease. Both patients had fine end inspiratory crepitations (Velcro sounds) which are an important feature [17] and informed our clinical diagnosis of IPF. Systemic hypertension and chronic rhinitis were comorbidities in case 1 where case 2 was HIV positive and on medications. The disease also shares risk factors with many other diseases and thus comorbidities are commonly found which may influence the course of the disease. [6, 7] There is no reported case of Chronic Rhinitis as a comorbidity or a

risk factor for IPF. Since no other risk factor apart from age was apparent in the index case, it is possible that persistent micro aspiration of secretions from chronic rhinitis resulted in lung injury with the chronic inflammation and fibrosis. This is similar to the hypothesis of micro aspiration used to explain association of IPF with Gastro-esophageal reflux disease. [2, 4, 7]

The diagnosis of IPF is confirmed by lung biopsy showing the “usual interstitial pneumonia” (UIP). However classical findings on HRCT along with the clinical features obviate the need for biopsy. [3, 9] The term UIP is also used to describe a high-resolution CT pattern characterized by bilateral reticulation and honeycombing that is predominantly peripheral and in the lower lobes. In our setting the availability of CT has increased but is still not adequate. Our patients had to travel 300 kilometers away to have a CT imaging. The expertise and facilities for lung biopsy are still very limited. [12] Thus our inability to make a histological diagnosis.

TREATMENT

There is no curative treatment for IPF. Steroids and the cytotoxic drug Azathioprine which were previously used have not proven useful. The antifibrotic agents, Nintedanib and Pirfenidone, have been shown to be safe and effective in the treatment of and both are recommended for use in patients affected patients. [1, 12, 18] These drugs are currently not available in our settings apart from issues of cost. Oxygen supplementation, pulmonary rehabilitation, lifestyle modification and lung transplant are options available for patients with advanced disease. [9, 19, 20] The index case responded to treatment for chronic rhinitis with to the resolution of her symptoms. This implies that her idiopathic pulmonary fibrosis is asymptomatic at present. She is currently on follow in our clinic for management of any complications that may arise. She was stable and asymptomatic at her last clinic visit 2 months ago. In the second case (case 2) supportive care in form of analgesics, rest as well as home oxygen when she became desaturated (SPO2 <88 %) was initiated. She is currently on follow up in our chest clinic where arrangements are being made to procure and commence her on one of the antifibrotic agents.

CONCLUSION

We have reported 2 cases of radiologically confirmed Idiopathic pulmonary fibrosis with comorbidities. There was delay in referral to a pulmonologist and also diagnostic challenges due non-availability of diagnostic facilities. The disease may not be as rare as reported in Africa. We recommend that clinicians should be more alert to the existence of this condition and have a high index of suspicion in to be able to make early diagnosis.

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