International Journal of Research in Medical Sciences
Shah AD et al. Int J Res Med Sci. 2023 Feb;11(2):727-729
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20230197

Case Report

Rheumatoid arthritis-associated interstitial lung disease seen in two generation of females in an Indian family

Arti D. Shah, Kaushani H. Patel, Parshwa Naik*, Chirag H. Chakravarti

Department of Respiratory Medicine, Smt. B. K. Shah Medical Institute and Research Center, Vadodara, Gujarat, India

Received: 23 December 2022
Revised: 11 January 2023
Accepted: 12 January 2023

***Correspondence:**
Dr. Parshwa Naik,
E-mail: parshwadell@gmail.com

ABSTRACT

Interstitial lung diseases **(**ILDs) or diffuse parenchymal lung diseases (DPLDs) are a group of lung diseases that is distinguished by subacute or chronic inflammation and/or fibrosis. Family history is currently being considered one of the biggest risk factors for ILD. Rheumatoid arthritis (RA) a systemic autoimmune disease has lungs as its most common extraarticular organ involved. Interstitial lung disease associated with it is one of the major causes of mortality along with severe disability. Lung involvement in RA might appear as ILD, pleural effusion, or pulmonary vasculitis. In this case report a 42-year-old female presented with complain of progressive breathlessness, dry cough, chest pain, joint pain since past 10 years. HRCT Thorax of patient suggested it to be ILD of UIP pattern with raised RF, anti CCP and positivity in ANA profile. Patient had a family history with mother being diagnosed with ILD-NSIP pattern. She was suspicioned for RA as she had complained of small joint pains and swellings and was responding well to steroids and HCQ.

Keywords: Rheumatoid factor, Usual interstitial pneumonitis, Non-specific interstitial Pneumonitis, Anti-nuclear antibody, Diffuse parenchymal lung diseases

INTRODUCTION

Rheumatoid arthritis (RA), a systemic autoimmune inflammatory disease has a frequency of 0.75% in India, which translates to around seven million individuals in India.[1] The most prevalent extraarticular complicity of RA is lung disease affecting up to 60% of RA patients over their clinical course.[2] It can affect the lung in various ways, manifesting as interstitial lung diseases or rheumatoid nodules by affecting the parenchyma, involving the pleura as pleural effusions or pleural inflammation, the small and larger airways manifesting as cricoarytenoiditis, constrictive or follicular bronchiolitis and bronchiectasis, and the pulmonary vasculature as pulmonary hypertension.[3] Lung illnesses linked with it account for approximately 10-20% of all fatalities associated with it.[4] Diffuse parenchymal lung disorders are the leading cause of death among RA patients, accounting for a mortality rate that is around 13% higher than in the general population, with those with DPLD having a threefold higher risk of death than those without.[5]

CASE REPORT

A 42-year-old nonsmoker female from Indian rural area presented to our OPD with complains non resolving dry cough for 4 years, progressive breathlessness for 3 years, chest pain for 3 years and complains of multiple upper and lower limb small joint pains with stiffness (Figure 1) since last 10 years.

All the complaints had increased in intensity in the last 2 months. Patient had past history of visit to family physician 3 years back and was started on empirical ATT

which she took for 6 months but the symptoms weren't relieved.

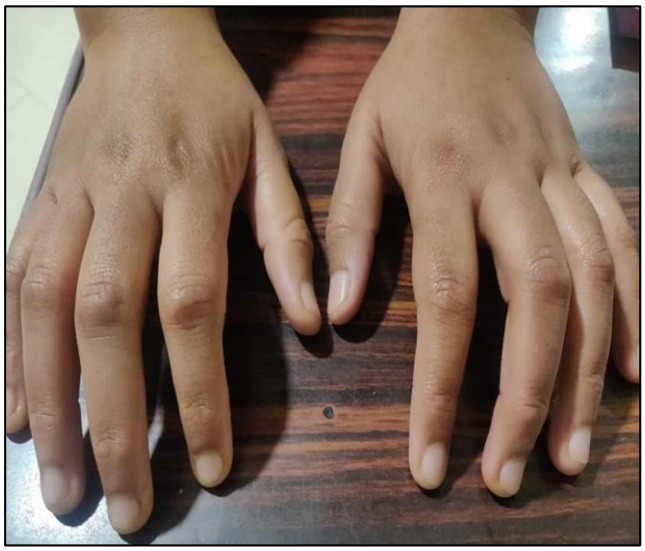

Figure 1: Stiffness of proximal and distal interphalangeal joint.

Patient had a family history with mother being diagnosed as a case of ILD- NSIP pattern in the fifth decade of her life. Her mother was suspicioned for RA as she had complained of small joint pains and was treated with steroids and HCQ to which she was responding well but later succumbed to death with advancement of diseases.

Patient's blood reports, spirometry, 2D echo and HRCT Thorax were done. Patient's blood reports came to be raised RF factor and anti CCP, with positive ANA profile for PM-Scl. 2D-ECHO showed LVEF of 45-50% with no PAH. Spirometry suggested restrictive pattern in lung function and HRCT thorax suggested ILD of UIP pattern (Figure 2).

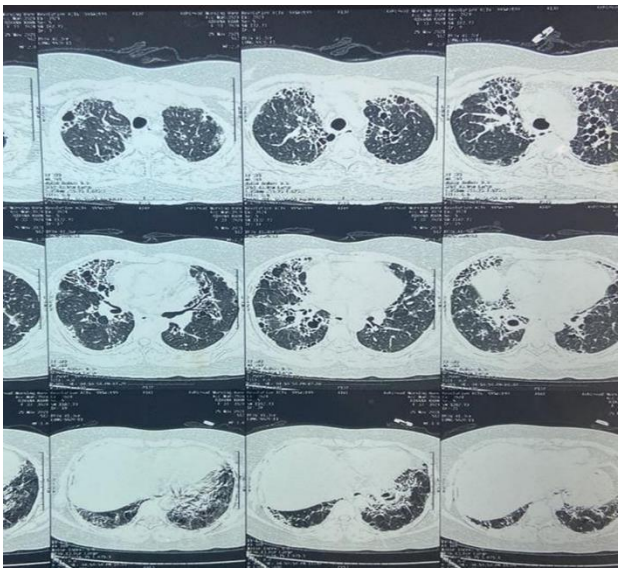

Figure 2: HRCT thorax of ILD-UIP pattern.

Rheumatologist opinion was taken and patient was started with tab. leflunomide, Tab HCQ and steroids. Patient was also started with Antifibrotics and Inhalers for ILD to which she is responding well. Patient was advised strict follow up and 6 monthly screening with HRCT Thorax.

As patient and her mother both had the same diseases course, it became our prime thought to look for the early signs of rheumatism in patient's only daughter. Patient's daughter being in second decade of her life also had complains of small joint pain and dry cough. She was screened with blood reports, spirometry and HRCT Thorax which came out to be normal with only spirometry showing early restrictive changes of lung function. She was treated symptomatically with anti-inflammatory by rheumatologist. She was counselled for regular follow and screening. Genetic sequencing to know the gene associated with the inheritance suspected was planned but wasn't being able to done due its low availability and higher cost. Patient being conscious, cooperative and well oriented to time, place and person gave us a consent to publish about her and her family's ailment.

DISCUSSION

DPLDsare the most prevalent pneumonic association with RA, being observed in up to 60% of patients with it on high resolution computed tomography (HRCT), of which around 10% are clinically significant, and so is a main cause of ailment and demise in individuals with RA.[6] Cavagna et al revealed that, whereas RA is more frequent in women, RA-ILD is more common in men, with a male-to-female ratio as high as 2:1 in some studies.[7] In our case report, however, we discovered that the RA-ILD was related with females.

In research conducted by Saag et al they discovered strong evidence suggesting cigarette smoking as a risk factor for the development of seropositive RA as well as RA-ILD.[8] In our situation, the females had no smoking history (either active or passive).

Bendstrup et al discovered that all forms of interstitial pneumonia can occur with RA-ILD, with UIP Pattern being the most prevalent presentation.[9] In our circumstance, the female likewise developed ILD of the UIP pattern.

Research of 101 consecutive independent RA-ILD patients found that the average age of RA outset was 53.54+15.40 years, the mean age of RA-ILD outset was 61.42+11.81 years, and the average duration of rheumatism before ILD detection was 7.93+10.83 years.[10]

Prior findings revealed compliance rates of 15-30% in monozygotic twins and 4% in dizygotic twins in twin studies investigating the genetic contribution of RA-ILD. Hereditary factors, particularly in the class II major

histocompatibility complex [MHC] area, can increase the risk of RA by up to 50%. The Human leucocyte antigen presentation (HLA)-DRB1 allele, which is involved in MHC molecule-based antigen presentation and is also responsible for self-peptide selection and T-cell repertoire, is the most significant genetic risk factor discovered to date and has been confirmed in patients with RA or anti-citrullinated protein antibody (ACPA).[11]

Numerous genetic studies have identified SNPs linked to an increased risk of pulmonary fibrosis, including parallels between familial pulmonary fibrosis (IPF) and other fibrotic ILDs including RA-ILD.[12] The most powerful heritable risk factor for IPF is the MUC5B promoter variant, which is associatedwith airway clearance and bacterial host defense and also prevalent in at least 50% of RA-ILD patients. MUC5B mutations have been associated to RA-ILD (particularly typical interstitial pneumonia (UIP) and fibrotic hypersensitivity pneumonitis) (HP).[13] Furthermore, using whole exome sequencing, research showed people with RA-ILD had asuperabundance of mutations in genes formerly associated with familial pulmonary fibrosis, such as TERT, RTEL1, PARN, and SFTPC.[14]

CONCLUSION

Family screening should be considered in a case of RA-ILD for early diagnosis and preventing morbidity and mortality associated with RA-ILD.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Malaviya AN, Kapoor SK, Singh RR, Kumar A, Pande I. Prevalence of rheumatoid arthritis in the adult Indian population. Rheumatol Int. 1993;13(4):131-4.
2. Wilsher M, Voight L, Milne D. Prevalence of airway and parenchymal abnormalities in newly diagnosed rheumatoid arthritis. Respir Med. 2012;106:1441-6.
3. Perez T, Remy-Jardin M, Cortet B. Airways involvement in rheumatoid arthritis: clinical, functional, and HRCT findings. Am J Respir Crit Care Med. 1998;157:1658-65.
4. Turesson C, Jacobsson L, Bergstrom U. Extra-articular rheumatoid arthritis: prevalence and mortality. Rheumatology. 1999;38:668-74.
5. Bongartz T, Nannini C, Medina-Velasquez YF. Incidence and mortality of interstitial lung disease in rheumatoid arthritis: a population-based study. Arthritis Rheum. 2010;62:1583-91.
6. Hyldgaard C, Hilberg O, Pedersen AB. A population-based cohort study of rheumatoid arthritis-associated interstitial lung disease: comorbidity and mortality. Ann Rheum Dis. 2017;76:1700-6.
7. Cavagna L, Monti S, Grosso V. The multifaceted aspects of interstitial lung disease in rheumatoid arthritis. BioMed Res Int. 2013;2013:759760.
8. Saag KG, Cerhan JR, Kolluri S. Cigarette smoking and rheumatoid arthritis severity. Ann Rheum Dis 1997;56:463-9.
9. Bendstrup E, Møller J, Kronborg-White S. Interstitial lung disease in rheumatoid arthritis remains a challenge for clinicians. J Clin Med. 2019;8:2038.
10. Juge PA, Borie R, Kannengiesser C, Gazal S, Revy P, Wemeau-Stervinou L et al. Shared genetic predisposition in rheumatoid arthritis-interstitial lung disease and familial pulmonary fibrosis. Eur Respir J. 2017;49(5):1602314.
11. MacGregor AJ, Snieder H, Rigby AS. Characterizing the quantitative genetic contribution to rheumatoid arthritis using data from twins. Arthritis Rheum. 2000;43:30-7.
12. Wijsenbeek M, Cottin V. Spectrum of fibrotic lung diseases. N Engl J Med. 2020;383:958-68.
13. Juge PA, Lee JS, Ebstein E. MUC5B promoter variant and rheumatoid arthritis with interstitial lung disease. N Engl J Med. 2018;379:2209-19
14. Gazal S, Sacre K, Allanore Y. Identification of secreted phosphoprotein 1 gene as a new rheumatoid arthritis susceptibility gene. Ann Rheum Dis. 2015;74:e19.

Cite this article as: Shah AD, Patel KH, Naik P, Chakravarti CH. Rheumatoid arthritis-associated interstitial lung disease seen in two generation of females in an Indian family. Int J Res Med Sci 2023;11:727-9.