CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
http://doi.org/10.5281/zenodo.3840119

Available online at: http://www.iajps.com Research Article

STUDY TO DETERMINE THE PULMONARY FUNCTION TESTS IN PATIENTS WITH LUNG DISEASE AND ASYMPTOMATIC RHEUMATOID ARTHRITIS

Dr. Hafiz Muhammad Hamza Tahir Saleemi[1], Dr. Muhammad Waqas Raza[2], Dr. Aina Tariq[3]

[1,2,3] Bahawal Victoria Hospital, Bahawalpur

Article Received: March 2020 **Accepted:** April 2020 **Published:** May 2020

Abstract:

Background: *Extra-articular findings common in patients with rheumatoid arthritis. Lung disease is the second most common cause of death in patients with rheumatoid arthritis after infection. Patients with rheumatoid arthritis have a great lack of knowledge and awareness about rheumatoid lung disease.*

Aim: *To compare pulmonary function tests in patients with asymptomatic rheumatoid lung disease and pulmonary function tests in healthy subjects.*

Study Design: *A cross-sectional analytical study.*

Location and duration of the study: *In the Medicine department of Bahawal Victoria Hospital, Bahawalpur for one-year duration from March 2019 to March 2020.*

Methods: *Pulmonary function test of 60 rheumatoid arthritis and 60 age, sex and BMI matched healthy individuals, having no pulmonary signs, symptoms or disease were compared. The data obtained was analyzed by using SPSS version 18.0.*

Results: *FEV1in RA [84.50 (77.0-92%)] was significantly lower than in healthy subjects (p = <0.0001) [96.0 (96.0-97%)]. The FVC percentage [85.0 (77.0–93.50)] was significantly lower in RA patients than in healthy subjects (p = <0.0001) [98.0 (96.25-99%)]. There was a significant difference in the FEV1: FVC ratio [85.15 (78.6-88.5)] in RA patients and healthy people (p = 0.020) [84.0 (83.0-88.95)].*

Conclusion: *Spirometry (lung function test) is a cost-effective test for detecting an early decline in lung function in patients with asymptomatic rheumatoid lung disease.*

Key words: *rheumatoid arthritis, rheumatoid lung disease, lung function test.*

Corresponding author:

Dr. Hafiz Muhammad Hamza Tahir Saleemi,

Bahawal Victoria Hospital, Bahawalpur

QR code

Please cite this article in press Hafiz Muhammad Hamza Tahir Saleemi et al, ***Study To Determine The Pulmonary Function Tests In Patients With Lung Disease And Asymptomatic Rheumatoid Arthritis.,*** *Indo Am. J. P. Sci, 2020; 07(05).*

INTRODUCTION:

Rheumatoid arthritis (RA) is a systemic disease diagnosed by continuous two-stage arthritis with synovial hyperplasia, which causes progressive joint destruction if it continues. The incidence of RA in the general world population is between 0.5% and 2%. Joint symptoms are common in patients with rheumatoid arthritis[1-2]. Lung disease is the second most common cause of death in patients with rheumatoid arthritis after infection. The first clinical report of pulmonary involvement in rheumatoid arthritis was published by Ellman and Ball (1948), describing three patients with polyarthritis and interstitial pneumonitis[-3-4]. Caplan described the classic observation of rheumatoid nodules on the chest radiographs of miners with rheumatoid arthritis[5-6]. The first case of rheumatoid lung disease Cudkowicz et al. They were described by, described not only the clinical picture, but also Spiro metric and histological results. Rheumatoid arthritis is often associated with lung involvement, while interstitial lung disease, rheumatoid nodules and pleural effusion are the most common symptoms, while obliterans bronchiolitis and crico-arytenoid arthritis are less common[5-6]. Interstitial fibrosis and respiratory diseases are detected in approximately 25% to 75% of patients[7]. It has been shown that there is a real negative clinical effect between rheumatoid arthritis and other pulmonary symptoms of rheumatoid arthritis (RA-ILD). The main objective of the study was to evaluate pulmonary function test results in patients with asymptomatic rheumatoid lung disease and to compare lung function in patients with asymptomatic rheumatoid lung disease and healthy people.

SUBJECTS AND METHODS:

This study is a comparative cross-sectional study conducted in the Medicine department of Bahawal Victoria Hospital, Bahawalpur for one year duration from March 2019 to March 2020. Sixty known patients with rheumatoid arthritis meeting the American College of Rheumatology criteria for RA8, aged 20-60 with no pulmonary symptoms, were taken from the Medicine department. A targeted sampling technique was used to recruit volunteers for the study. The control group consisted of sixty (60) healthy people of similar age, sex and BMI values.

Exclusion criteria: people with the following conditions were excluded: systemic lung disorders, smokers and former smokers, patients with abnormalities of the chest wall and spine, obesity, BMI> 30 kg / m2, other rheumatic diseases, and any disease hearts. Informed written consent was obtained from each study participant. Complete demographic information, history, physical and systemic examination. Height, weight and BMI were calculated, and data was recorded in a pre-designed data form. . Blood samples were collected using aseptic technique.

Spirometry (lung function test): Lung function was assessed by spirometry. A spirogram was obtained from all participants according to the American Thoracic Society (ATS) criteria. A spirometer was used to measure the flow in this study (Spirolab II, two-way digital turbine; MIR srl, Rome, Italy). Spirometry data: The measurements used in the data analysis are FVC% (2) FEV1% and (3) the ratio FEV1: FVC. FVC and FEV1 are reported as volume measured in liters and as a percentage of the predicted or reference value for a given person for that age, height, sex and ethnicity. FEV1: FVC was calculated from the volume measured in liters and then taken to a percentage. Data were entered and analyzed using SPSS 18.0. Data are expressed as the mean ± SD for normally distributed quantitative variables and the median (IQR) for normally distributed quantitative variables. Frequencies, percentages or charts are given for categorical variables. Data is usually not broken down for quantitative variables, therefore nonparametric statistics, i.e. the Mann-Whitney U test, were used. A p value <0.05 was considered statistically significant.

RESULTS:

The study included one hundred twenty (120) patients, 60 of whom were rheumatoid arthritis and 60 healthy people of the same age and same sex. There were 51 women and 9 men in the RA group, 51 women and 9 men in the healthy group. The mean ± SD age in the RA group was 41.45 + 10.58 years, while the mean ± SD age in the healthy group was 43.38 + 7.36 years. The median duration of illness for RA patients is 5.50 (4-8) years. While 32 (53.33%) patients had RA positive, 28 (46.66%) had RA negative. While 10 (16.66%) patients had a positive family history in RA, 50 (83.33%) had no family history in RA. While 17 (28.33%) had information about RA, only 03 (5%) patients had information about extra-articular symptoms of RA. Median FEV1 was 84.50% (77.0-92.0%), median FVC 85% (77.0-93.50%), median FEV1: FVC 85 (78.67-88.51) (Table 1).

Table: 1. Data of the rheumatoid arthritis group.

Variables	Median (IQR)
FEV1%	84.50(77-92%)
FVC%	85(77-93.50%)
FEVI: FVC	85.15(78.6-88.5%)
RA factor positive	32(53.33%)
Disease duration (years)	7.33±12.0
Positive family history	10(16.66%)
Knowledge about RA	17(28.33%)
Knowledge about extra articular manifestations of RA	3(5%)

While 3 people in the healthy group had a positive RA factor, 57 people had a negative RA factor. While the family history of 2 people was RA positive, 58 had no RA family history. Median FEV1 was 96.0% (96.0-97.0), median FVC 98% (96.25-99%), median FEV1: FVC 84 (81.0-87.7). FEV1 RA patients [84.50 (77.0-92%)] was significantly lower than in healthy subjects (p = 0.001) [96.0 (96.0-97%)]. RA patients had significantly lower CVF [85.0 (77.0–93.50)] than healthy subjects (p = 0.001) [98.0 (96.25–99)]. There was a significant difference in the FEV1: FVC ratio [85.15 (78.6-88.5)] in RA patients and healthy people (p = 0.020) [84.0 (83.0-88.95)] (Table 2).

Table 2: Comparison of pulmonary functions in study groups.

	Rheumatoid arthritis	Healthy individuals	p- value
FEV1%	84.50(77.0-92.0)	96.0(96.0-97.0)	0.001*
FVC%	85.00(77-93.5)	98(96.25-99)	0.001*
FEV1: FVC ratio	85.15(78.6-88.5)	84.0(83.0-88.95)	0.020*

DISCUSSION:

Early diagnosis of lung involvement is very important in RA because respiratory involvement is the second most common cause of death in RA patients. Doctors and rheumatologists cannot routinely solicit lung involvement or deterioration if there are no cost-effective and time-saving detection tools. This study showed that PFT can exclude reduced lung function in RA patients and identify patients who will receive additional treatment. A significant decrease in% FEV1 and FVC% was observed in RA patients compared to healthy subjects[9-10]. These results were available in patients with RA without symptoms and symptoms in the lungs. Therefore, he showed early lung dysfunction in patients with asymptomatic rheumatoid lung disease. Clinically, many studies have been conducted on international preclinical rheumatoid lung disease, but most studies do not concern spirometry detection, but HRH lung rheumatoid disease detection. Gochuicoet and Karazincir et al. Preclinical reduction of lung function has been reported in patients with rheumatoid disease[11-12]. They noticed the same results comparable with our results, i.e. Lower FEV1 and FVC%. Other researchers observed similar results in RA patients, but selected all RA patients regardless of their symptoms and symptoms in the lungs. Banks et al. found a significant decrease in FEV1 and FVC% in RA patients with normal FEV1: FVC. Mohd Noor et al. Reported FEV1 (85.8%) and FVC (83.4%). Sheianovet observed a decrease in both FEV1 (83%) and FVC (78.7%). Pappas et al. FEV1 (85%) and FVC (71%) were found in patients with RA. In a retrospective study by Bongartzet al, a reduction in FEV1 and FVC in RA patients was demonstrated with a greater reduction in FVC%. Bilgiciet and Habibet et al. found that RA patients had obstructive, restrictive and mixed lung involvement. A prospective study by Linstowet al reported a progressive decline in lung function for eight years. Cortetet et al. observed in their study a significant decrease in FEV1% compared to% FVC. Zrouret al showed a reduction in both FEV1 and FVC% in RA patients. Avon et al. In the 5-year prospective study that occurred, a significant reduction in lung function was observed, and slight airway obstruction and a restrictive model were observed among RA patients[13]. Cortetet showed an obstructive pattern in RA patients, FEV1: FVC was 78.9%. Pérez et al. A Collins et al. A decrease in FEV1: FVC has been reported in RA patients, which showed an obstructive pattern of lung involvement[14]. These results were higher than FEV1 values in healthy patients: the FVC index contradicted our results and observed a restrictive model in our RA patients. Pappas et al. similar results were observed, 85%. Similarly, in the prospective study of Hyland et al., A restrictive pattern was observed in 155 RA patients compared to 95 controls. Our study shows that primary disease (RA), which affects lung function in RA patients, does not last long; it is an aggression of rheumatoid arthritis affecting lung function in patients with rheumatoid arthritis. It was observed that only 17 (28.33%) patients with RA know their disease well (diagnosis, treatment and

prognosis). This clearly shows the lack of awareness among our patients about their long-term illness. Similarly, only 03 (05%) patients with RA had satisfactory information when asked for extra-RA results[15]. This suggests a lack of awareness of extra-articular symptoms that may affect our RA patients in their future lives, including lung involvement, and have high morbidity and mortality.

CONCLUSION:

Pulmonary function early decreases in patients with rheumatoid arthritis, even without pulmonary signs and symptoms. The detection of early rheumatoid lung disease can be done using spirometry, which is a cost-effective test and can be performed in routine clinical applications.

REFERENCES:

1. Shao, X., Hudson, M., Colmegna, I., Greenwood, C.M., Fritzler, M.J., Awadalla, P., Pastinen, T. and Bernatsky, S., 2019. Rheumatoid arthritis-relevant DNA methylation changes identified in ACPA-positive asymptomatic individuals using methylome capture sequencing. *Clinical epigenetics*, *11*(1), p.110.
2. Matsuda, S., Yoshida, S., Takeuchi, T., Fujiki, Y., Yoshikawa, A. and Makino, S., 2019. Asymptomatic rheumatoid meningitis revealed by magnetic resonance imaging, followed by systemic rheumatic vasculitis: A case report and a review of the literature. *Modern rheumatology*, *29*(2), pp.370-376.
3. Hansen, P.R., Feineis, M. and Abdulla, J., 2019. Rheumatoid arthritis patients have higher prevalence and burden of asymptomatic coronary artery disease assessed by coronary computed tomography: A systematic literature review and meta-analysis. *European journal of internal medicine*, *62*, pp.72-79.
4. Cioffi, G., Giollo, A., Orsolini, G., Idolazzi, L., Carletto, A., Ognibeni, F., Dalbeni, A., Gatti, D., Rossini, M. and Viapiana, O., 2019. Incidence and predictors of adverse clinical events in patients with rheumatoid arthritis and asymptomatic left ventricular systolic dysfunction. *Clinical and experimental rheumatology*.
5. Abdelrahman, F.I., Mortada, M.A. and Abdul-Sattar, A., 2019. AB1113 RELATION BETWEEN RESTRICTIVE PULMONARY FUNCTION TESTS AND ULTRASONOGRAPHIC CHANGES OF ASYMPTOMATIC ANTERIOR CHEST WALL JOINTS IN RHEUMATOID ARTHRITISPATIENTS.
6. Mardanshahi, Z., Mardanshahi, A., Amiri, A.H., Khademloo, M., Tayebi, M., Nattaj, A.G. and Jamshidi, H., 2020. Investigating the relationship between carotid intima-media thickness, flow-mediated dilatation in brachial artery and nuclear heart scan in patients with rheumatoid arthritis for evaluation of asymptomatic cardiac ischemia and atherosclerotic changes. *Nuclear Medicine Review*, *23*(1), pp.25-31.
7. Cavazzana, I., Vizzardi, E. and Franceschini, F., 2019. Diastolic dysfunction in rheumatoid arthritis: a usual travel-mate?. *Monaldi Archives for Chest Disease*, *89*(3).
8. Krajnc, M.K., Hojs, R., Holc, I. and Pahor, A., 2019. FRI0053 ACCELERATED ATHEROSCLEROSIS IN PREMENOPAUSAL WOMEN WITH RHEUMATOID ARTHRITIS (15 YEARS PROSPECTIVE STUDY).
9. de la Rosa, I.A., Torres-Granados, C., Perez-Sanchez, C., del Carmen Abalos-Aguilera, M., Patiño-Trives, A., Luque-Tevar, M., Ibañez-Costa, A., Castro, R.O., Gutierrez, J.C., Estevez, E.C. and Contreras, A.E., 2019. SAT0036 IMPACT OF RHEUMATOID ARTHRITIS IN LIVER DAMAGE. INVOLVEMENT OF ANTI-CITRULLINATED PROTEIN ANTIBODIES.
10. Shobayo, A., Nwanyanwu, C. and Chapnick, E., 2019. Pneumocystis pneumonia in a treatment-naive rheumatoid arthritis patient. *IDCases*, *18*, p.e00647.
11. Drosos, A.A., Pelechas, E. and Voulgari, P.V., 2020. Radiological Findings of the Cervical Spine in Rheumatoid Arthritis: What a Rheumatologist Should Know. *Current Rheumatology Reports*, *22*(6), pp.19-19.
12. Dong, H., Julien, P.J., Demoruelle, M.K., Deane, K.D. and Weisman, M.H., 2019. Interstitial lung abnormalities in patients with early rheumatoid arthritis: A pilot study evaluating prevalence and progression. *European journal of rheumatology*, *6*(4), p.193.
13. Falahee, M., Finckh, A., Raza, K. and Harrison, M., 2019. Preferences of patients and at-risk individuals for preventive approaches to rheumatoid arthritis. *Clinical therapeutics*, *41*(7), pp.1346-1354.
14. Koslow, M., Young, J.R., Eunhee, S.Y., Baqir, M., Decker, P.A., Johnson, G.B. and Ryu, J.H., 2019. Rheumatoid pulmonary nodules: clinical and imaging features compared with malignancy. *European radiology*, *29*(4), pp.1684-1692.
15. Koslow, M., Young, J.R., Eunhee, S.Y., Baqir, M., Decker, P.A., Johnson, G.B. and Ryu, J.H., 2019. Rheumatoid pulmonary nodules: clinical and imaging features compared with malignancy. *European radiology*, *29*(4), pp.1684-1692.