

# The Prevalence Of Pulmonary And Cutaneous Manifestations In Connective Tissue Diseases: A Cross-Sectional Study

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## Abstract

**Background:** Connective tissue diseases (CTDs) are a group of disorders that affect the body's connective tissues, including the skin, joints, and internal organs. Pulmonary and cutaneous manifestations are common in CTDs. The aim of this study was to determine the prevalence of pulmonary and cutaneous manifestations in CTDs.

**Methods:** This cross-sectional study was conducted at the Pakistan Institute of Medical Sciences, Islamabad, Pakistan, between Jan 2022 to Jan 2023. A total of 100 patients with CTDs were included in the study. Data regarding sociodemographic characteristics, clinical manifestations, laboratory investigations, and chest radiography findings were collected.

**Results:** The overall mean age of the patients was  $42.4 \pm 14.3$  years. The most common CTD was systemic lupus erythematosus (SLE), followed by rheumatoid arthritis (RA). The most common pulmonary manifestation was dyspnea (54%), followed by pleuritic chest pain (50%). The most common cutaneous manifestation was discoid rash (68%), followed by photosensitivity (47%).

**Conclusions:** Pulmonary and cutaneous manifestations are common in CTDs. Early diagnosis and timely management are essential to prevent the progression

**Keywords:** Connective tissue diseases, pulmonary, cutaneous, manifestations, prevalence

## Introduction

Connective tissue diseases (CTDs) are a group of disorders that affect the body's connective tissues, including the skin, joints, and internal organs<sup>1</sup>. CTDs are characterized by inflammation, organ damage, and immune system dysregulation. CTDs are a heterogeneous group of disorders, with systemic lupus erythematosus (SLE) being the most common. Other CTDs include rheumatoid arthritis (RA), polymyositis, dermatomyositis, and scleroderma. Pulmonary and cutaneous manifestations are common in CTDs. Pulmonary manifestations include dyspnea, pleuritic chest pain, pleural effusions, and pneumonitis. Cutaneous manifestations include discoid rash, photosensitivity, malar rash, alopecia, and ulcers<sup>2</sup>. Early diagnosis and treatment of CTDs is essential to prevent the progression of the disease and its associated complications<sup>3</sup>. The aim of this study was to determine the prevalence of pulmonary and cutaneous manifestations in CTDs. The study was conducted at the Pakistan Institute of Medical Sciences, Islamabad, Pakistan,

between October 2017 and October 2018. This was a cross-sectional study, and data regarding sociodemographic characteristics, clinical manifestations, laboratory investigations, and chest radiography findings were collected<sup>4</sup>.

## Materials and methods

This cross-sectional study was conducted at the Pakistan Institute of Medical Sciences, Islamabad, Pakistan, between Jan 2022 to Jan 2023. Patients with confirmed CTDs were included in the study. Patients with any other systemic illnesses or those who were pregnant were excluded. A total of 100 patients with CTDs were included in the study.

## Data collection

Data regarding sociodemographic characteristics, clinical manifestations, laboratory investigations, and chest radiography findings were collected. Clinical manifestations included pulmonary and cutaneous manifestations. Laboratory investigations included serum antinuclear antibody (ANA) titers, antineutrophil cytoplasmic antibody (ANCA) titers, and erythrocyte sedimentation rate (ESR). Chest radiography was performed to detect any pulmonary manifestations.

## Statistical analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 20. Descriptive statistics were used to describe the data. Categorical variables were expressed as counts and percentages and continuous variables were expressed as means and standard deviations.

## Results

The overall mean age of the patients was  $42.4 \pm 14.3$  years (range 18-75 years). Of the 100 patients, 76 (76%) were female and 24 (24%) were male. The most common CTD was SLE ( $n = 63$ , 63%), followed by RA ( $n = 18$ , 18%). The most common pulmonary manifestation was dyspnea (54%,  $n = 54$ ), followed by pleuritic chest pain (50%,  $n = 50$ ). The most common cutaneous manifestation was discoid rash (68%,  $n = 68$ ), followed by photosensitivity (47%,  $n = 47$ ). The mean ANA titers were  $1:320 \pm 1:640$  (range 1:40-1:1280) and the mean ESR was  $44.8 \pm 22.9$  mm/h (range 4-108 mm/h). Chest radiography showed pulmonary infiltrates in 20 (20%) patients.

Table 1 Demographics Age Wise

Age Group	Number of Patients	Percentage
18-25	8	8%
26-35	35	35%
36-45	27	27%
46-55	17	17%
56-65	13	13%

Table 2 Clinical manifestations

Clinical Manifestations	Number	Percentage
Dyspnea	54	54%
Pleuritic chest pain	50	50%
Discoid rash	68	68%
Photosensitivity	47	47%
Malar rash	23	23%
Alopecia	13	13%
Ulcers	5	5%

Table 3 Laboratory Findings

Laboratory Investigations	Number	Percentage
ANA titer >1:80	88	88%
ANCA titer >1:20	14	14%
ESR >20mm/h	56	56%

Table 4 Chest Radiography Findings

Chest Radiography	Number	Percentage
Pulmonary infiltrates	20	20%
No pulmonary infiltrates	80	80%

## Discussion

This study aimed to determine the prevalence of pulmonary and cutaneous manifestations in CTDs. The overall mean age of the patients was  $42.4 \pm 14.3$  years and the most common CTD was SLE, followed by RA. The most common pulmonary manifestation was dyspnea, followed by pleuritic chest pain<sup>5,6,7</sup>. The most common cutaneous manifestation was discoid rash, followed by photosensitivity. The mean ANA titers were  $1:320 \pm 1:640$  and the mean ESR was  $44.8 \pm 22.9$  mm/h<sup>8</sup>. Chest radiography showed pulmonary infiltrates in 20 (20%) patients. The findings of this study are consistent with previous studies that have reported a high prevalence of pulmonary and cutaneous manifestations in CTDs<sup>9,10</sup>. In a study conducted in India, the most common pulmonary manifestation was dyspnea (49.2%), followed by pleuritic chest pain (43.8%). Similarly, the most common cutaneous manifestation was discoid rash (72.1%), followed by photosensitivity (52.2%)<sup>11,12,13,14</sup>. The findings of this study suggest that pulmonary and cutaneous manifestations are common in CTDs. Early diagnosis and timely management are essential to prevent the progression of the disease and its associated complications<sup>15</sup>.

## Conclusion

This study found that pulmonary and cutaneous manifestations are common in CTDs. The most common pulmonary manifestation was dyspnea, followed by pleuritic chest pain. The most common cutaneous manifestation was discoid rash, followed by photosensitivity. Early diagnosis and treatment of CTDs is essential to prevent the progression of the disease and its associated complications.

## Authors' Contributions

- : Literature Review, manuscript drafting.
- : Data collection & statistical analysis.
- : Data Interpretation,
- : Proof reading
- : Manuscript drafting
- : Expert opinion and manuscript revision

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