

# Lung Zones Prone For Infections

B S MANOJ

## Citation

B S MANOJ. *Lung Zones Prone For Infections*. The Internet Journal of Pulmonary Medicine. 2023 Volume 21 Number 1.

DOI: [10.5580/IJPM.56807](https://doi.org/10.5580/IJPM.56807)

## Abstract

51 cases with Pulmonary tuberculosis are selected for the study on: (a) Relationship between the side of infective unilateral lung opacities and the side of relatively more prominent lower zone lung vasculature. (b) Relationship between the side of relatively increased volume of infective bilateral lung opacities and the side of relatively more prominent lower zone lung vasculature. Imaging methods adopted for the study are chest X-ray and CT-Thorax. Findings of the study conformed to the aims set in the study. These findings need to be probed further. An approach based on these findings can be of use in differentiating infective from non-infective opacity(ies).

## INTRODUCTION:

Modern approaches, which include use of bronchoscopes, thorascopes, an array of biochemical and immunological tests and the latest imaging techniques, have made diagnosis of lung diseases easier. But still, a cost-effective diagnostic approach can be of help in the diagnosis of the diseases in clinics with improved accuracy.

The present work is an analysis of the relationship between: (1) side and volume of infective opacities and (2) side of prominence of lung vasculature in lower lung zones. A relationship of this nature will help to identify infective lung opacity(ies) and also non-infective lung opacity(ies) cost-effectively.

## AIM:

To analyse the relationship between (1) Side of infective lung opacities and prominence of lower zone lung vasculature on that side in cases of unilateral lung opacity(ies) and (2) Volume and side of infective lung opacities and prominence of lower zone lung vasculature on that side in cases of bilateral lung opacity(ies).

## MATERIALS AND METHOD:

Imaging techniques used: Chest X-ray and CT-Thorax

51 patients with pulmonary tuberculosis and no co-morbid conditions were selected. They had infective lung opacity(ies) on chest roentgenology. Those opacity(ies) are due to tubercular infections. In case of unilateral infective lung opacity(ies), their locations in each of the three lung

zones on either side of lungs were noted. There are 6 lung zones. They are right upper, right middle and right lower lung zones, along with left upper, left middle and left lower lung zones. There are also total 3 relatively prominent lung vasculatures emanating from the hilum. For example, at the level of the upper zone, there can be only one relatively more prominent lung vasculatures emanating from the hilum, which could be either on right or left upper lung zone. Similarly, there could be two more prominent lung vasculatures at each remaining lung zone levels present on either right or left lung. In next step, relatively more prominent lung vasculature in each of the lung zones on either side is matched with the lung opacity(ies) in each lung zone. Followed by that, side of more prominent lower zone lung vasculature is also matched with side of the lung opacity(ies).

In case of bilateral infective lung opacity(ies), the locations of opacity(ies) along with their volume (marked as star \* or\*\*) in each lung zone on either side of the lung zones are noted. Next, relatively more prominent lung vasculature in each of the lung zones on either side is matched with the lung opacity(ies) in each lung zone. Finally, side of increased volume of lung opacity(ies) is matched with the side of more prominent lower zone lung vasculature. Term “relatively increased volume of lung opacity” applies for bilateral lung opacities at a given zone level.

## REVIEW OF LITERATURE:

Relationship between (1) prominence of lung vasculature in

any lung zone(s), (2) levels of nasal cavity constrictions and (3) infective lung opacities has already been studied<sup>1</sup>.

The present study focuses on:

1. Relationship between the side of infective unilateral lung opacities and the side of relatively more prominent lower zone lung vasculature.
2. Relationship between side of relatively increased volume of infective bilateral lung opacities and the side of relatively more prominent lower zone lung vasculature.

## OBSERVATIONS:

This study was conducted at the Tuberculosis and Chest diseases outpatient center of Late Baliram Kashyap Memorial Government Medical College in Jagdalpur, Dist-Bastar, State Chhattisgarh, India extending from January 2023 to June 2023.

1. Cases with relatively more prominent lower zone lung vasculature on the side of infective lung opacities in case of unilateral lung opacity (ies) (Appendix-A).

**Table 1**

| Side of relatively more prominent lower zone vasculature: | No. of cases with unilateral infective lung opacities. |           |
|-----------------------------------------------------------|--------------------------------------------------------|-----------|
|                                                           | Right Lung                                             | Left Lung |
| RIGHT LOWER ZONE VASCULATURE                              | 6                                                      |           |
| LEFT LOWER ZONE VASCULATURE                               |                                                        | 18        |

Total number of cases with relatively more prominent lower zone vasculature lung opacities on the side of lung opacity (ies) =24

2. Cases with relatively more prominent lower zone lung vasculature on the side of relatively increased volume of infective lung opacity(ies) in case of bilateral lung opacities (Appendix-B).

**Table 2**

| Side of relatively more prominent lower zone vasculature: | No. of cases with increased volume of infective lung opacities.              |                                                                             |
|-----------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
|                                                           | No. of Cases with increased volume of infective lung opacities on Right Lung | No. of Cases with increased volume of infective lung opacities on Left Lung |
| RIGHT LOWER ZONE VASCULATURE                              | 12                                                                           |                                                                             |
| LEFT LOWER ZONE VASCULATURE                               |                                                                              | 15                                                                          |

Total number of cases with relatively more prominent lower zone vasculature present on the side of relatively increased volume of lung opacities was 27.

## DISCUSSION:

1. Unilateral lung opacities

There are upper, middle and lower zones on right and left lungs. At each zonal level, there is relatively prominent lung vasculature on one of the sides.

All infective lung opacities were located in zones bearing relatively prominent lung vasculature (Ref: Appendix A)

6 out of 24 cases had unilateral infective lung opacities on right side with relatively more prominent right lower zone vasculature.

18 cases had unilateral infective lung opacities on left side with relatively more prominent left lower zone vasculature.

2. Bilateral lung opacities

All infective lung opacities were located in zones bearing relatively prominent lung vasculature. (Ref: Appendix B)

12 out of 27 cases had relatively more volume of infective lung opacities on right side with relatively more prominent right lower zone vasculature. Term “relatively increased volume of lung opacity” applies for bilateral lung opacities, where volume of lung opacity(ies) in a given lung zone is more than the volume of lung opacity(ies) in corresponding opposite lung zone.

15 cases had relatively more volume of infective lung opacities on left side with relatively more prominent left lower zone vasculature.

## CONCLUSION:

All 24 cases with unilateral infective lung opacities were

present in lung zones with relatively prominent lung vasculature.

Among them, 6 out of 24 cases with right sided unilateral infective lung opacities were located in lung zones having relatively more prominent lung vasculatures. In all the above mentioned cases, there was also prominent right sided lower zone lung vasculature.

The remaining 18 out of 24 cases with left sided unilateral infective lung opacities were also located in lung zones having relatively more prominent lung vasculatures. In all these cases, there was also prominent left sided lower zone lung vasculature.

Therefore, in all the 24 cases, **unilateral infective lung opacities, are located in those lung zones with relatively prominent lung vasculature, which are on the side of relatively prominent lower zone vasculature.**

Similarly, out of 27 cases with bilateral infective lung opacities, 12 cases had increased volume of lung opacities occurring in zones with relatively prominent lung vasculature on the side of relatively prominent lower zone lung vasculature.

The remaining 15 cases too had lung opacities occurring in zones with relatively prominent lung vasculature. But, on the side having increased volume of lung opacities, there was also relatively more prominent lower zone lung vasculature.

Therefore, in all the 27 cases with **bilateral infective lung**

**opacities, the increased volume of lung opacities were located in those lung zones with relatively prominent lung vasculature, which were on the side of relatively prominent lower zone vasculature .**

This findings need to be studied further. An approach based on this finding will be of use in identifying infective from non-infective lung opacities.

Summary:

51 patients attending the OPD with infective lung opacity(ies) due to pulmonary tuberculosis were selected for the study to investigate the relationship between the side of relatively prominent lower zone lung opacity(ies) and the side of relatively increased volume of lung opacity (ies). 24 unilateral lung opacity cases had relatively more prominent lower zone lung vasculature on the side of lung opacity(ies). In patients with bilateral lung opacities, there was relatively more prominent lower zone lung vasculature on the side of relatively increased volume of lung opacities. But, in corresponding lung zones on the side of relatively less prominent lower zone lung vasculature, there was relatively less volume of infective opacities.

This finding needs to be studied further. An approach based on these findings can be of help in differentiating infective from non-infective lung opacities.

### **References**

(1)B.S. Manoj. Identification Of Probable Lung Zones Prone For Infection. The Internet Journal of Pulmonary Medicine.2004, Volume5 Number 1.

**Author Information**

**BHASKARAN SUMATHY MANOJ, Professor**

Department of Pulmonary Medicine, Late Baliram Kashyap Memorial Government Medical College  
Dimrapal, Jagdalpur, Chhattisgarh, India