Case Report

iMedPub Journals
www.imedpub.com

Insights in Biomedicine
ISSN 2572-5610

2020
Vol.5 No.5:17

DOI: 10.36648/2572-5610.4.4.81

# Misleading Presentation of COVID-19 Multifocal Pneumonia with Superimposed Mycoplasma Infection Diagnosed by Chest CT Imaging: A Case Report

**Talalaev MA[1]*, Ghazvini K[2], Manella S[3], Tse A[4], Lazovic G[1] and Arenstein J[1]**

1 Larkin Emergency Physicians, Palm Springs Hospital, Miami, Florida, USA
2 PGY-1, Family Medicine Program, Palm Springs Hospital, Miami, Florida, USA
3 Program Director, Family Medicine Program, Palm Springs Hospital, Miami, Florida, USA
4 PGY-5, Larkin Community Hospital, Miami, Florida, USA

***Corresponding author:** Dr. Michael A

Talalaev@gmail.com

Talalaev, 145 SW 13th Str., Suite 618, Miami, Florida, 33130, USA.

**Tel:** 6128123622

**Citation:** Talalaev MA, Ghazvini K, Manella S, Tse A, Lazovic G, et al. (2020) Misleading Presentation of COVID-19 Multifocal Pneumonia with Superimposed Mycoplasma Infection Diagnosed by Chest CT Imaging: A Case Report. Insights Biomed Vol.5 No.5:17

## Abstract

**Introduction:** A chest CT plays a pivotal role in the early detection and diagnosis of COVID-19 pulmonary disease. Concurrent infections of and Mycoplasma pneumonia and may present additional challenges with respect to diagnosis, treatment, and recovery of patients with superimposed pulmonary processes.

**Patient Concerns:** A 39-year-old male presented to the Emergency Room with fever and malaise for three days. Patient denied cough or dyspnea.

**Diagnosis:** Chest x-ray (CXR) showed a cavitary lesion in the left mid-lung consistent with a possible lung abscess. Chest Computed Tomography (CT) revealed bilateral multifocal mixed ground-glass/solid airspace opacities, but no pleural effusion, pneumothorax, or pleural thickening. Microbiologic and serologic evaluation demonstrated positive Mycoplasma IgM and positive COVID-19 test. Interventions: Patient was treated with Azithromycin IV and standard steroid course, and showed rapid improvement.

**Outcomes:** Repeated CXR demonstrated mild interval improvement of bilateral ground-glass opacities and interval resolution of left lung opacity.

**Conclusion:** Amid the COVID-19 pandemic, physicians must be on the lookout for other infections that can masquerade or co-infect, such as Mycoplasma pneumonia. Since results of the COVID-19 nasal swab may take days, radiography is crucial in distinguishing between the two infections. A 39 year old male presented to the Emergency Room with fever and malaise for three days. Physical exam was unremarkable except for a fever of 101.2 F. A chest x-ray (CXR) showed a cavitary lesion in the left mid-lung consistent with a possible lung abscess, while a Chest Computed Tomography (CT) revealed bilateral multifocal mixed ground-glass/solid airspace opacities, but no pleural effusion, pneumothorax, or pleural thickening. Microbiologic and serologic evaluation demonstrated positive Mycoplasma IgM and a COVID-19 test returned positive result. Patient was diagnosed with COVID-19 Pneumonia and Mycoplasma Pneumonia and treated with Azithromycin IV (intravenous) and standard steroid course and subsequently discharged after patient improved. Patients with suspected/presumed COVID-19 multifocal pneumonia should be evaluated for secondary bacterial causes of pneumonia. There should be low threshold for performing CT chest in patients with presumed COVID-19 pneumonia, as imaging may show changes more consistent with superimposed bacterial process. We recommend that initial evaluation of presumed COVID-19 patients should include respiratory culture, Mycoplasma Ag, *Legionella* urinary Ag, and antibiotic coverage should be adjusted accordingly.

**Keywords:** COVID-19; Multifocal pneumonia; Superinfection; Co-infection; *M. pneumonia*

**Abbreviations:** ARDS: Acute Respiratory; Distress Syndrome COVID-19: Coronavirus; Disease 2019 CRPHS: C-Reactive Phosphokinase; CT: Commuted Tomography; CXR: Chest X-Ray; IV: Intravenous; PO: Oral Administration; Q8H: Every 8 hours; QD: Every day; RT-PCR: Reverse Transcriptase Polymerase Chain Reaction

**Received:** October 30, 2020; **Accepted:** November 03, 2020; **Published:** November 10, 2020

 

## Introduction

Pneumonia is a typical presentation of COVID-19 infection, accounting for approximately 80% of total cases. Real-time reverse-transcription polymerase chain reaction (RT-PCR) demonstrates a low sensitivity, and under pandemic conditions, may take several days to be confirmed, thus chest CT plays a pivotal role in the early detection and diagnosis of COVID-19 pulmonary disease. Early identification of an inflammatory pulmonary process is paramount for improved patient survival and reduced morbidity. Concurrent infections of and *Mycoplasma pneumonia* have been previously described, and may present additional challenges with respect to diagnosis, treatment, and recovery of patients with superimposed pulmonary processes [1-9].

## Case Report

A 39-year-old overweight Hispanic male with a history of diabetes mellitus II, hypertension, obesity, and acute pancreatitis presented to the emergency department of a community hospital complaining of fever and malaise for three days. The patient denied overt cough and dyspnea but reported frequent spitting of clear mucus, which he attributed to gastroesophageal reflux. On a detailed medical history evaluation conducted in the patient's native language, he specifically denied dry or productive cough, fatigue, headache or diarrhea, loss of taste or smell, sore throat, congestion or runny nose. The patient also denied chest pain, palpitations, syncope, hemoptysis, abdominal pain, motor or sensory deficits, and lateralizing symptoms. Social history was remarkable for alcohol abuse; patient strongly denied tobacco smoking or use of tobacco products. Occupational history demonstrated frequent contact with the geriatric population in the course of his employment as non-emergency medical transportation driver. Physical exam revealed a fever of 101.2 on initial examination, no tachycardia, and pulse oximetry within normal range. However, the respiratory rate was 20.

### Diagnosis

Initial lab work on 08/08/2020 revealed a glucose of 225, Hb 12.8, WBC 4.4, Ferritin 599.1 (H), CRPHS 9.42 (H), D-dimer .680 (H), fibrinogen 449 (H), LDH 308 (H), Sed rate 38 (H), lipase normal, and total CPK 355 (H). The chest x-ray showed a cavitary lesion in the left mid-lung zone, new since last radiologic exam, consistent with a possible lung abscess **(Figures 1 and 2)**. CT of the chest revealed bilateral multifocal mixed ground-glass/solid airspace opacities, but no pleural effusion, pneumothorax, or pleural thickening **(Figures 3 and 4).**

Microbiologic and serologic evaluation demonstrated positive Mycoplasma IgM; blood cultures showed no growth after 48 hours. Sputum culture revealed heavy growth of endogenous flora. Influenza A and B and *Legionella* AG were negative; COVID-19 test returned positive result within 96 hours after the sample was collected.

### Interventions

Patient was treated with Azithromycin 500 mg IV daily × 5 days and Dexamethasone 6 mg PO daily × 5 days, and showed rapid improvement. Patient tolerated therapy well and without complications.

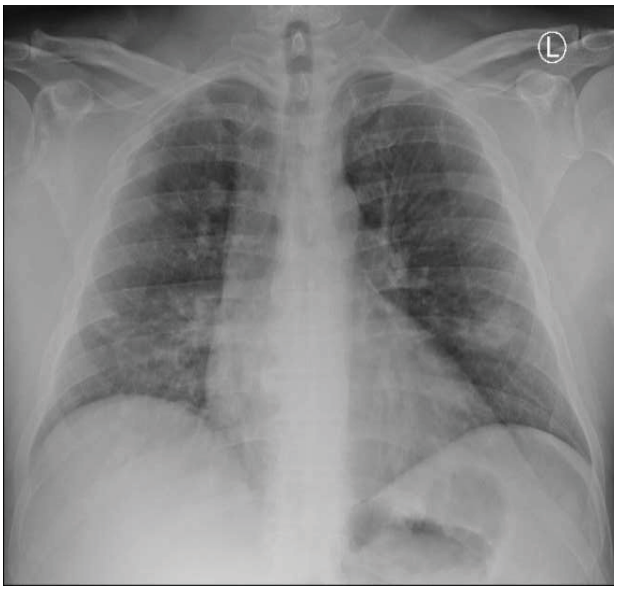

**Figure 1** Chest X-ray performed on admission. Initial Radiologic evaluation demonstrated a new cavitary lesion involving left mid lung zone, which was interpreted as a lung abscess.a

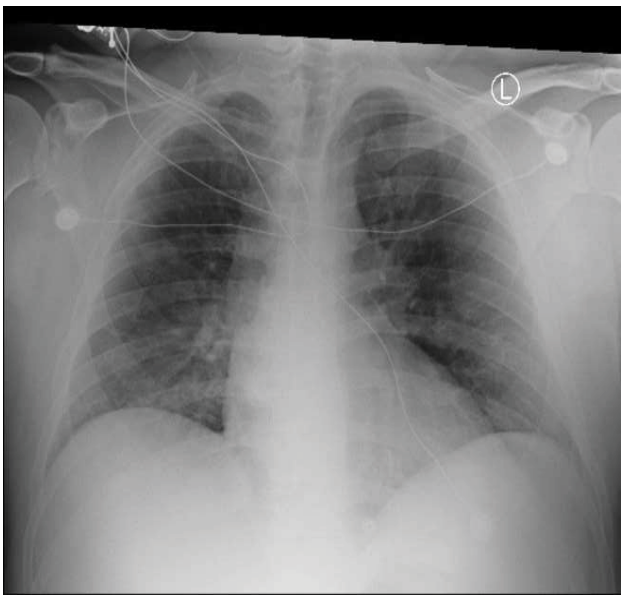

**Figure 2** Chest X-ray performed immediately prior to discharge. Final radiologic evaluation demonstrated resolution of the cavitary lesion prior to discharge.

### Outcomes

Repeated CXR demonstrated mild interval improvement of bilateral ground-glass opacities and interval resolution of left lung opacity. Patient was subsequently discharged home on the fifth hospital day with self-care and instructions for primary care follow-up.

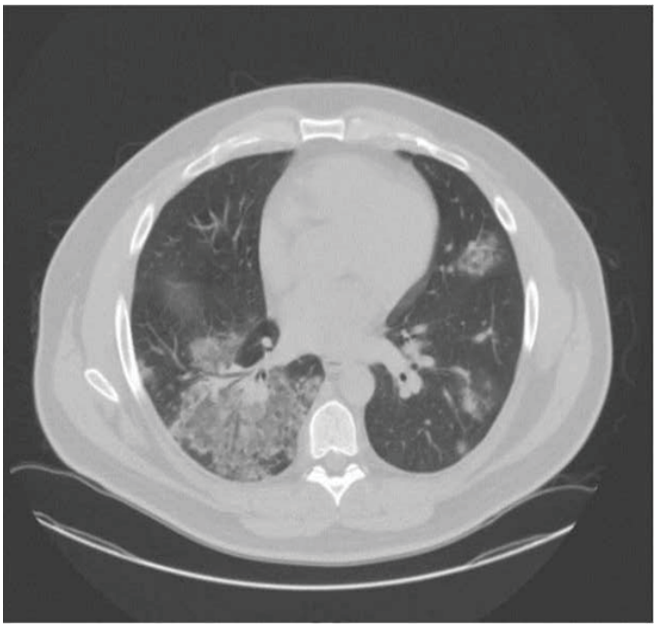

**Figure 3** CT scan of the chest demonstrating multifocal pneumonia and peri-bronchial and perivascular interstitial infiltrates. A CT of the chest was performed in the course of further diagnostic evaluation. CT of the chest revealed bilateral multifocal mixed ground-glass/solid airspace opacities, but no pleural effusion, pneumothorax, or pleural thickening.

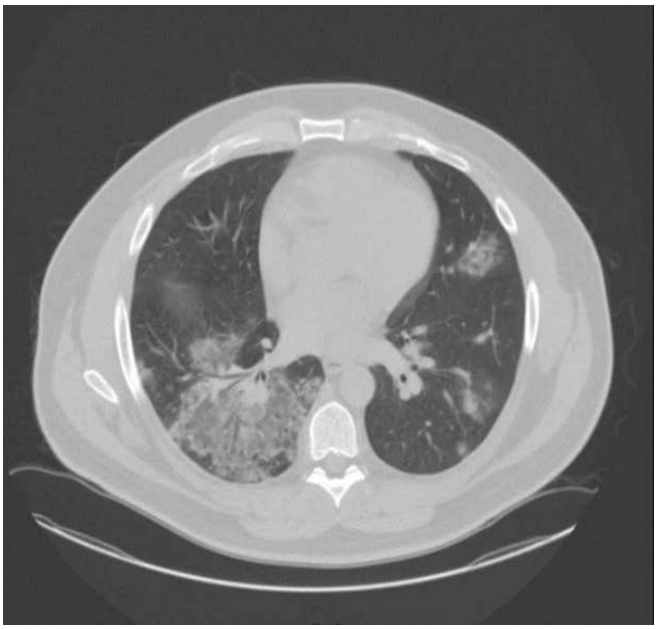

**Figure 4** CT scan of the chest demonstrating additional radiographic changes typical for both COVID-19 and M. Pneumoniae.

## Results and Discussion

Amid the COVID-19 pandemic, physicians must be on the lookout for other infections that can masquerade or co-infect, such as Mycoplasma pneumonia, the second most common form community acquired pneumonia after *Streptococcus pneumoniae* [4,5]. In addition, because the results of the COVID-19 nasal swab may take days, radiography is crucial in distinguishing between the two infections. Furthermore, tests for the usual pathogens should not be overlooked in any suspected COVID-19 case. Serological testing, as was performed in our case, is currently the most common method for diagnosing *M. pneumoniae* infection. Although *Mycoplasma pneumonia* is mostly benign, it can also present as a life-threatening condition, including ARDS and multiple organ failure. A study of 416 patients with mycoplasma infections, 68 (16.3%) required admission to the intensive care unit (ICU), and the ICU mortality rate was 29.4% [10].

Radiographic findings consistent with COVID-19 are ground glass opacities on both chest x-ray (30% of severe cases), and CT scans (60.5%) of severe cases). Bilateral patchy shadowing is seen on chest x-ray in 58.3% of patients with severe cases and 94.6% of all severe cases demonstrate some sort of abnormal CT finding [1]. In another study from China, the chest x-ray findings most frequently found in COVID-19 patients are bilateral lower zone consolidation that worsened and peaked 10-12 days after symptom onset (2). Overall, the most common features found on chest radiographs of COVID-19 pneumonia include ground-glass opacities, bilateral or local patchy shadowing, and interstitial abnormalities [2].

In another study, the hallmark findings of COVID-19 by CT were bilateral ground glass opacities with or without consolidation in the posterior and peripheral lung fields [11-24]. Findings in later phases included consolidations, linear opacities, vascular enlargement, ‘crazy-paving’ pattern, and the ‘reversed halo’ sign.

Compared to COVID-19, Mycoplasma pneumonia CT findings are most likely to be bronchial wall thickening (81%), centrilobular nodules (78%), ground-glass attenuation (78%), and consolidation (61%) [3]. In chest x-rays, mycoplasma pneumonia presents commonly as peri- bronchial and perivascular interstitial infiltrates, airspace consolidation, and nodular opacification [3,6]. While rare, pulmonary abscesses have been reported in cases of *M. pneumonia* as was found in this case [7].

In *Mycoplasma pneumoniae* infection, the finding of cold agglutination is common while reactive lymphocytes are seen frequently in COVID-19 infections [25-34]. Because COVID-19 coinfection with other common pathogens such as mycoplasma pneumoniae may worsen clinical symptoms and increase morbidity, clinicians should be vigilant in detecting coinfections when diagnosing and treating COVID-19 patients [8].

This is not the first confirmed case of a combined COVID-19 and *M. pneumonia* case. A 61-year-old Taiwanese man presented with a dry cough and malaise [9]. His Chest x-ray showed progression of bilateral ground-glass patches. High-resolution computed tomography (HRCT) revealed multiple patches of ground-glass opacity, crazy-paving pattern, and peribronchial consolidation on the right upper lobe, middle lobe, and bilateral lower lobes [35,36]. He was treated with azithromycin at 500 mg QD was prescribed for three days along with hydroxychloroquine at 200 mg Q8H for a total of eight days. The patient's clinical condition and chest x-ray both improved [9].

In another case involving a 56-year-old woman who presented to the emergency room with fever, dry cough, myalgia, and sore throat, a rapid *Streptococcus* A antigen testing returned positive. She was given ceftriaxone and azithromycin. Repeat chest X-ray the following day revealed worsening bilateral diffuse opacities. A respiratory virus panel (Respiratory Pathogen Panel- NAT/Quest Diagnostics, Valencia, CA) was negative. Subsequently, the patient was tested for COVID-19 via the SARS-CoV-2 rRT-PCR, and the test was positive. CT of the chest showed scattered perihilar and dependent patchy airspace consolidation and bilateral ground-glass opacities [11].

## Conclusion

Nicolson et al. opined that the positive responses from antibiotic and anti-malarial drugs experienced by some COVID-19 patients may have been due to the suppression of Mycoplasma species and other bacterial co-infections. They concluded, like we did, that all patients with COVID-19 should undergo molecular tests to determine the presence of Mycoplasma and other pathogenic bacteria so that they can be treated accordingly. Our patient was treated promptly with IV azithromycin and steroids once the Mycoplasma was identified and there was rapid resolution of the lung abscess. Other respiratory pathogens were tested such as *Klebsiella* and *Legionella*.

## Patient Consent Statement

Patient has provided informed consent for publication of the case.

## References

1 Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, et al. (2020) Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med 382: 1708-1720.

2 Wong HYF, Lam HYS, Fong AH, Leung ST, Chin TW, et al. (2019) Frequency and distribution of chest radiographic findings in COVID-19 positive patients Radiol 2: 201160.

3 Miyashita N, Sugiu T, Kawai Y, Oda K, Yamaguchi T, et al. (2009) Radiographic features of *Mycoplasma pneumoniae pneumonia*: Differential diagnosis and performance timing BMC Med Imag 9: 7.

4 Miyashita N, Fukano H, Mouri K, Fukuda M, Yoshida K, et al. (2005) Community-acquired pneumonia in Japan: a prospective ambulatory and hospitalized patient study. J Med Microbiol 54: 395-400.

5 Matsushima T, Kohno S, Saito A, Nakata K, Yamaguchi K, et al. (2005) The committee for the JRS guidelines in management of respiratory infections. The JRS guidelines for the management of community-acquired pneumonia in adults [in Japanese] The Japanese Respiratory Society. Tokyo, Japan.

6 Reittner P, Muller NL, Heyneman L, Johkoh T, Park JS, et al. (2000) *Mycoplasma pneumoniae pneumonia*: Radiographic and high-resolution CT features in 28 patients. AJR Am J Roentgenol 174: 37-41.

7 Lewis JE, Sheptin C (1972) *Mycoplasmal pneumonia* associated with abscess of the lung. Calif Med 117: 69-72.

8 Fan BE, Lim K, Chong V, Chan S, Ong KH, et al. (2020) COVID-19 and *Mycoplasma pneumoniae* coinfection. Am J Hematol 95: 723-724.

9 Huang ACC, Huang CG, Yang CT, Hu HC (2020) Concomitant infection with COVID-19 and *Mycoplasma pneumonia*. Biomedical J 7: 2.

10 Khoury T, Sviri S, Rmeileh A, Nubani A, Abutbul A, et al. (2016) Increased rates of intensive care unit admission in patients with *Mycoplasma pneumoniae*: A retrospective study Clin Microbiol Infect 22: 711-714

11 Khaddour K, Sikora A, Tahir N, Nepomuceno D, Huang T (2020) Case report: The importance of novel coronavirus disease (COVID-19) and coinfection with other respiratory pathogens in the current pandemic. Am J Trop Med Hyg

12 Nicolson G, Ferreira G (2020) COVID-19 coronavirus: Is infection along with mycoplasma or other bacteria linked to progression to a lethal outcome? Int J Clin Med 11: 282.

13 Carotti M, Salaffi F, Sarzi-Puttini P (2020) Chest CT features of coronavirus disease 2019 (COVID-19) pneumonia: key points for radiologists. Radiol Med 125: 636-646.

14 Tan WJ, Zhao X, Ma XJ, Wang WL, Niu PH, et al. (2020) Notes from the Field: A novel coronavirus genome identified in a cluster of pneumonia cases − Wuhan, China 2019−2020. China CDC Weekly 2: 61-62.

15 Wang D, Hu B, Hu C (2020) Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus–infected pneumonia in Wuhan, China. JAMA 323: 1061- 1069.

16 http://www.bmj.com/content/369/bmj.m1375/rr-12.

17 https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200312-sitrep-52-covid-19.pdf

18 Ai T, Yang Z, Hou H, Zhan C, Chen C, et al. (2020) Correlation of chest CT and RT-PCR testing in coronavirus disease 2019 (COVID-19) in China: A report of 1014 cases. Radiol 2020: 200-642.

19 Fan BE, Lim KGE, Chong VCL, Chan SSW, Ong KH, et al. (2020) COVID-19 and *Mycoplasma pneumoniae* coinfection. Am J Hematol 95:723-724.

20 Khoury T, Sviri S, Rmeileh AA, Nubani A, Abutbul A, et al. (2016) Increased rates of intensive care unit admission in patients with Mycoplasma pneumoniae: A retrospective study. Clin Microbiol Infect 22: 711-714.

21 Miyashita N, Sugiu T, Kawai Y, Oda K, Yamaguchi T, et al. (2009) Radiographic features of *Mycoplasma pneumoniae pneumonia*: Differential diagnosis and performance timing. BMC Med Imag 9: 7.

22 Xie X, Zhong Z, Zhao W, Zheng C, Wang F, et al. (2020) Chest CT for typical 2019-nCoV pneumonia: Relationship to negative RT-PCR testing. Radiol 296: E41-E45.

23 Shi H, Han X, Jiang N, Cao Y, Alwalid O, et al. (2020) Radiological findings from 81 patients with COVID-19 pneumonia in Wuhan, China: A descriptive study. Lancet Infect Dis 20: 425-434.

24 Li JY, You Z, Wang Q, Zhou ZJ, Qiu Y, et al. (2020) The epidemic of 2019-novel-coronavirus (2019-nCov) pneumonia and insights for emerging infectious diseases in the future. Microbes Infect 22: 80-85.

25 Emami A, Javanmardi F, Pirbonyeh N, Akbari A (2020) Prevalence of underlying diseases in hospitalized patients with covid-19: A systematic review and meta-analysis. Arch Acad Emerg Med 8: e35.

26 Hon EKL, Ip M, Chu WCW, Wong W (2012) Megapneumonia Coinfection: *Pneumococcus, Mycoplasma pneumoniae*, and *Metaneumovirus*. Case Rep Med 2012: 2-4.

27 Kim JH, Kwon JH, Lee JY, Lee JS, Ryu JM, et al. (2018) Clinical features of *Mycoplasma pneumoniae* coinfection and need for its testing in influenza pneumonia patients. J Thorac Dis 10: 6118-6127.

28 Lim KGE, Chong VCL, Chan SSW, Ong KH, Kuperan P (2020) COVID-19 and Mycoplasma pneumoniae Coinfection. Am J Hematol 95: 1.

29 Gao Z, Gao L, Chen X, Xu Y (2020) A 49-year-old women co-infected with SARS-CoV-2 and mycoplasma: A Case report. Case Rep Infect Dis 203: 2-4.

30 Lovato A, De Filippis C (2020) Clinical presentation of COVID-19: A systematic review focusing on upper airway symptoms. Ear Nose Throat J 99: 1-5.

31 Rodriguez-Morales AJ, Cardona-Ospina JA, Gutiérrez-Ocampo E (2020) Clinical, laboratory and imaging features of COVID-19: A systematic review and meta-analysis. Travel Med Infect Dis 34: 101-623.

32 Li M, Lei P, Zeng B (2020) Coronavirus Disease (COVID-19): Spectrum of CT findings and temporal progression of the disease. Acad Radiol 27: 603- 608.

33 Zha L, Shen J, Tefsen B, Wang Y, Lu W, et al. (2020) Clinical features and outcomes of adult COVID-19 patients co-infected with *Mycoplasma pneumoniae*. J Infect 81: e12-e15.

34 Fang Y, Zhang H, Xie J (2020) Sensitivity of chest CT for COVID-19: Comparison to RT-PCR. Radiol 12: 200-432.

35 Ai T, Yang Z, Hou H, Zhan C, Chen C, et al. (2020) Correlation of chest CT and RT-PCR testing in coronavirus disease 2019 (COVID-19) in China: A report of 1014 cases. Radiol 12: 200-642.

36 Zenghui C, Yong L, Qiqi C, Le Q, Zilai P, et al. (2020) Clinical features and chest CT manifestations of coronavirus disease 2019 (COVID-19) in a single-center study in Shanghai, China. Am J Roentgenol (2020): 1-6.