

COVID-19 Pneumonia through a lens of surgeon and physician: An experience study in Basrah City

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Magna Scientia Advanced Research and Reviews, 2021, 02(02), 092–099

Publication history: Received on 28 June 2021; revised on 07 August 2021; accepted on 09 August 2021

Article DOI: <https://doi.org/10.30574/msarr.2021.2.2.0056>

Abstract

The pandemic of SARS-CoV-2 virus represented the major disaster in the world in this century. It impacted all fields in the life and in all countries in the world. Imaging techniques play an important role in supporting the diagnosis, grading, severity, guiding treatment, diagnosing complications, and assessing the response to treatment. More than 500 patients confirmed diagnosis with COVID-19 were consulted at private clinics in Basrah, Iraq from December 2019 till April 2021. Chest X-ray is generally the first-line imaging test in patients with suspected or confirmed COVID-19 due to its usefulness, availability and low cost for our locality peoples. The chest X-ray may be normal in mild cases of disease. The most common findings are airspace opacities, which may be consolidations or, less frequently, ground-glass opacities. Males were 70% whereas females constituted 30% of the sample. Above 50 years was the age of the majority of patients. The mean age was 50.7 ± 12.88 years. Smoker patients were 60%. Approximately, 49% of patients were obese, 20% overweight, and 31% with normal weight. Comorbidities were recorded in 62% of patients. In relation to marital status, 35% married, 23% divorce, 17% widowed, and 25% single. About 24% of patients were employer, 45% had no jobs, 25% were housewives, and only 6% were students. CXR play an important role in the management of patients with suspected or confirmed COVID-19. COVID-19 pneumonia is characterized by the presence of ground-glass opacities and/or consolidations, which are typically bilateral and peripheral.

Keywords: COVID-19; SARS-CoV-2 virus; Chest x-ray; Patchy ground glass opacification; Consolidation; Safwan city

1. Introduction

COVID-19 is a newly emerged disease, it caused by a single stranded RNA genome. The disease has led to a public-health emergency. As a result, WHO has announced corona virus disease as a pandemic at December 2019 [1]. There were more than 182 million cases recorded, and 3.9 million deaths till July 2021 [2]. Serious cases, COVID-19 can be complicated by acute respiratory distress syndrome (ARDS), cardiac injury, septic shock, sepsis, acute infection of

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kidney and multi-organ failure [3]. The main pathology beyond that is resulted from direct cytopathic effect of the virus on pneumocytes, the late is due to a profuse inflammatory reaction similar to bacterial sepsis such as (Hemophagocytic lymphohistiocytosis) [3]. During the early phase the innate immune response occur, and if it fail to control the disease, mild symptoms will appear as a result of viral cytopathic effect and innate immune response. Subsequently, this will enhance the adaptive immune response. In other term, the inflammatory cytokines will significantly increase causing tissue damage and clinical deterioration. Patients may exhibit a clinical phenomenon, when patients suddenly deteriorate after a period of stability and improvement [4]. Symptoms of disease including all body system such as fever, myalgia and headache. Upper respiratory symptoms are rhinorrhea, sore throat. Lower respiratory symptoms are dyspnea, chest tightness, cough and sputum. Gastrointestinal symptoms are nausea, vomiting, and diarrhea. CNS and CVS also involvement [5]. Chest x-ray play an important role in initial detection of COVID-19. Peripheral and basal patchy ground glass opacification, high number of patches or diffuse opacification are the main features noticed of the severity of the disease [6].

Here, we showed a number of chest x-ray photography of several COVID-19 patients, diagnosed in our private clinic, to introduced the real picture about the size of this disaster.

2. Methods

2.1. Study design and setting

More than 500 patients confirmed diagnosis with COVID-19 were consulted at private clinics in Basrah, Iraq from December 2019 till April 2021. All patients in this study were diagnosed according to the WHO procedure [2].

2.2. Data collection

Clinical data were collected in private clinic and patients' data were reviewed. Those including demographic information and CXR findings.

2.3. Investigation

WBC count tends to be normal, Lymphopenia can appear in 80%, mild thrombocytopenia also can be found, Platelet count < 100 may be associated with poor prognosis. Generally D-Dimer commonly elevated (>0.28ng/L) testing. DIC may develop over time and associated with poor prognosis. IL6 elevated (>24.3), C-reactive protein, it's an important marker to pursue the disease severity, prognosis and mortality. Positive PCR for other Viruses doesn't mean patient isn't infected with COVID-19. Additionally, PCR can diagnose four Coronaviruses which cause mild illnesses. Nowadays, the standard test for the detection of SARS-CoV-2 is reverse transcription-polymerase chain reaction (RT-PCR), usually done on a sample of nasopharyngeal or respiratory secretions. RT-PCR is believed to be highly specific, but its sensitivity can range from 60-70% to 95-97%, so false negatives are a real clinical problem, especially in the early stages. Sensitivity varies by time elapsed since exposure to SARS-CoV-2. The rate of false negatives is 100% on the first day after exposure, then decreases to 38% on the day of onset of symptoms and drops to 20%, its lowest level, on the third day of symptoms [7].

2.4. Chest X-ray

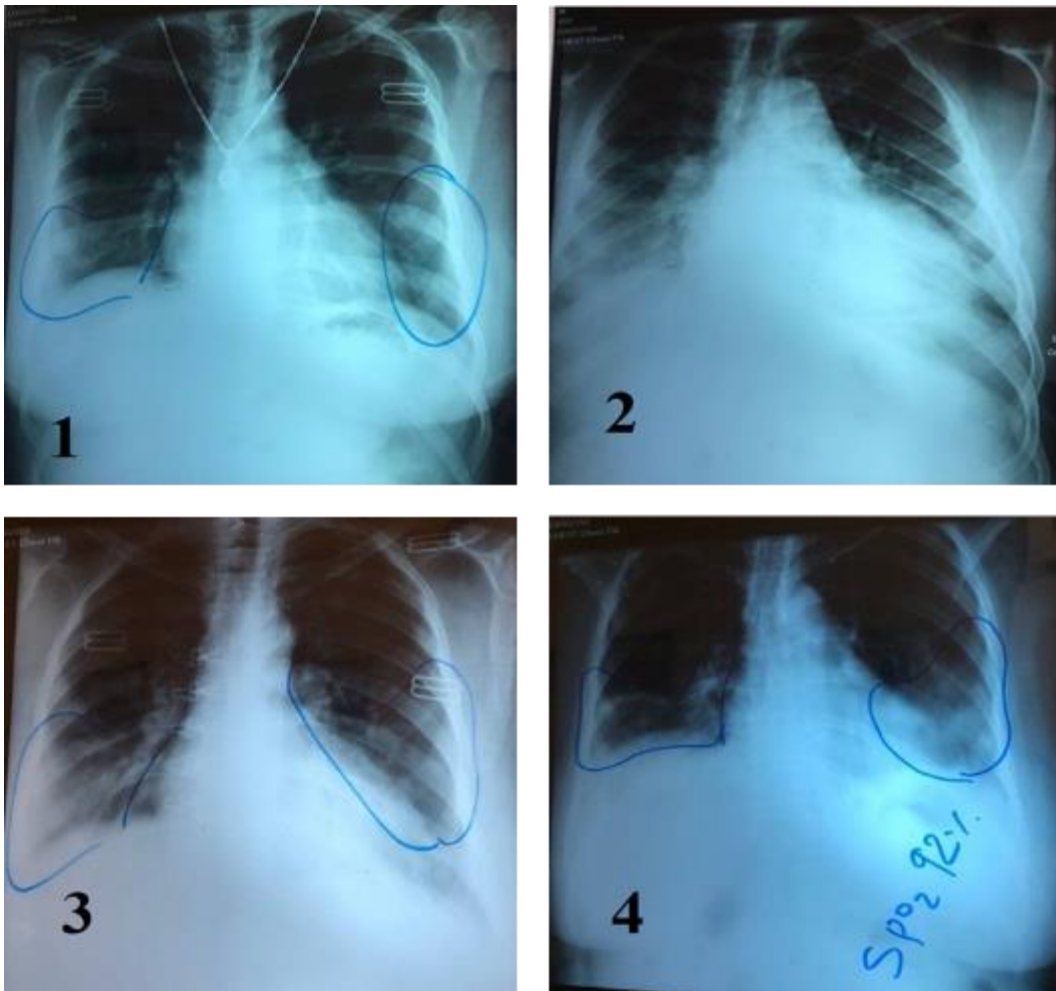
Table 1 Categories of CXR findings in patients with suspected COVID-19

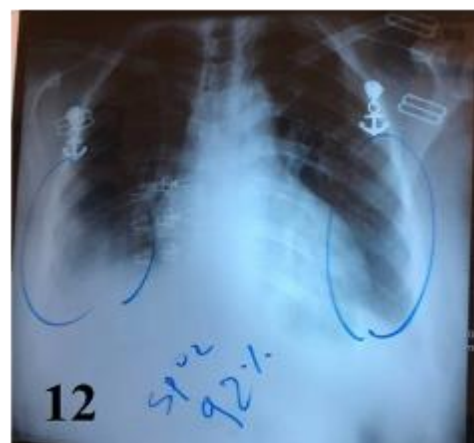
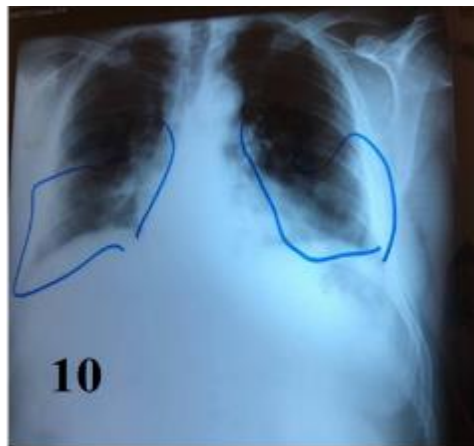
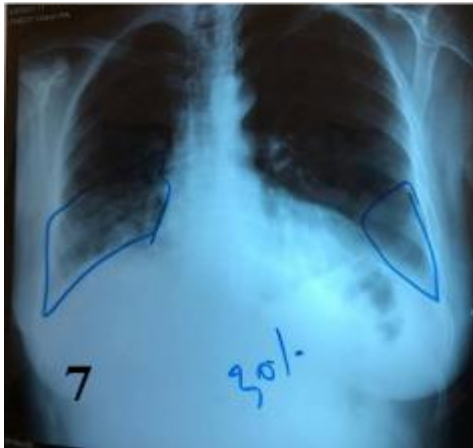
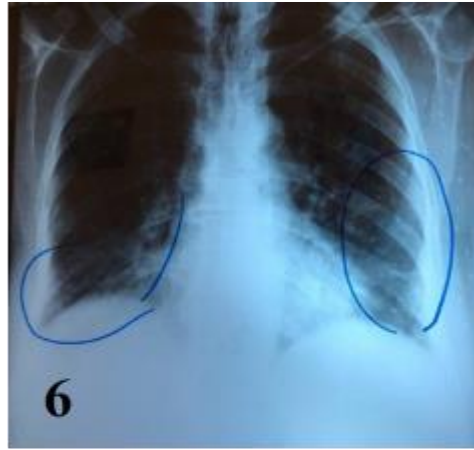
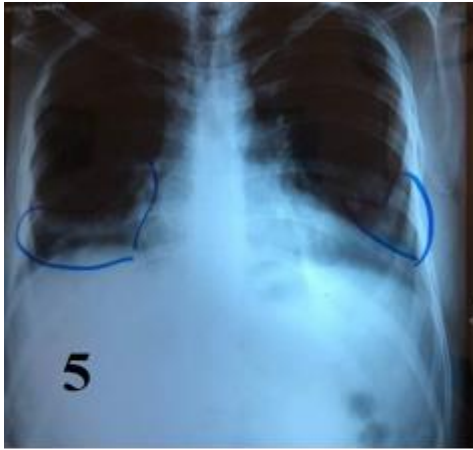
Category I	Category II	Category III	Category IV
Normal	Typical: These include a reticular pattern, ground-glass opacities and consolidations, with rounded morphology and a confluent or patchy multifocal distribution. The distribution is usually bilateral and peripheral, with a predominance in the lower fields.	Indeterminate: These include consolidations and ground-glass opacities with a unilateral, central or upper-lobe distribution.	Atypical (uncommon): These include lobar consolidation, lung nodules or masses, miliary pattern, cavitation and pleural effusion, reported in only 3% of patients and more typical of advanced disease

Chest X-ray is generally the first-line imaging test in patients with suspected or confirmed COVID-19 due to its usefulness, availability and low cost for our locality peoples. The chest X-ray may be normal in mild cases of disease [8, 9]. The most common findings are airspace opacities, which may be consolidations or, less frequently, ground-glass opacities [8]. CXR findings have been divided into four categories [10-13] (Table 1).

3. Results

The demographic of 500 patients were illustrated in Table 2. Males were 70% whereas females constituted 30% of the sample. Above 50 years was the age of the majority of patients. The mean age was 50.7 ± 12.88 years. Smoker patients were 60%. Approximately, 49% of patients were obese, 20% overweight, and 31% with normal weight. Comorbidities were recorded in 62% of patients. In relation to marital status, 35% married, 23% divorce, 17% widowed, and 25% single. About 24% of patients were employer, 45% had no jobs, 25% were housewives, and only 6% were students. (Table 2). CXR findings were showed in figures 2.





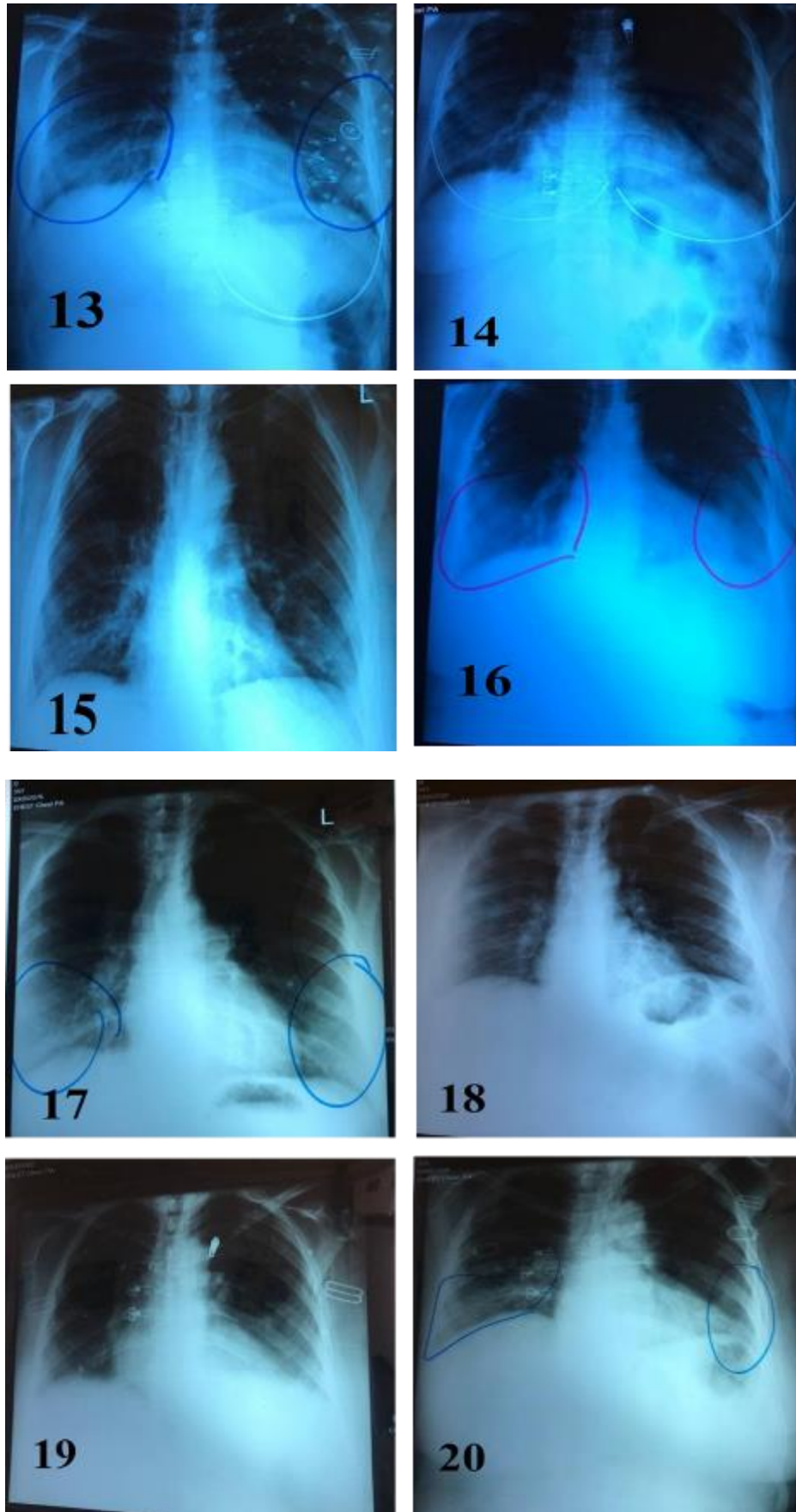


Figure 2 CXR findings

Table 2 Demographic characteristics

Variables		n (%)
Gender	Female	150 (30)
	Male	350 (70)
Age (years) 50.7±12.88	18-29	20 (4)
	30-39	50 (10)
	40-49	80 (16)
	50-59	130 (26)
	60-79	120 (24)
	>70	100 (20)
Smoking	Smoker	300 (60)
	Non-smoker	200 (40)
BMI (Kg/m ²) 29.7±11.39	Normal	155 (31)
	Overweight	100 (20)
	Obese	245 (49)
Comorbidity	Present	310 (62)
	Absent	190 (38)
Marital status	Married	175 (35)
	Divorce	115 (23)
	Widowed	85 (17)
	Single	125 (25)
Occupation	Government employer	120 (24)
	Non-employer	225 (45)
	Housewife	125 (25)
	Student	30 (6)

4. Discussion

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by a coronavirus strain called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first cases were seen in Wuhan, China, in late December 2019. From there, it quickly spread to virtually the entire world. It was officially recognized as a pandemic by the WHO on 11 March 2020. Infection generally occurs within 14 days of exposure and in most cases within 4-5 days. Although it can occur at any age, it is most common in middle-aged and elderly male adults [14]. The most common associated symptoms include: cough (50%), subjective fever or fever higher than 38 °C (43%), myalgia (36%), headache (34%), dyspnoea (29%), sore throat (20%), diarrhoea (19%), nausea/vomiting (12%), anosmia, ageusia, dysgeusia (<10%), abdominal pain (<10%) and runny nose (<10%) [15-17]. It should be noted that fever is not a universal finding, even among hospitalized cohorts. Smell and/or taste abnormalities have been reported primarily in patients with mild to moderate COVID-19, at rates ranging from 34% to 87% [18]. A prevalence of gastrointestinal symptoms of 18% (diarrhoea, 13%; nausea/vomiting, 10%; and abdominal pain, 9%) has been reported [19]. Skin alterations similar to erythema pernio (chilblains) have also been reported, especially in the fingers and toes and generally in children and young adults [19].

5. Conclusion

CXR play an important role in the management of patients with suspected or confirmed COVID-19. COVID-19 pneumonia is characterized by the presence of ground-glass opacities and/or consolidations, which are typically bilateral and peripheral. As regards clinical course, reparative changes appear from the second week of the disease, characterized by subpleural lines, greater subpleural distortion and bronchial dilations.

Compliance with ethical standards

Acknowledgments

Thank you for Dr. Rasha Alsaad for their helping.

Disclosure of conflict of interest

There was no conflict of interest to be declared.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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