SPECTRUM OF UNENHANCED CT-CHEST APPEARANCES AND SEVERITY IN COVID 19 PATIENTS IN DUHOK, KURDISTAN REGION, IRAQ

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ABSTRACT

Background: Since the emergence of COVID-19 infection, CT lung scanning was important diagnostic tool for assessing COVID-19 pulmonary infection. The aim of this study is to evaluate the spectrum of radiological findings in non-enhanced CT of the lungs, and to estimate the CT severity score index and correlate CT findings of the patients with age and gender.

Materials and methods: This cross-sectional study was conducted from 9th of October to 29th of November 2021 at Radiology department-CT unit of Azadi Teaching hospital, Duhok, Iraq. Overall, 137 RT-PCR positive symptomatic COVID-19 patients were included in this study, aged 17-85 years. The un-enhanced lung slices were viewed for nature of the abnormal opacity mainly pure ground glass opacities (GGO) and consolidation. The CT severity score index was measured to be correlated with age, sex and temporal changes of lung findings.

Results: The average age of the patients was 52.12 ± 15.79 SD, more of 50% of patients were of 31-59 years and 85 (62%) females. The consolidation opacity was the most common opacity (61.34%), followed by GGO (52.56%). The pulmonary opacities were dominant in lower lobes. There was strong positive correlation between higher CT severity score and older age group (p=0.021), but no significant correlation with sex (p value = 0.38). There was also positive correlation between stages of the disease and GGO (p=0.013), pure consolidation (0.026), interlobular septal thickening (p=0.006), bronchiectasis (p=0.026).

Conclusions: Non-enhanced Chest CT can assess predictable abnormal lung opacities and assess the disease severity and hence give an idea of the prognosis of disease. Higher CT score is significantly correlated with older age groups.

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Keywords: COVID-19, CT Severity score index, Chest CT, Lungs, Duhok, Iraq.

Coronavirus disease 2019 (COVID-19) is a highly contagious communicable disease caused critical respiratory syndrome coronavirus[2] (SARS-CoV-2)[1]. The disease was declared as a pandemic by the World Health Organization (WHO) on March 12, 2020. Globally, on 13 June 2022, there have been 532, 887, 351 confirmed cases of COVID-19, including 6, 307, 021 deaths, reported by WHO[2].

The common clinical signs of this virus are fever, cough, and shortness of breath, anorexia, chest tightness, muscle soreness, fatigue and myalgia[3]. Infection may cause pneumonia, severe acute respiratory syndrome (SARS), eventually death in severe cases. On February 2020, the first cases of COVID-19 infection were reported in Kurdistan Region, northern Iraq. Furthermore, throughout the third wave social and healthcare workers had received whole vaccination against COVID-19, while the vaccination of elderly and frail people was continuing, while the utmost of the population was fully vaccinated and

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restrictions were much looser in the fourth wave, mainly concerning unvaccinated or partially vaccinated people[4,5,6].

Chest CT should be performed with strict precautions to minimize hazardous exposure of patients and health care professionals to SARS-CoV-2. When possible, chest CT is performed at sites with less traffic to avoid exposure of other patients and staff[1]. The identification of patients infected by SARS-CoV-2 is highly important to control the disease; however, the clinical presentation is often unspecific and a large portion of the patients develop mild or no symptoms at all. For this reason, there is an emphasis on evaluating diagnostic tools for screening. Chest CT scans are emerging as a useful tool in the diagnostic process of viral pneumonia cases associated with COVID-19[7]. The combined application of RT-PCR and CT may have advantages over single test alone and may increase the accuracy and sensitivity of diagnosis, although the algorithm of combining RT-PCR and early chest CT has not been fully studied yet and is still need to be proven with further studies[8]. It is known that chest CT sensitivity and specificity for diagnosing COVID-19 pneumonia were 90% and 91%, respectively (9). Among 103 patients with an initial positive chest CT finding(s) for COVID-19 and a negative initial RT-PCR test, a repeat RT-PCR was positive in 90% (93/103). In patients with both negative chest CT and RT-PCR, the negative predictive value regarding final discharge diagnosis for COVID-19 was 99% (2035/2050 patients)[9].

The aim of the study is to evaluate the spectrum of radiological findings in non-enhanced CT of the lungs of COVID-19 patients, and to estimate the CT severity score index. Additionally, the aim is to correlate these findings with age and gender of the patient and time of duration of patient signs and symptoms.

MATERIALS AND METHODS

The study design and procedure were approved by the local health ethics committee in the Duhok Directorate, General Health Department of scientific research division, Kurdistan Region, Iraq. Informed consent was obtained from all subjects.

This prospective cross-sectional study was conducted on symptomatic RT-PCR-positive COVID-19 cases that referred by clinician to Radiology department-CT unit at Azadi Teaching Hospital, Duhok City, Kurdistan Region, Iraq from period of 9th of October to 29th of November of 2021, for assessing the native CT examination of lungs.

Overall, 137 patients, aged 17-85 were eligible to be involved in the study. The inclusion criteria were age older than 16 years, positive RT PCR test, non-vaccinated, and the period of diseases of 0-20 days duration from the onset of signs and symptoms. Exclusion criteria are patients younger than 16 years old, pregnant patients, duration of clinical features more than 20 days, and significant previous chronic lung disease like emphysema or lung tumors. During the first visit to CT department, participants completed a questionnaire which included questions regarding sex, age, and signs and symptoms of infection.

The CT Machine Ingenuity Core 64 detectors (Philips, Netherlands) was used in this study. The scanning was performed as a native CT scanning of chest (no contrast material was administered to the patient), with exposure parameters: 120 KV, 250 mAs. Both lung and mediastinal windows

were reconstructed from the row data. The lung reconstruction and the mediastinum were performed by iDose (1) and iDose (3), respectively (Philips iterative reconstruction). The chest acquisition was a volume of 1mm slice width. The examination viewing parameters on work station were window center (C): 600 and window width (W): 1600 for lung examination, and (C): 60 and (W): 350 for mediastinum. Both lung and mediastinal were examined on axial, coronal and sagittal reconstructions. The lung slices were viewed for the nature of the abnormal opacity (GGO, consolidation, crazy paving), interstitial lines, bronchiectasis, and pneumothorax and for distribution of these abnormal opacities in lung lobes (axial and lateral distribution). Also, the severity of the abnormal opacity was assessed for each lobe. The mediastinal window was assessed for lymph nodes and pleural effusion.

The onset of a duration of signs and symptoms classify COVID-19 patients to four stages: (a) Early stage (0–4 days), is characterized with either normal findings or GGO; (b) Progressive stage (5–8 days), with increased GGO and crazy-paving appearance; (c) Peak stage (9–13 days), with progressive consolidation; and (d) Late stage (≥14 days), characterized by a gradual decrease of consolidation and GGO, while signs of fibrosis (including parenchymal bands, architectural distortion, and traction bronchiectasis) may manifest[10].

The CT severity score index is a scoring system used to assess the lung involvement by COVID-19 based on approximate estimation of pulmonary involved areas. Each of the five lung lobes has been visually scored and given a score from 1 to 5: score 1 representing less than 5% lobar involvement, score 2: 5–25%, score 3: 26–50%, score 4: 51–75%, score 5: > 75% lobar involvement. Score 0 is added for no lobe pathology.

Then, the final score will be the summation of individual lobar scores and will be out of 25 (total score); the total lung involvement is then obtained by multiplying the total score by 4[11].

Statistical analyses were performed using the GraphPad Prism Version 8. The frequency and percentage were calculated for the characteristics of patients and continuous data. Statistical significance was considered if the p-value < 0.05. The Chi-square test was used to analyze categorical data.

RESULTS

Overall, 137 COVID-19 patients were eligible to participate in the study. The age of participants in the study ranged from 17 to 85 years (average age: 52.12 ± 15.79 SD). Approximately more than 54% of patients belonged to the group of 31-59 years. The gender was 52 (38%) males, and 85 (62%) was females. The stages of disease are: early stage was found in 12 (8.76%) of patients, 38 (27.74%) in progressive stage,40 (29.20%) peak stage, and 47(34.30%) in late stage (Table 1).

The CT findings showed that 17 (12.4%) of the patients were normal. Consolidation was most common finding (84 patients, pure form (48, 35%), mixed form (36, 26.3%)), followed by GGO (72patients, pure form (36, 26.3%), mixed form (36, 26.3%)) (Figure 1). Other findings are: 17 (12.4%) crazy paving pattern, 52 (37.9%) interlobular septal thickening patients (Figure 1), 69 (50.4%) subpleural bands, and 13 (9.5%) bronchiectasis (Figure 1).

Table 1: Frequency of age groups, sex of patients and the stages of the disease.

Age		Sex		Stages of the disease	
Age (years)	**No. of patients**	**Sex**	**Number of Patients**	**Stages of the Disease**	**Number of Patients and percentage**
≤ 30	12 (8.76%)	Male	52 (37%)	Early stage	12 (8.76%)
31-59	73 (53.28%)	Female	85(62%)	Progressive stage	38 (27.74%)
≥ 60	52 (37.96%)			Peak stage	40 (29.20%)
				Late stage	47 (34.30%)
Total	**137**		**137**		**137**

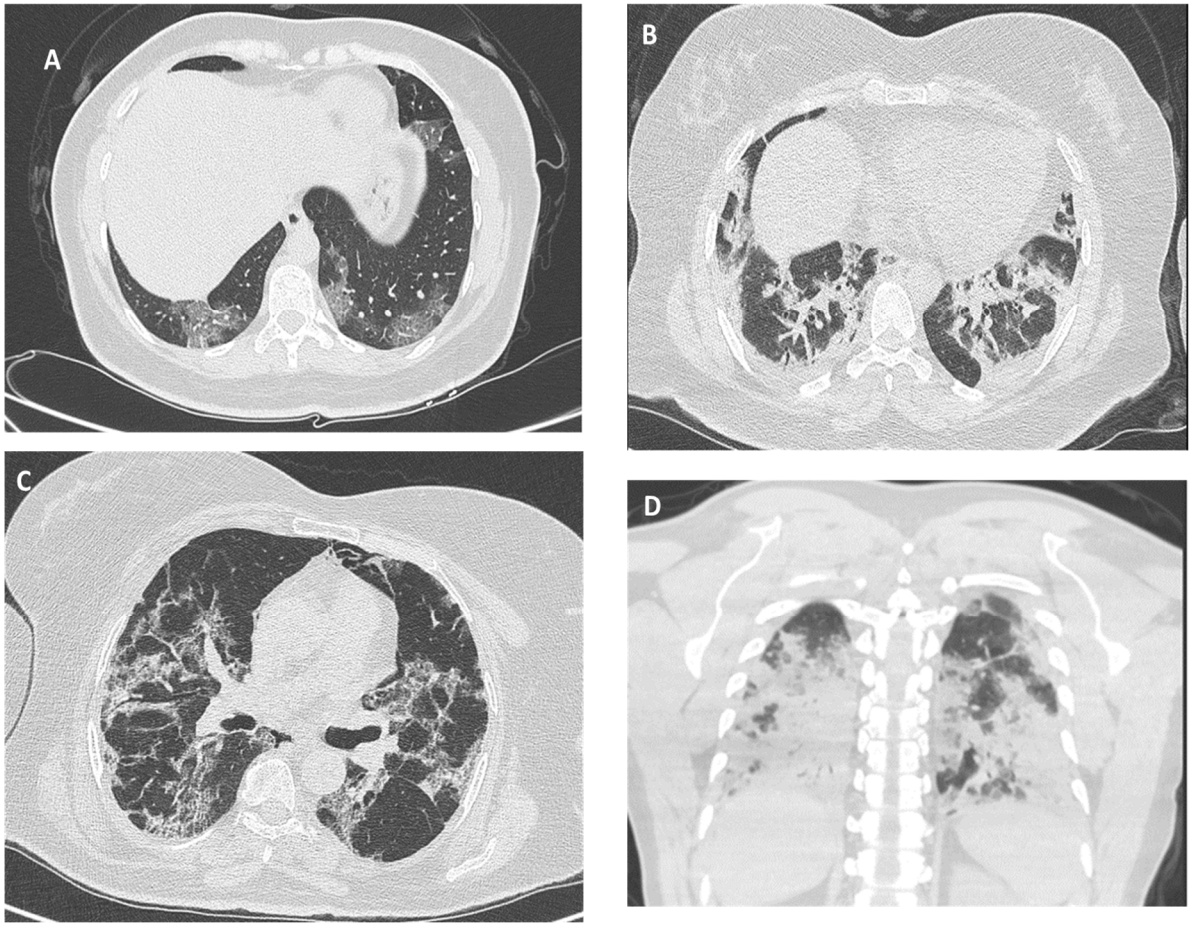

Figure 1: CT of chest lungs window of patients infected with COVID-19. A: An axial CT of the lung in 34 years old female patient with 7 days duration. There was GGO in posterior peripheral lung. B: Axial CT scan lung window of 48 years old female patient with 14 days duration. There was confluent consolidation in the periphery of both lungs, with irregular shape and retractile configuration. C: An axial lung CT of the chest of 62 years old female patient of 20 days duration. there is bilateral mainly peripheral and some central and anterior located GGO with irregular shape, subpleural and interstitial lines seen, mild bronchiectasis in right side. D: Coronal lung section of HRCT of chest of 40 years old male patient with 10 days duration of disease. The consolidation opacities are continuous and extensive in posterior periphery of the lung with basal and midlung predominance and mild apex involvement.

Table 2: Score of lung involvement in COVID-19 patients (N=137), Correlation between CT severity index and different age group and sex of patients

CT Severity Index	Number and percentage	Age of the Patients			Sex of the Patients	
		≤30 years	31-59 years	≥ 60 years	Male	Female
Score 0	17 (12.41%)	3	6	8	8	9
Score 1	1(0.73%)	1	0	0	1	0
Score 2	17 (12.41%)	3	9	5	5	12
Score 3	56(40.88%)	5	33	18	23	33
Score 4	34(24.82%)	0	19	15	13	21
Score 5	12(8.76%)	0	6	6	2	10
Total	**137(100%)**	**12**	**73**	**52**	**52**	**85**
P value			**0.021**		**0.38**	

The right and left lung was involved in 119 and 118 of 137 COVID-19 patients, respectively. 117 patients had both lungs involved, 3 patients unilateral one. For each lobe involvement was: right lower lobes (RLL) was involved in 118/137 (86.13%) patients, 117/137 (85.40%) for left lower lobe (LLL), 110/137(80.29%) right upper lobe (RUL), 108/137 (78.83%) left upper lobe (LUL), 106/137 (77.37) right middle lobe (RML). The mean percentage of lung severity score was 28.39 for RLL, 25.05 for LLL, 20.26 for RML, 18.89 for RUL, and 16.72 for LUL. The P-value of t-Test of lung lobes severity correlation was 0.001 between LLL and LUL, 0.3 between RML and RUL, 0.0005 between qRLL and RUL, and 0.003 between RLL and RML, 0.138 between RLL and LLL (Table 3).

Table 3: The lobes of lung involved and its severity mean and median in COVID-19 patients, and the correlation between severity of the lobes by using two sample t-Test.

Lobes of Lungs	Involved Numbers and percentage	Mean of percentage of severity	Median of severity	Lobe's correlation severity	P- value
(LUL)	108 (78.83%)	16.72	10	LUL and LLL	0.001
(LLL)	117 (85.4%)	25.05	15	RUL and RML	0.3
(RUL)	110 (80.29%)	18.89	10	RUL and RLL	0.0005
(RML)	106 (77.37%)	20.26	10	RLL and RML	0.003
(RLL)	118 (86.13%)	28.39	20	RLL and LLL	0.138

Out of 137 subjects, the final score of the lung involvement showed that 17 patients were normal (Score 0, 12.41%). Score 1, 2, 3,4 and 5 was seen in 1(0.74%), 18(13.14%), 56 (40.88%), 34(24.82%) and 12 (8.76%) patients, respectively (Table 2). There was significant association between different CT scores and age group of patients (p value =0.021), but no significant association with sex of patient is seen (p=0.38) (Table 3).

There was significant correlation between stages of the disease and pure ground glass opacities (p=0.013), pure consolidation (p= 0.026), mixed GGO and consolidation (p= 0.015), interlobular septal thickening (p=0.006), and bronchiectasis (p= 0.026) (Table 4).

Table 4: Correlation between spectrum of findings and duration of signs and symptoms

CT findings	NO. of Patients	Early phase	Progressive	Peak	Late	P value
Pure Ground Glass opacity	36(26.28%)	6	15	8	7	0.013
Pure Consolidation	48(35.04%)	0	11	17	20	0.026
Mixed GGO and Consolidation	36(26.28%)	3	3	12	18	0.015
Crazy Paving pattern	17(12.41%)	1	5	2	9	0.242
Interlobular Septal thickening	52(37.96%)	2	10	13	27	0.006
Subpleural bands	69(50.36%)	4	14	22	29	0.074
Bronchiectasis	13(9.49%)	1	0	3	9	0.026
Halo sign	1(0.73%)	0	0	1	0	0.486
Reverse halo sign	1(0.73%)	0	0	0	1	0.587
Pneumothorax	2(1.46%)	0	0	0	2	0.274

DISCUSSION

This cross-sectional study was performed in fourth wave of COVID-19 in the fall of 2021, in which there were surge in number of COVID-19 cases and patients visiting the hospitals and clinician in our region, because still high number of populations was not vaccinated and protection measures not followed strictly by the population. The population in Duhok city, Kurdistan Region, Iraq was at risk of acquiring a surge in number of CVID-19 infection, especially it was after parliamentary election period and opening school season.

Our study shows that about 37,96% were male and 62,04% were female and that the CT severity score was not significantly associated with gender. There was no correlation between the CT severity index and sex of patients (p=0.38). This was not with agreement with other studies that show male were more presenting to the health care services and they present more with severe disease. One of this study was performed by Al-Mosawe, et al. who studied 172 Iraqi patients infected with COVID-19 (58.2% were male, 41.8% female) during the period from 5 August to 9 September 2020 (between first and second wave) and found higher CT severity score in male patients (p =0.0002) 12. Our study was conducted in fourth wave of COVID (Fall of 2021) which may predict change in behaviour of severity of disease due to immunity of population after repeated waves of COVID -19 infection and administration of vaccination.

The more severe CT lung changes appears to be higher in older age groups (above 60 years of age) with significant correlation (p= 0.021), owing mostly coexisting morbidities that needs hospitalization and intensive care unit service. The result is in agreement with Al-Mosawe, et al. who found significant correlation between age group and severe CT lung changes (p value = 0.00018). Therefore, it is important to note that COVID-19-infected patients who need hospitalization, ICU admission, and with higher mortality rate are more likely of male gender and those with elder age group populations[13,14].

In the present study, about 8.76% of patients were present in early stage of disease that is 0-4 days from onset of disease. The number of patients is higher and increasing in later stages of the disease: 27.74% in progressive stage (5-8 days), 29.20% in peak stage (9-13 days), and 34.31% in late stage or absorption stage (14-20 days). This could be due to the fact

that COVID-19 has a progressive pneumonia nature, and the patients searched for medical care to relieve from the progressive severity nature of the disease. Progressively increased in the number of patients with stages of the disease will have impact on the findings of the results regarding number of cases that have either ground glass opacities or consolidation. The lines and stripes and bronchial changes are more prominent toward the end stages of the disease, because the inflammatory change of COVID is leading to lung fibrosis, which may be resolved or become persistent as interstitial lung fibrosis.

Our study also revealed pure consolidation in 48 patients (35.04 %), while pure GGO and mixed consolidation and GGO opacities were encountered in 36 for each (26.28%). So totally consolidation is seen in 84 patients (61.34%), and GGO in 72 patients (52.56%). This in contradiction to the study of Al-Mosawe et al., 2021 regarding consolidation (33%), but agreed with their GGO finding (79%)[12]. The number of consolidations was higher and GGO was lower because more percentage of patients was beyond early stage of the disease. Our study showed that crazy paving was partly seen superimposed over GGO changes, meaning part of GGO showed crazy paving pattern. The percentage of crazy paving occurrence was variable over the range of 5-36% as stated in pictorial review by Ye et al., 2020. It suggests that it is a sign of progression of disease to progressive and peak stage of disease. As stated, not all GGO undergo crazy paving pattern. Crazy paving pattern finding in CT lung is an intermediate incidence (10-70%) in chest CT. There were variable percentages of consolidation and ground glass opacities in different studies because of the timing of the study at which CT examination is performed. Consolidation with or without ground glass changes will be seen in the 2nd and 3rd weeks of infection course. In our study, the number of our patients were 87 patients present beyond 9 days of presentation (duration of signs and symptoms :0-20 days, range is 19, mean is 10.87 days, median is 10) (40 patients at peak stage 9-13 days, and 47 patients at late stage 14-20 days). Our results were also similar to other studies, reported that ground glass pattern was the most common CT pattern in their studies[15.16].

In the present study, there was also a positive correlation between GGO (p=0.013), pure consolidation (0.026), interlobular septal thickening (p=0.006), bronchiectasis (p=0.026) with the stages of the disease. This is in accordance with the study of Pan and Ye (2020), they revealed that the GGO is predominant seen in early stage, while consolidation and crazy paving more occurring in progressive and peak stage 10. The interlobular septal thickening and subpleural bands were more observed in peak and late stage. As with many previous literatures like of Guilmoto, 2020 and Kwee and Kwee, 2020, pleural effusions and/or mediastinal adenopathy were not encountered in our study 1,14.

Our study revealed 17 patients (12%) had negative CT findings. This number is in accordance with estimated 10.6% (95% CI: 7.6%, 13.7%) normal CT lungs in review article by Kwee and Kwee,2020 1. our study shows that high percentage of patients (87%) who present with positive CT findings for COVID-19 infection. Thus, CT can be done as a support tool for diagnosis of pneumonia of COVID-19 in patients who exhibit epidemiologic and clinical features compatible with COVID-

19 infection, especially when the RT-PCR test results are negative 17. When correlating the CT severity index and age group of patients, the P value was 0.021. Regarding the mean percentage of lobe severity, lower lobes were more severely affected and predominant, and the P-value of the t-test between upper and lower lobes was significant (0.001 between LLL and LUL, 0.0005 between RLL and RUL); thus, indicating the disease is more severe and predominant in lower lobes. Our result was in accordance with the study of Francone and Iafrate (2020) who found that calculated CT score based on the extent of lobar involvement showed that pathological involvement was most common in the lower lobes. Same study showed that mean CT score comparison between lobes for each lung have significant difference between RLL and RUL, RLL and RML, and LLL and LUL ($p< 0.001$) 11. The high incidence of lower lobes involvement on CT of opacity was a parameter that predict high probability of COVID-19 pneumonia (more than 70%) when there was no RT-PCR proven-test.

In conclusion, the findings were predictable regarding the presence of consolidation and ground glass opacities, the predominance in peripheral basal lung fields. The abnormal opacities show predictable appearance according to the temporal pathological changes of the lung pneumonia in CT. Also, the chest CT has the potential value in assessing the severity of the lung involvement by CT score index and accordingly rapid triaging of symptomatic patients to whether the patient need close monitoring if the total lung score index is high.

We have no conflict of interest to disclose.

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پوختە

شەبەنگەك ژ دیاردە و توندیا وێنەیێ برگەیی ب ریکا کۆمپیوتەری بو سینگی لنك نەخۆشێن کۆفید 19 ل دهۆك، هەرێما کوردستان، عیراق

پێشەکی و ئارمانج: هەر ژ پەیدابوونا نەخۆشیا کوفید 19، پشکنینا سیهێ ب تیشکا برگەیی کو ئامیرەکێ گرنگێ دەست نیشانکرنێ یە بو هەلسەنگاندنا نەخۆشیا کوفید 19 یێ سیهکی. ئارمانج ژ ڤێ ڤەکولینێ هەلسەنگاندنا شەبەنگا ئەنجامێن تیشکێ یە د وینەیێ برگەیی ب ریکا کۆمپیوتەری یێ نە پشتەڤانیکەر بو سیهان. و خەملاندنا نیشاندەرێ پلەیا توندیا وینەیێ برگەیی ب ریکا کۆمپیوتەری و گرێدانا ئەنجامێن وێنەیێ برگەیی یێ نەخوشان ب تەمەن و رەگەزیڤە.

کەرەستە و رێك: ئەڤ ڤەکولینا برگەیی ل (9) ی چریا ئێکێ هەتا (29) ی چریا دووێ سالا 2021 هاتەکرن ل بەشێ وێنەیێ برگەیی ل نەخۆشخانا ئازادی یا فێرکرنێ، دهۆك عیراق. ب شێوەکێ گشتی 137 ژ نەخۆشێن کوڤید 19 کەتنە بەر ڤەکولینێ کو گازندە ژ نیشانێن پۆزەتیڤ دکرن لدویڤ پشکنینا RT-PCR دڤێ ڤەکولینیدا و تەمەنێ وان دناڤبەرا 17 - 85 سالان بوو. لێنێرینەك ل پارچەیێن سیهێ ب ریکا کۆمپیوتەری هاتەکرن بو سروشتێ تاریکرنێ نەیێ سروشتێ ب شێوەکێ سەرەکی تاریکرنا شیشەیێ هێرای یێ پاقژ (GGO) و تێکەلکری. نیشاندەرێ پلەیا توندیا وێنەیێ برگەیی ب ریکا کۆمپیوتەری هاتەپیڤان کو گرێدای بیت ب تەمەن و رەگەزی و گورانکاریێن دەمی بو ئەنجامێن سیهێ.

ئەنجام: ناڤنجیا تەمەنێ نەخۆشان 52.12 ± 15.79 SD بوو، پتر ژ 50 % ژ نەخۆشان تەمەنێ وان دناڤبەرا 31 - 59 سالّ بوون و 85 (62 %) مێ. تاریکرنا تێکەلکرنێ. تاریتیەکا پتر بەلاڤبوو (61,34 %) لدویڤدا تاریتیا شیشەیێ هێرای یێ پاقژ (52,56 %). تاریکرنێن سیهێ پتر د دیاربوون د پرتێن خارێدا. هەڤبەندیەکا پۆزەتیڤ یا بهێز هەبوو دناڤبەرا پلەیا توندیا وێنەیێ برگەیی ب ریکا کۆمپیوتەری و کۆمەلا تەمەنی یێ مەزنتر ب سالان (بەهایێ چێدبیت = 0,021)، لێ هەڤبەندیا مەعنەوی ب رەگەزیڤە نینە (بەهایێ چێدبیت = 0,38) هەروسا هەڤبەندیەکا پۆزەتیڤ هەبوو دناڤبەرا ڤۆناغێن نەخۆشیێ و تاریبوونا شیشەیێ هێرای یێ پاقژ (بەهایێ چێدبیت = 0,013)، تێکەلبوونا پاقژ (0,026)، ستویراتیا بەربەستی دناڤبەرا پرتاندا (بەهایێ چێدبیت = 0,006) بەرفرەهبوونا بوریچکێن هەوای (بەهایێ چێدبیت = 0,026).

دەرئەنجام: چێدبیت وێنەیێ برگەیی ب ریکا کۆمپیوتەرێ تاریکرنێن سیهێ یێن نە سروشتی هەلسەنگینیت کو چێدبیت پێشبینی یێ بهێتەکرن و توندیا نەخۆشیێ بهێتە هەلسەنگاندن و پاشی هزرەك ل سەر دەست نیشانکرنا نەخۆشیێ بهێتە دان. بلندبوونا پلەیا وێنەیێ برگەیی ب ریکا کۆمپیوتەری ب شێوەکێ مەزن ب تەمەنێن مەزن ب سالانڤە گرێدایە.

پەیڤێن کلیلێ: کۆفید 19، نیشاندەرێ پلەیا مەترسیاتی بو وێنەیێ برگەیی، وێنەکرنا سینگی یا برگەیی، هەردوو سیە، دهۆك، عیراق.

الخلاصة

طيف من مظاهر وشدة التصوير المقطعي المحوسب للصدر لدى مرضى كوفيد 19 في دهوك، إقليم كردستان، العراق

الخلفية والأهداف: منذ ظهور عدوى كوفيد 19، كان فحص الرئة بالأشعة المقطعية أداة تشخيصية مهمة لتقييم عدوى كوفيد 19 الرئوي. الهدف من هذه الدراسة هو تقييم طيف النتائج الإشعاعية في التصوير المقطعي المحوسب غير المعزز للرئتين، وتقدير مؤشر درجة شدة التصوير المقطعي المحوسب وربط نتائج التصوير المقطعي للمرضى مع العمر والجنس.

المواد والطرق: اجريت هذه الدراسة المقطعية من 9 تشرين الاول الى 29 تشرين الثاني 2021 في قسم التصوير المقطعي بمستشفى آزادي التعليمي، دهوك، العراق. بشكل عام، تم تضمين 137 من مرضى COVID-19 الذين يعانون من أعراض إيجابية حسب فحص RT-PCR في هذه الدراسة، تتراوح أعمارهم بين 17-85 عاما. تم النظر إلى شرائح الرئة المحوسبة لطبيعة التعتيم غير الطبيعي بشكل اساسي عتامة الزجاج المطحون النقي (GGO) والاندماج. تم قياس مؤشر درجة شدة التصوير المقطعي المحوسب ليرتبط بالعمر والجنس والتغيرات الزمنية لنتائج الرئة.

النتائج: كان متوسط عمر المرضى 52.12 ± 15.79 SD، أكثر من 50٪ من المرضى تراوحت أعمارهم بين 31-59 سنة و85 (62٪) إناث. كانت عتامة الاندماج هي العتامة الأكثر شيوعا (61.34٪)، تليها عتامة الزجاج المطحون النقي (52.56%). كانت العتامات الرئوية هي السائدة في الفصوص السفلية. كان هناك ارتباط إيجابي قوي بين درجة شدة التصوير المقطعي المحوسب والمجموعة العمرية الأكبر سناً (القيمة الاحتمالية = 0.021)، ولكن لا يوجد ارتباط معنوي بالجنس (القيمة الاحتمالية = 0.38). كان هناك أيضاً ارتباط إيجابي بين مراحل المرض و عتامة الزجاج المطحون النقي (القيمة الاحتمالية = 0.013)، الاندماج النقي (0.026)، سماكة الحاجز بين الفصوص (القيمة الاحتمالية = 0.006)، توسع القصبات (القيمة الاحتمالية = 0.026).

الاستنتاجات: يمكن للتصوير المقطعي المحوسب للصدر تقييم عتامات الرئة غير الطبيعية التي يمكن التنبؤ بها وتقييم شدة المرض ومن ثم إعطاء فكرة عن تشخيص المرض. يرتبط ارتفاع درجة التصوير المقطعي المحوسب بشكل كبير بالفئات العمرية الأكبر سنا.

الكلمات المفتاحية: كوفيد 19، مؤشر درجة الخطورة للتصوير المقطعي، تصوير الصدر المقطعي، الرئتين، دهوك، العراق.