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COMPLEX ASSESSMENT OF COMPUTED TOMOGRAPHY OF THE LUNGS AND CLINICAL DATA IN COVID-19 PATIENTS, HOSPITALIZED IN THE CLINIC IN NUR-SULTAN

Abstract. The ambiguity of the X-ray picture and clinic in patients with coronavirus infection (CVI) was the reason for this analysis in order to avoid diagnostic errors and to achieve the effect of the treatment.

Conducted a comparative description of three clinical cases of patients with coronavirus infection COVID-19.

All three patients differed in different parameters of SARS Co-2 PCR. In the first two patients who underwent CT on the 7th and 10th days from the onset of the disease on control CT after treatment, a regressive positive dynamics was observed; in the third patient, after an early CT scan on the second day of illness and on the next CT scan performed on the 10th day after the appearance of the clinic and a positive PCR test, progression of signs of viral pneumonia was observed with an increase in the affected area.

Thus, the earlier CT was performed, the less pronounced the changes in the CT picture (the lesion volume is up to 5% or no changes are detected). When performing CT scan, patients with a long-term clinic (7-10 days from the onset of the disease) showed a characteristic picture of lung damage - up to 25-30%. The analysis of CT scans performed in the described clinical cases at different times from the onset of the disease, regardless of the results of PCR, confirms the need for CT scans 5-7 days after the first clinical signs appear. Also, as a result of our work, we once again received confirmation from numerous studies conducted in the world on the absence of a correlation between SARS Co-2 PCR and CT data.

Key words: computed tomography (CT), coronavirus infection, COVID-19, "ground glass" (GGO).

Introduction. The COVID-19 pandemic is a coronavirus infection (CVI) pandemic caused by the SARS-CoV-2 coronavirus [1]. The epidemic began with the detection of the first cases of pneumonia of unknown origin in the city of Wuhan in the Hubei province of central China at the end of December 2019, the origin of which was associated with the Huanan seafood market. On December 31.2019, China reported an outbreak of unknown pneumonia to the World Health Organization (WHO) [2]. On January 30, 2020, at a meeting of the WHO Emergency Committee, the outbreak of the new coronavirus was declared a public health emergency of global concern [3]. Most of all, WHO was concerned about the possibility of an outbreak of the virus in countries with an underdeveloped health system [4].

In Kazakhstan, the first case of detecting patients with COVID-19 was registered in March 20. To date, in the Republic of Kazakhstan, as of August 1, 20, 91,593 cases of CVI infection were registered. 61 839 people recovered, however, despite the re-introduced quarantine and ongoing epidemiological measures, 6407 cases of coronavirus infection were detected in the last day, 66 patients died. According to the US-based Johns Hopkins University, 17,759,332 people got COVID-19 in the world, 682,855 patients became victims of the infection, and another 10,484,442 people recovered [5]. Radiologists of Kazakhstan, along with infection diseases physicians and pulmonologists, are at the forefront, provide significant assistance in the diagnosis of CVI.

Based on multiple literary sources describing the role of computed tomography (hereinafter referred to as CT) in the diagnosis of pneumonia caused by the COVID-19 virus, the ambiguity of the clinic, CT-picture, the results of timely nucleic acid testing (PCR) and other laboratory data, we set out to analyze own material and compare with the available literature data.

Materials and methods A retrospective analysis of three clinical cases with CT analysis before and after treatment was performed. The patients were treated at the provisional clinic in Nur-Sultan from 20.05 to 20.07.2020. The volume of lung damage was determined referring to the recommendations of Russian scientists: CT-0, zero, lungs unchanged; CT-1, mild with parenchymal involvement = <25%; CT-2, medium-severe with parenchymal involvement 25-50%; CT-3, severe with parenchymal involvement 50-75% and CT-4 critical> = 75% [6]. A point assessment of the degree of lesion was also used, proposed by Xingzhi Xiel, Zheng Zhong, Wei Zhao [7], which states that each lung is divided into three zones: upper (above the carina), middle (below the carina to the lower pulmonary vein) and lower (below the pulmonary vein) ... For each zone: 0 points - 0% engagement; 1 point - less than 25%; 2 points - from 25% to 50%; 3 points - from 50% to 75%; 4 points - 75% or more; 6 zones - the maximum score is 4 points, as a result the total score was summed up - 24 points. Also, to quantify the severity and prevalence of the process by CT, the method proposed by Michael Chung, Adam Bernheim, Xueyan Mei et al. [8] was used, according to which each of the five lung lobes was assessed by the degree of involvement and classified as absence (0%), minimal (1-25%), mild (26-50%), moderate (51-75%) and severe (76-100%).

Research results: *Clinical case 1.* Patient A., female born in 1966 (54 years old), fell ill for the first time after hypothermia on 13.05.2020, symptoms began with an increase in body temperature from 37 to 39 degrees for 2 days, body aches, chills, pain in the lower abdomen and lumbar region. On 16.05.20., weakness, headache, cough with difficult to separate phlegm, sweating joined. The patient has denied contact with infectious patients in the past 14 days and has not traveled to foreign countries over the past six months, where cases of COVID-19 have been identified. She was self-treated at home with paracetamol. On 05.18.20. , due to the deterioration of her condition, she was hospitalized in an infectious diseases' hospital after a positive PCR for the presence of coronavirus infection. Anamnesis: arterial hypertension 3 tbsp. (takes basic therapy), also registered with an endocrinologist with hypothyroidism. Laboratory - ESR up to 20 mm/h.

CT scan was performed upon admission (20.05.20) on the 7th day from the onset of the disease (figure 1) and CT-signs of bilateral polysegmental pneumonia, moderate severity CT-2 (multiple areas of compaction of the " GGO " type, localization, of various lengths, characteristic of the inflammatory process, probably of viral etiology, the volume of lung damage was up to 25%).

Treatment was carried out: aluvia 2 tablets x 2 times inside 10 days, Cef 3 x 1 g x 2 times 14 days, Omez 1 capsule x 2 times a day for 6 days, Clexane 0.4 x 2 times a day for 8 days, Fraxiparin solution 0,3 x 2 times a day. Re-analysis of SARS Co-2 PCR from 20.05.2020 - negative result. On CT from 02.06.20 (figure 2) 2 weeks after treatment, positive dynamics was determined in the form of a decrease in foci with a predominance of compacted foci of consolidation. At discharge, leukocytes, lymphocytes and C-reactive protein were normal, ESR decreased to 15 mm/h.
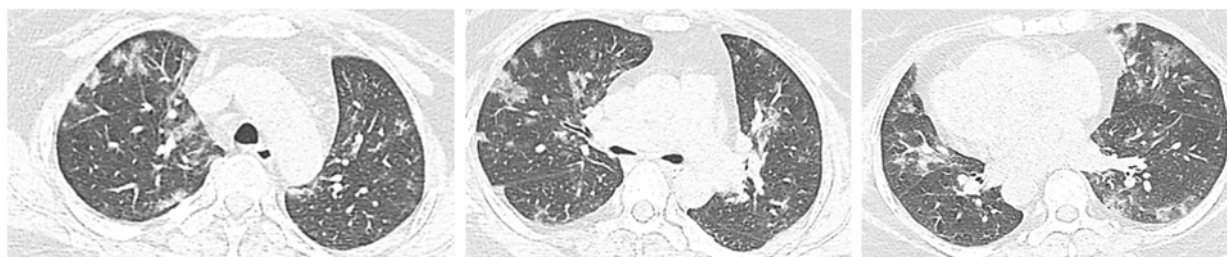
20.05.20

Figure 1 - CT scan of patient A, 54, upon admission to the clinic (20.05.20)

02.06.20

Figure 2 - CT scan of patient A, 54, in dynamics 13 days after treatment (06.02.20)

11.07.20

Figure 3 - CT of the lungs of patient A., 54 years old, in dynamics after a month

In dynamics, a month later, the patient was admitted to rehabilitation and CT scan was performed on 11.07.20 (figure 3). CT - positive dynamics (reduction of areas of compaction, the presence of areas of reticular changes and fibrosis).

Clinical case 2. Patient D., male, born in 1971 (49 years old), PCR three times negative (17.06.20, 20.06.20, 29.06.20). He had contact with CVI-infected person (the spouse has a PCR positive from 15.06.20). The first symptoms started from 16.06.20: weakness, nasal congestion and chest pain. He received outpatient azithromycin 500 mg per day for 7 days, Flemoxin Solutab 2000 mg per day for 7 days. On 26/06/2020 got hospitalized for further examination and treatment. Laboratory data on admission: leukocytes 10.2, lymphocytes 4.1, CRP 13 mg/l, ESR 25 mm/h.
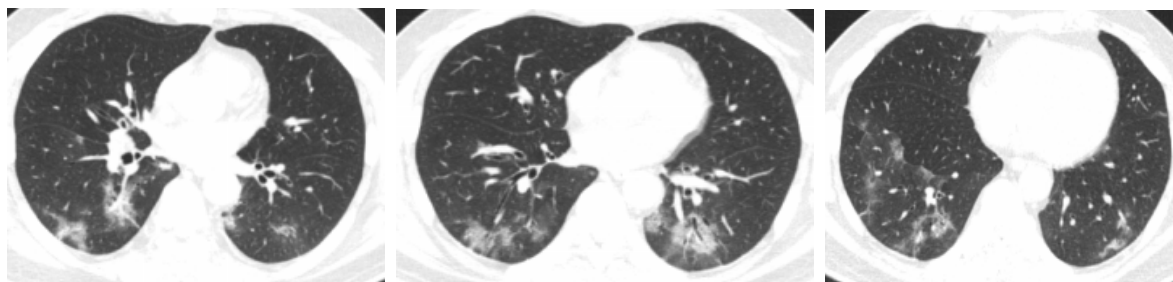
26.06.20

Figure 4 - CT of the lungs of patient D., 49 years old, 10 days after the first symptoms

On 26.06.20., CT of the lungs was performed on the 10th day after the onset of the first symptoms (figure 4), CT scan showed many pathological areas of the "GGO" type, of various forms and localization with a predominant lesion of the lower lobes of the lungs. The volume of lesion of the lung parenchyma was 25%, the degree of lesion according to computed tomography CT-1 (light). Treatment: vitamin C 500mg x 2 times a day; paracetamol 500mg 1 tab x 2 times a day; suprax 400mg 1 tablet 1 time per day for 7 days. On the 14th day after treatment and improvement of the condition (10.07.20), the patient underwent control CT (figure 5). PCR analysis from 07.09.2020. - negative. As can be seen on CT, there is a positive trend, with a significant decrease in the nature of the matte induration in the lungs, in comparison with previous data.
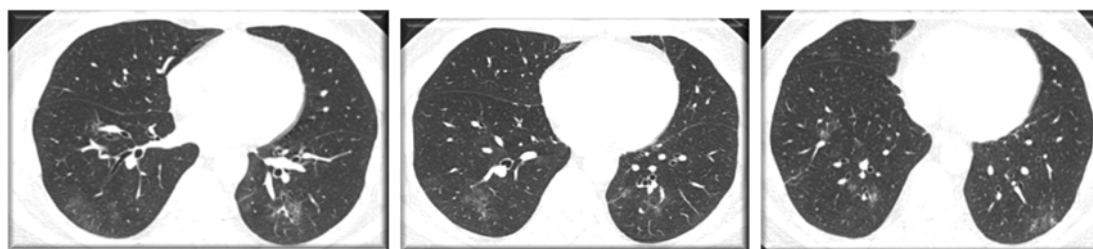
10.07.2020

Figure 5 - CT of the lungs of patient D., 49 years old, 14 days after the previous CT scan

Patient D was discharged for outpatient treatment with improvement on 12.07.20. On discharge, leukocytes, lymphocytes and C-reactive protein were within normal limits, ESR decreased to 12 mm/h.

Clinical case 3. Patient C, male, born in 1963 (57 years old). PCR negative on day 7 after contact with a patient with COVID-19. Fell ill on 22.05.20, general weakness, dry cough. Treatment: taking plenty of fluids, nasal irrigation with saline; aspirin at night; vitamin C 1000mg x 2 times a day. From the anamnesis the patient is not included in the dispensary. In a laboratory study, upon admission, leukocytes, lymphocytes and C-reactive protein are normal, ESR is 15 mm/h.

24.05.20 CT scan of the lungs was performed on day 2 from the onset of the disease (figure 6), according to the picture - signs of single local areas of dullness in the lower lobe of the right lung, perivascular localization, in area up to 5%, causing suspicion and average probability of viral pneumonia, mild severity and observation in dynamics is recommended.

24.05.20

Figure 6 - CT of the lungs of patient S., 57 years old, 2 days after the appearance of the clinic

The patient was prescribed treatment, however, on the 7th day from the onset of the first signs, the patient still complains of sore throat, dry cough, sweating, heaviness in the chest, shortness of breath with little physical exertion, cough with purulent sputum, severe sweating, decreased appetite. When re-taking PCR SARS Co-2 from 01.07.20 - positive result. Taking into account the deterioration of the patient's clinic after the treatment, it was decided to conduct a control CT scan in dynamics after 10 days (figure 7).

04.07.20

Figure 7 - CT of the lungs of patient S., 57 years old, in dynamics 10 days after treatment

On CT 04.07.20 - negative dynamics: an increase in the number and volume of pathological areas of dullness, polygonal forms, intralobar, perivascular and subpleural localization, an area with a

"cobblestone" symptom, the affected area is up to 25%. After the received CT data, the patient's treatment was adjusted: ceftriaxone 1 g. x 2 times a day and a solution of Fraxiparine 0.3 ml subcutaneously. On discharge, leukocytes, lymphocytes and C-reactive protein were normal, ESR decreased to 12 mm/h.

Discussion. All presented clinical cases with symptoms of COVID-19 had ambiguous results of the PCR tests: at the initial sampling, patient 1 had a positive PCR test result, patients 2 and 3 – negative ones. On re-sampling, patient 1 received a negative test result after treatment; patient 2, who was in contact with a CVI infected, had all PCR tests negative; patient 3, who had contact with a CVI infected ones, had his repeated PCR tests positive. All patients came at different times from the onset of symptoms, some were treated at home on their own for several days.

All three patients underwent CT on admission to determine the extent of the lesion and the likelihood of viral pneumonia in case of COVID-19, also over time to monitor and evaluate the effectiveness of treatment. CT scan revealed the primary signs of the disease, their subsequent transformation and the most unfavorable radiation symptoms corresponding to the severe course of the process. The primary symptoms of COVID-19 lung lesions on CT have been described by Xiaoqi Lin, Zhenyu Gong, Zuke Ziao et al. [9].

CT analysis showed that the study was conducted at different periods: patient 1 underwent the first CT scan on the 7th day of illness; patient 2 - on the 10th day from the onset of symptoms. Patient 3 underwent the first CT scan on the 2nd day. Thus, the earlier CT was performed, the less pronounced the changes in the CT picture (the volume of the lesion is up to 5%) or no changes are detected. When conducting CT, patients 5-7 days from the onset of the disease showed a characteristic picture of lung damage - up to 25-30%, which once again confirms the need for CT on 5-12 days after the disease. In case of patient 2 and patient 3, who had a negative PCR result, CT scan showed signs of viral pneumonia, this point once again confirms the lack of correlation between SARS Co-2 PCR and CT data, which was described in their work by Tao Ai and Zheniu Yang, studying 1014 cases on the correlation between CT of the lungs and the results of PCR testing in China. They proved that when comparing the results of PCR for COVID-19, the sensitivity of CT imaging was 97%, chest CT can be considered as the main, but not a screening method for detecting COVID-19 viral pneumonia [19].

In case of patient 2, a 4-fold negative PCR test indicates the absence of the COVID-19 virus. Previously described cases where CT-manifestations of pneumonia of the influenza virus were similar to the picture in COVID-19 [11]. Symptoms of GGO or GGO with consolidation and thickening of the interlobular septum were more often observed, a bilateral process with multiple changes in different lobes of the lungs, and most of them involved all 5 lobes, so it was difficult to distinguish them from each other [12-14]. Pneumonia in case of COVID-19 has a patchy or a combination of GGO with consolidation and mainly affects the peripheral zones, and in case of influenza pneumonia - a cluster pattern and thickening of the bronchial wall in the central and peripheral regions [15]. Also Wang et al. [16] found that with COVID-19, the margins of the lesion are distinct and contoured compared to the flu pattern.

All patients underwent general strengthening, antiviral and antiplatelet treatment. Control CT scans in 1 and 2 patients show the resolution phase with a decrease in the GGO volume, which indicates the correct tactics of the clinician and the timely started antibiotic therapy, which is not indicated at the initial stage of the disease. Detection of early CT changes in the lungs in 3 patients led to unreasonable self-treatment with antibiotics, which were not indicated in viral infection and on CT in dynamics, after a positive PCR - the progression of the process with the transition to a more severe stage of the lesion with signs of consolidation, which is a prognostic sign to determine further treatment tactics [17].

Our patients had intitial CT-patterns in COVID-19 (bilateral involvement (88%), "GGO" (88%), posterior distribution (80%), multilobar involvement (79%), peripheral distribution (76%), consolidation (32%), and the presence of stripes in the form of thickening and compaction of interlobular and intersegmental septa) and clinical results with previously reported cases in the literature [10]. Feng Pan, Tianhe Ye, Peng Sun and co-authors [18], based on the analysis of changes in the lungs during dynamic CT observation, proposed to supplement the qualitative characteristics of the degree of lung damage with quantitative ones.

In our work, we also presented the laboratory parameters of patients and determined an increase in leukocytes of patient 3 with a negative CT picture; unexpressed lymphocytopenia of patients 1, 2 and 3 before and after treatment; an increase in C-reactive protein of patient 2 with a positive dynamics of

decrease during treatment and an increase after treatment with progression of CT data of patient 3. ESR values also correlated with treatment and CT picture in all described patients, which is consistent with modern studies [20].

Summarizing the above, we can say the following:

- patient 1: no contact with a CVI infected, with symptoms of the disease, concomitant pathologies, a positive PCR test, a positive effect of therapy - from 25% of lung damage at the first CT scan and 5% of changes during repeated CT after treatment, speaks of the transferred viral pneumonia COVID-19;

- patient 2, who was in contact with a CVI infected, with four-fold negative PCR, presence of a clinic, with pronounced changes (25-30%) on the first CT scan and with good (5%) CT dynamics, quick recovery, speaks more about the transferred influenza virus;

- patient 3, who fell ill 7 days after contact with a CVI infected, weak clinical manifestations, without confirmation of the first PCR test and inconclusive initial CT data, in dynamics with an increase in the CT picture of viral pneumonia on day 10 and a positive second test for COVID-19, speaks of the progression of COVID-19 viral pneumonia with severe and long-term treatment.

The next conclusions follow from the presented work:

- the optimal timing of CT is of great importance, and we recommend carrying out the first CT scan 5-7 days from the onset of symptoms, since early CT scans are insensitive up to 4 days, and the use of CT as a screening method is inappropriate, which is confirmed by the literature data;

- CT in dynamics should be carried out at intervals of 3-5 days from the previous one, depending on the clinic, laboratory data, taking into account PCR testing, concomitant diseases;

- CT has a high sensitivity in detecting both the first CT signs of viral pneumonia, stages of development of the CT picture during dynamic research, and evaluating the effectiveness of treatment. CT data often correlate with the clinic, PCR test indicators, laboratory data, but there are conflicting data, which is confirmed by many modern works.

Conclusion. Computed tomography for COVID-19 is very important, since it may be the first study that will clearly show signs of viral lung damage, determine the stage of the process, assess the severity of the lesion and, of course, adverse prognostic signs of its further development. The accumulated experience of clinical and radiation examination of patients with COVID-19 will improve the radiation semiotics of the process in the lungs, which is important for determining treatment tactics.

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**НҰР-СҰЛТАН ҚАЛАСЫНДА ЕМХАНАҒА ЖАТҚЫЗЫЛҒАН COVID-19 ШАЛДЫҚҚАН
НАУҚАСТАР ӨКПЕСІНІҢ КОМПЬЮТЕРЛІК ТОМОГРАФИЯСЫН
ЖӘНЕ КЛИНИКАЛЫҚ ДЕРЕКТЕРДІ КЕШЕНДІ БАҒАЛАУ**

Аннотация. Коронавирусты инфекция (КВИ) жұқтырған науқастардағы рентгенологиялық көріністер-дің біркелкі болмауы – емдеу кезіндегі әсерді байқау үшін және диагностикалық шараларды жүргізу барысындағы қателіктердің алдын алу мақсатында осы анализді өткізуге негіз болды. Сондай-ақ ауруханаға жатқызылу алдында және ауруханаға жатқаннан соң COVID-19 расталған науқастарға динамикалық өкпенің компьютерлік томографиясы (КТ) жасалып, өзара салыстырылды.

Нұр-Сұлтан қаласындағы клиниканың провизорлық бөлімшесіндегі COVID-19 коронавирус инфек-циясын жұқтырып, диагностика жасалған және ем қабылдаған үш клиникалық жағдайдың салыстырмалы сипаттамасы жүргізілді. Барлық науқастарға ПЦР тест өткізіліп, зертханалық талдамалар алынып, мульти-спиральді компьютерлік томография жасалды. Мақалада клиникалық сипаттамалар бастапқы кезеңдегі оң ПЦР тест нәтижелерін алғаннан кейінгі КТ көрсетілімдері, зертханалық көрсеткіштер мен динамикалық КТ бақылауының ем курсын алғаннан соңғы нәтижелері салыстырылды. Сондай-ақ мысал ретінде ПЦР теріс нәтижелі науқастардың КТ көрсетілімдерінің кері бағытта даму мәліметтері ұсынылған.

Жұмыс аясында үш науқас зерттеліп, емделді. Олар: 54 жастағы бір әйел және 49 бен 57 жастағы екі ер адам. Барлық зерттеулерге ПЦР SARS Co-2 тесті жасалды. Бірінші жағдайдағы әйел 5 тәуліктен артық суық

тиіп ауырған. 7-тәулікте ПЦР тесттің оң нәтижесін алғаннан соң КТ жасалып, нәтижесінде орта дәрежелі ауырлықтағы вирусты пневмонияның белгілерін көрсеткен. Екінші клиникалық жағдайда суық тию белгілері бар ер адамда ПЦР тест 3 рет теріс нәтиже беріп, қабылдаған емнің әсері болмағаны себепті және зертханалық көрсеткіштердің нашар болуына байланысты сырқаттың 10-тәулігінде КТ жасалып, вирусты пневмония COVID-19-дың жеңіл дәрежесін анықтаған. Үшінші клиникалық жағдайдағы ер адам жіті ауырып, ПЦР тесттің теріс нәтиже бергеніне қарамай, клиникалық белгілері пайда болған екінші тәулікте КТ жасалып, қалыптасу сатысындағы, динамикалық бақылауды қажет ететін күңгірттену ошақтары байқалған. Жоғарыда атап өткеніміздей барлық үш науқаста аурудың мерзімімен, КТ диагностикасын өткізу кезеңімен және ПЦР SARS Co-2 тестінің нәтижелері бойынша өзара айырмашылығы бар. Аурудың 7 және 10-тәулігінде КТ жасалған алғашқы екі науқас ем қабылдап болғаннан кейінгі бақылаулық КТ зерттеулерінде регрессивті, оң динамика байқалған. Аурудың ерте кезеңінің 2-тәулігінде және ПЦР тесттің оң нәтижесінен кейінгі 10-тәулікте КТ жасалған үшінші науқаста вирусты пневмония белгілерінің артып, зақымдалу ошағының ұлғайғаны белгілі болған.

Осылайша КТ қаншалықты ерте өткізілсе, соншалықты КТ көрсетілімдеріндегі өзгерістер аз көрінеді (зақымдалу көлемі 5%-дан аз немесе мүлде көрінбейді). Ұзақ клиникаға ие (сырқаттың 7-10 тәулігінде) науқастардың жасалған КТ нәтижелеріндегі өкпенің зақымдану ошақтары – 25-30%-ға дейін жетеді. Зерттеу көрсеткендей, COVID-19 кезіндегі пневмонияның ең жиі белгілері ретінде – екі жақты үдеріс (75%), «ұнтақталған әйнек» симптомы (85,7%), дақты дақ консолидациясы (19,0%), субплевралық локализациямен, сондай-ақ қабықшалар аралық және сегмент аралық қалқандарда тығыздалу түрінде жолақтар пайда болған. Ұсынылған клиникалық жағдайда сырқаттың әртүрлі сатыларында өткізілген КТ талдамалары – ПЦР тестінің нәтижесіне тәуелсіз түрде, аурудың алғашқы клиникалық белгілері пайда болғаннан кейінгі 5-7 тәулікте КТ өткізу қажеттілігін растайды. Сондай-ақ біз жүргізген жұмыс барысында әлемде жасалып жатқан зерттеулер қорытындысына сай келетін ПЦР SARS Co-2 және КТ мәліметтері арасындағы корреляцияның жоқтығын тағы да бір рет растадық.

Түйін сөздер: компьютерлік томография, коронавирусты инфекция, COVID-19, «күңгірт шыны» симптомы.

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КОМПЛЕКСНАЯ ОЦЕНКА КОМПЬЮТЕРНОЙ ТОМОГРАФИИ ЛЕГКИХ И КЛИНИЧЕСКИХ ДАННЫХ У ПАЦИЕНТОВ С COVID-19, ГОСПИТАЛИЗИРОВАННЫХ В КЛИНИКУ Г. НУР-СУЛТАН

Аннотация. Неоднозначность рентгенологической картины и клиники у пациентов с коронавирусной инфекцией (КВИ) послужило поводом проведения данного анализа во избежание диагностических ошибок и для достижения эффекта от проводимого лечения. При этом сравнивали результаты компьютерной томографии (КТ) легких пациентов, прошедших при поступлении и в динамике с подтвержденным COVID-19, госпитализированных в стационар.

Провели сравнительную характеристику трех клинических случаев пациентов с коронавирусной инфекцией COVID-19, проходивших диагностику и лечение в провизорном отделении клиники города Нур-Султан. Всем пациентам проводили ПЦР-тестирование, лабораторные анализы, компьютерную томографию на мультиспиральном компьютерном томографе. В работе описаны клинические характеристики, данные компьютерной томографии на начальном этапе после получения положительного теста, сравнение с лабораторными показателями и динамическое наблюдение по КТ-картине после проведенного курса лечения, также приведены примеры КТ исследований пациентов с отрицательной ПЦР и прогрессирование КТ-картины.

Было обследовано и пролечено трое пациентов: одна женщина, 54 лет и двое мужчин, 49 и 57 лет. Всем пациентам провели ПЦР SARS Co-2. В первом клиническом случае – женщина болела симптомами простуды более 5 дней, после был получен положительный тест на ПЦР и на 7 день проведена КТ, где описана картина вирусной пневмонии средней степени тяжести. Во втором клиническом случае у мужчины с простудной симптоматикой ПЦР тест трижды показал отрицательный результат, учитывая отсутствие динамики от лечения и плохие лабораторные показатели на 10 день от начала болезни пациенту провели КТ, где выявились признаки вирусной пневмонии COVID-19 легкой степени. В третьем клиническом случае

мужчина заболел остро, несмотря на отрицательный результат ПЦР, на 2 день от начала клиники провели КТ, где выявились подозрительные участки, с подозрением на вирусную пневмонию, вероятнее всего, формирующиеся и требующие динамического наблюдения. Как следует из вышеописанного, все трое пациентов отличались между собой сроками заболевания, проведения КТ-диагностики и разными показателями ПЦР SARS Co-2. У первых двух пациентов, которым КТ было проведено на 7 и 10 день от начала заболевания, на контрольных КТ после лечения наблюдалась регрессивная положительная динамика; у третьего пациента после проведенного раннего КТ на второй день болезни и на следующем КТ, проведенном на 10 день от появления клиники и положительного теста ПЦР, наблюдали прогрессирование признаков вирусной пневмонии с увеличением площади поражения.

Таким образом, чем раньше было проведено КТ, тем менее выражены изменения КТ-картины (объем поражения до 5% или никаких изменений не выявляется). При проведении КТ пациентам с длительной клиникой (на 7-10 день от начала заболевания) отмечена характерная картина поражения легких – до 25-30%. Исследование показало, что наиболее частыми признаками пневмонии при COVID-19 являются двухсторонний процесс (75%), симптом «матового стекла» (85,7%), пятнистая консолидация (19,0%) с субплевральной локализацией, также наличие полосок в виде утолщения и уплотнения межлобулярных и межсегментарных перегородок. Анализ проведенных КТ в описанных клинических случаях в разные сроки от начала заболевания, независимо от результатов ПЦР, подтверждает необходимость проведения КТ на 5-7 сутки после появления первых клинических признаков. Также в результате проведенной нами работы еще раз получили подтверждение многочисленные исследования, проведенные в мире на отсутствие корреляции между ПЦР SARS Co-2 и КТ-данными.

Ключевые слова: компьютерная томография, коронавирусная инфекция, COVID-19, симптом "матовое стекло".

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