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FEATURES OF X-RAY DIAGNOSTICS OF PATIENTS WITH MODERATE COVID-19

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RESUME
Environmental change, climate warming, increasing population density, high migration activity of the population and other factors provoke the emergence and spread of new infections around the world. The purpose of the study: to study the X-ray radiological features of patients with an average degree of COVID-19. The article presents an analysis of the results of X-ray radiological studies of 102 patients with COVID-19 of moderate severity who received treatment at the peak of the July-August 2020 pandemic in the COVID-19 specialized hospital at the dormitory of the Technological Institute in Bukhara.

Key words: COVID-19, coronavirus, clinic, diagnosis, prevention Conflict of interests

RELEVANCE
Environmental change, climate warming, increasing population density, high migration activity of the population and other factors provoke the emergence and spread of new infections around the world.
The beginning of 2020 was marked by the rapid spread of a new coronavirus infection (COVID-19) in Asia, America, Europe and the active introduction of the causative agent into the territory of the Russian Federation with the threat of penetration of an infectious agent into military units and the possibility of disease in military personnel. The first outbreak of COVID-19 occurred in December 2019 in the People's Republic of China with the epicenter in the city of Wuhan (Hubei Province).
On February 11, 2020, the International Committee on the Taxonomy of Viruses assigned the official name of the causative agent of infection – SARS-CoV-2. On February 11, 2020, the World Health Organization gave an official name to a new infectious disease – COVID-19 ("Coronavirus disease 2019").
The purpose of the study: to study the radiological features of patients with an average degree of COVID-19.

MATERIAL AND METHODS
The article provides an analysis of the results of X-ray studies of 102 patients with COVID-19 of moderate severity who received treatment at the peak of the pandemic in July-August 2020. in a specialized COVID-19 hospital at the dormitory of the Technological Institute in the city of Bukhara.
It should be noted that during this period, 326 patients with COVID-19 received inpatient treatment at the hospital. The treatment method was carried out according to protocol No. 6, on the

recommendation approved by the Ministry of Health of the Republic of Uzbekistan for the examination and treatment of COVID - 19 dated 06/30/2020. According to the protocol, patients with COVID - 19, depending on the severity of the disease, are conditionally divided into 3 groups. And specific recommendations are given on the scope of research and treatment, taking into account the severity of patients.

Of the 326 patients with COVID-19, 102 (31.2%) had moderate lung disease, 224 (68.7%) patients had severe lung disease with COVID-19. This article provides an analysis of radiological data of the studied patients with moderate severity of lung injury.

Of the 102 examined patients with covid pneumonia, 61 (59.8%) were males and 51 (41.2%) females aged 17 to 85 years. The average age was 52.6?1.8 years. The main complaints at admission in patients were - fever (up to 90%); Dry cough or with a small amount of sputum (72.3% of cases); Shortness of breath (28%); Fatigue (47.8%); Feeling of congestion in the chest (20.2%);

Sore throat (11.6%); runny nose (57.0%), decreased sense of smell and taste (82.8%); signs of conjunctivitis (22.0%) cases. All examined patients had complications of pneumonia, which was confirmed by X-ray radiological examination.

Of the 102 patients, in most cases (95.1%), bilateral covid pneumonia was noted with predominant middle (32.8%) and lower (62.3%), (5.8%) patients had unilateral pneumonia, of which right-sided pneumonia (3.7%), (2.1%) patients had left-sided COVID-19 pneumonia.

To accurately establish the diagnosis of COVID - 19, all patients underwent a PCR study from the nasopharynx. It should be noted that 2% of patients at the time of admission had confirmed PCR results on their hands. The rest of all patients from the moment of admission were conducted in the hospital PCR study. In 45% of patients, according to the results of a PCR study, there was a suspicion of coronovirus, 55% of patients had confirmed PCR tests for coronovirus. Taking into account the presence of clinical signs such as: anosmia, headaches, fever, in the anamnesis, in patients in whom a PCR study showed suspicion of coronavirus, a diagnosis of COVD-19 was made. All of them had a history of contact with patients with CVD -19 during the last 14 days, prior to the admission of patients. 70 % of patients in the family had patients with confirmed COVID-19.

From the moment of admission, on an emergency basis, all patients started conservative treatment according to protocol 6. From the moment of admission, all patients underwent PCR testing for COVID - 19 from the nasopharynx, body temperature, respiratory rate were measured, an objective examination of the lung (auscultation, percussion), lung spirography, pulse oximetry were performed , X-ray examination and, if necessary, MSCT of the chest. Taking into account the results of clinical and radiological studies, all examined patients, if necessary, underwent oxygen therapy using SPAP devices or Bobrov's apparatus.

RESULTS AND DISCUSSIONS

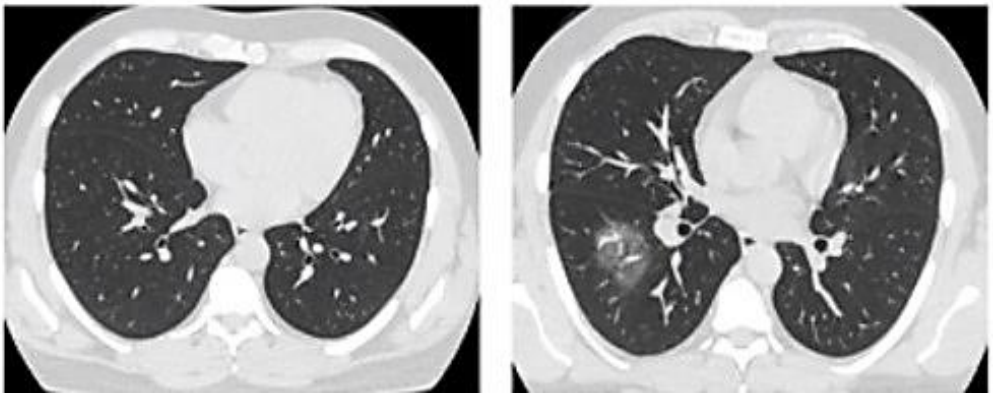
When evaluating X-ray images and MSCT of the chest of patients with COVID - 19, we adhered to the classification of Russian scientists. S.P. Morozov, D.N. Protsenko, S.V. Smetanina [i dr.]. 2020 (reference no. Morozovg).

The essence of the classification is as follows;

– CT-0 (normal): norm and absence of CT signs of viral pneumonia against the background of a typical clinical picture and a relevant epidemiological history (however, according to the results of CT, radiological signs of inflammatory lesions may be absent in 18% of patients with a mild course of the disease, as well as in the early stages diseases);

– CT-1 (light): ground glass compaction zones, involvement
lung parenchyma <25%;
– CT-2 (moderate): ground glass compaction zones, involvement of the lung parenchyma 25–50%;
– CT-3 (severe): areas of ground glass compaction, areas of consolidation, involvement of the lung parenchyma 50–75%, volume expansion
50% lesions in 24-48 hours on the background of respiratory disorders, if
research is carried out in dynamics;
– CT-4 (critical): diffuse compaction of the lung tissue by type
"ground glass" and consolidation in combination with reticular changes, pleural effusion (bilateral, predominance no left), lung parenchymal involvement >75%

It should be noted that out of 102 examined patients of group IA, 38 (37.2%) had a CT-1 form of radiological picture. 64 (32.8%) had CT-2 form of radiological picture. Which corresponds to patients with moderate COVID - 19.



Picture 1. CT-1 CT-2

In 99 (97.1%) patients lesions were noted on both sides, in 3 (2.9%) patients unilateral lung lesions were noted. The main radiological signs of lung damage in patients with COVID-19 were the following symptoms of COVID-19 associated pneumonia:
• Numerous ground-glass seals of the lung tissue, involving up to 25-50% of the lung parenchyma, occurred in 68 (66.6%) patients where areas similar to a foggy lung seal are characteristic, with preservation of the contours of the bronchi and blood vessels, substrate pattern - filling the alveoli with liquid with the formation of a foam-like substance. On CT, ground-glass opacities are defined as tender alveolar densities, against which visualization of pulmonary vessels is preserved, in contrast to consolidation, in which the vascular architecture is not differentiated (see Fig. 2). In 22 (32.3%) patients with CT ground glass, there were areas of consolidation thickening of the interlobular interstitium according to the type of "cobblestone pavement ("crazy-paving") (Fig. 2)

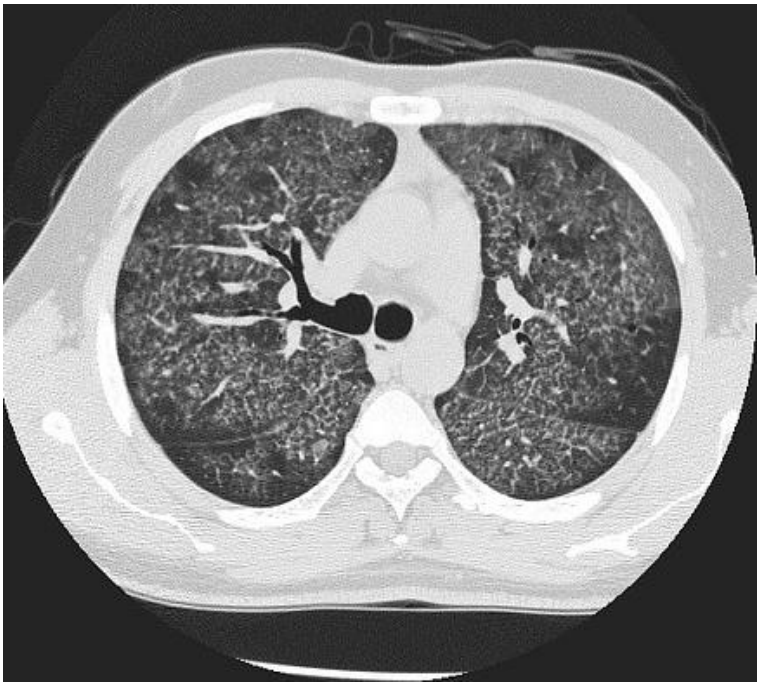


Figure 2

The damage to the lungs was mainly 99 (97.0%) bilateral, which, in our opinion, is one of the distinguishing features of COVID - 19 associated pneumonia from surgical purulent inflammatory diseases of the lungs. Infrequent signs of CT examination in patients were:

– areas of consolidation, perilobular seals in 19 (18.6%) patients (Fig. 3);

- a symptom of an air bronchogram, traction bronchiectasis in 7 (6.8%) patients (Fig. 4);

– 2 (1.9%) patients had bilateral hydrothorax with pleural effusion. All these signs were mainly determined on the 6th–10th day. diseases.

In the process of complex treatment, synchronously with the improvement of the general condition and clinical and X-ray laboratory data of the examined patients, the CT picture also had a positive trend by 7-8 days of treatment, in most cases they had a normal CT picture. It should be noted that in 20-25% of patients in this period, CT scans showed residual effects of the X-ray picture in the form of Fig. 5

FINDINGS

1. MSCT diagnostics is a more effective method for diagnosing pulmonary complications of COVID-19.
2. The radiological picture of COVID-19 associated pneumonia has some similar radiological findings with pneumonia and lung abscess of bacteriological etiology. Which dictates the need for additional scientific research on the differential diagnosis of the X-ray picture in these pathologies.

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PICTURE FINDINGS

1 MSCT diagnostics is a more effective method for diagnosing pulmonary complications of COVID-19

2 The radiological picture of COVID-19 associated pneumonia has some similar radiological findings with pneumonia and lung abscess of bacteriological etiology. Which dictates the need for additional scientific research on the differential diagnosis of the X-ray picture in these pathologies.

BIBLIOGRAPHY

1. Vinokurov A.S., Smirnova A.D., Belen'kaya O.I., Yudin A.L., Yumatova Ye.A. Kliniko-rentgenologicheskiye varianty porazheniya legkikh pri infektsii, vyzvannoy staphylococcus aureus // Klinicheskaya praktika. - 2021. - T. 12. - №3. - C. 71-89. doi: 10.17816/clinpract71642.

2. Okesola A. Community-acquired methicillin-resistant Staphylococcus aureus-a review of literature. Afr J Med Med Sci. 2011;40(2):97–107.

3. Bel'kova YU.A. Piodermii v ambulatornoy praktike // Klinicheskaya mikrobiologiya i antimikrobnaya khimioterapiya. 2005. № 2. S. 255–270. [Belkova YuA. Pyoderma in outpatients. Clinical Microbiology and Antimicrobial Chemotherapy. 2005;(2):255–270. (In Russ).]

4. Morgan MS. Diagnosis and treatment of Panton–Valentine leukocidin (PVL) associated staphylococcal pneumonia. J Antimicrob Agents. 2007;3(4):289–296. doi: 10.1016/j.ijantimicag.2007.04.019

5. Influence of different concentrations of dimethylsulfoxide solution on antibiotic sensitivity of pathogenic microorganisms in experiment (In Vitro) Safoyev Bakhodir Barnoyevich1, Yarikulov Shukhrat Shokirovich2, Boltayev Timur Shavkatovich3 European Journal of Molecular & Clinical Medicine ISSN 2515-8260 Volume 07, Issue 03, 2020.

6. Safoev B.B., Turdiev Kh.K., Boltaev T.SH., Clinical and Laboratory Features of Covid - 19 Course in Combination with Pneumonia // Yeuropean multidisciplinary journal of modern science. – 2022, Vol. 4, 2021, Pages. 622 – 626.

7. Turdiev Khurshid Kobilovich. Diagnostic criteria for covid - 19 combined with pneumonia. European Journal of Interdisciplinary Research and Development, Volume-05 July-2022, ISSN (E): 2720-5746.

8. Turdiev Khurshid Kobilovich, Rakhmatov Shukhrat Sharopovich. Complications After Covid - 19 Combined with Pneumonia. Texas Journal of Medical Science, ISSN NO: 2770-2936.

9. Safoyev B.B., Yarikulov SH.SH., Ikromov T.E. Vliyaniye razlichnykh doz ul'trafioletovyy luchey na rezistentnosti patogennyye mikroorganizmy v eksperimente (in vitro). Tibbiyotda yangi kun - Bukhoro, 2020. №4(33) –– S. - 129-131. (14.00.00; № 22)

10. Safoyev B.B., Yarikulov SH.SH. Podavleniye rezistentnosti mikroflory pod vozdeystviyem rastvora dimetilsul'foksida pri lechenii gnoyno-khirurgicheskikh zabolevaniy myagkikh tkaney // Biologiya va tibbiyot muammolari - Samarkand, 2021. - №2 (127). - S. - 125-130. (14.00.00; №19)

11. Yarikulov SH.SH., Khasanov A.K., Mukhammadiyev I.SH., Puti snizheniya rezistentnosti mikroflory k antibiotikam pri lecheniya gnoynykh ran. // Tibbiyotda yangi kun - Bukhoro, 2020. -№3(31). – S. 156-160 (14.00.00; № 22)
12. Safoyev Bakhodir Barnoyevich, Yarikulov Shukhrat Shokirovich, Boltayev Timur Shavkatovich. Influence of different concentrations of dimethylsulfoxide solution on antibiotic sensitivity of pathogenic microorganisms in experiment (In Vitro) European Journal of Molecular & Clinical Medicine. Great Britain. 2020, Volume 7, Issue 3, P. 5194-5198 (14.00.00; Scopus)
13. Safoev Baqodir Barnoyevich., Yarikulov Shuxrat Shokirovich. The influence of different doses of ultraviolet rays on the resistance of pathogenic microorganisms in experiment (in vitro) // Journal NX - A Multidisciplinary Peer Reviewed Journal. Maharashtra India. - 2021. - Vol 7. - №. 06. - P. 285–290. Impact Factor 7.223.
14. Yarikulov SH.SH. Vliyaniye razlichnykh kontsentratsiy rastvora dimetilsul'foksida na chuvstvitel'nosti k antibiotikam patogennykh mikroorganizmov v eksperimente. Tibbiyotda yangi kun. Bukhoro. - №4 – 33 - 2020. – S. 153 – 155.
15. Safoyev B.B., Yarikulov SH.SH., Arashev R.R. Metody uluchsheniya mestnogo lecheniya gnoynykh ran s primeneniyem ul'trafioletovogo oblucheniya v kombinatsii s mnogokomponentnymi mazyami na vodorastvorimoy osnove // Innovation in the modern education system: a collection scientific works of the International scientific conference // 25th April, 2021. – Washington, USA: "CESS", 2021. Part 5, Issue 1 – p, P. 558-565.
16. Safoyev B.B., Yarikulov SH.SH., Karshiyev N.R. Application of physical and chemical methods in treatment of purulent diseases of soft tissue Proceedings of Ingenious Global Thoughts An International Multidisciplinary Scientific Conference Hosted from San Jose, California November 29th, 2020 P. 55-56.
17. R.R.Arashov, & Sh.Sh.Yarikulov. (2022). Comparative evaluation of the outcome of treatment of patients with cavity liver formation with a simple and complex subdiagphragmal position. World Bulletin of Public Health, 13, 55-62. Retrieved from.
18. Radjabov Vohit Bafoyevich, & Yarikulov Shukhrat Shokirovich. (2022). Modern approaches to abdominal drainage in diffuse peritonitis. World Bulletin of Public Health, 13, 50-54. Retrieved from.
19. R. R.Arashov, & SH. SH. Yarikulov. (2022). Osobennosti khirurgicheskogo lecheniya bol'nykh polostnymi obrazovaniyami pecheny pri slozhnykh vnutripechenochnykh raspolozheniyakh. European Journal of Interdisciplinary Research and Development, 6, 30–38. Retrieved from.
20. R. R. Arashov, Sh. Sh. Yarikulov, & B. B. Safoev. (2022). Treatment of patients with cavity liver formation with a simple and complex subdiagphragmal position. Galaxy International Interdisciplinary Research Journal, 10(8), 65–74. Retrieved from.
21. Sharopova M. S., Safoyev B. B., & Yarikulov SH. SH. (2022). Osobennosti kliniko-laboratornogo techeniya gnoynykh ran v sochetannom fone sakharnogo diabeta i diffuznogo toksicheskogo zoba. Galaxy International Interdisciplinary Research Journal, 10(8), 75–87. Retrieved from
22. Safoev Baqodir Barnoyevich, & Yarikulov Shuxrat Shokirovich. (2021). The influence of different doses of ultraviolet rays on the resistance of pathogenic microorganisms in experiment (in vitro). JournalNX - A Multidisciplinary Peer Reviewed Journal, 7(06), 285–290.