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MANIFESTATIONS OF VIRAL INFECTION COVID-19 IN THE ORAL CAVITY

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ABSTRACT

This article provides a literature review of the latest data collected on the epidemiology, pathogenesis and course of the novel coronavirus infection COVID-19 and its manifestations in the oral cavity. The transmission routes of the disease and the main symptoms are also described. The article describes the current pandemic situation caused by the action of the SARS-CoV-2 virus, which is responsible for the outbreak of the infectious disease COVID-19 in Uzbekistan.

KEYWORDS:- SARS-COV-2, Coronavirus Infection, Coronavirus, Infection, Risk Factors, Manifestations In The Oral Cavity.

INTRODUCTION

The first cases of human morbidity with COVID-19 coronavirus infection (caused by SARS-CoV-2 coronavirus) were recorded in December 2019 in Wuhan, Hubei Province of central China. On December 31, 2019, the Chinese authorities reported an outbreak of this viral infection to the World Health Organization (WHO). On January 30, 2020, the World Health Organization (WHO) recognized the outbreak of coronavirus infection in China as a public health emergency of international importance. On

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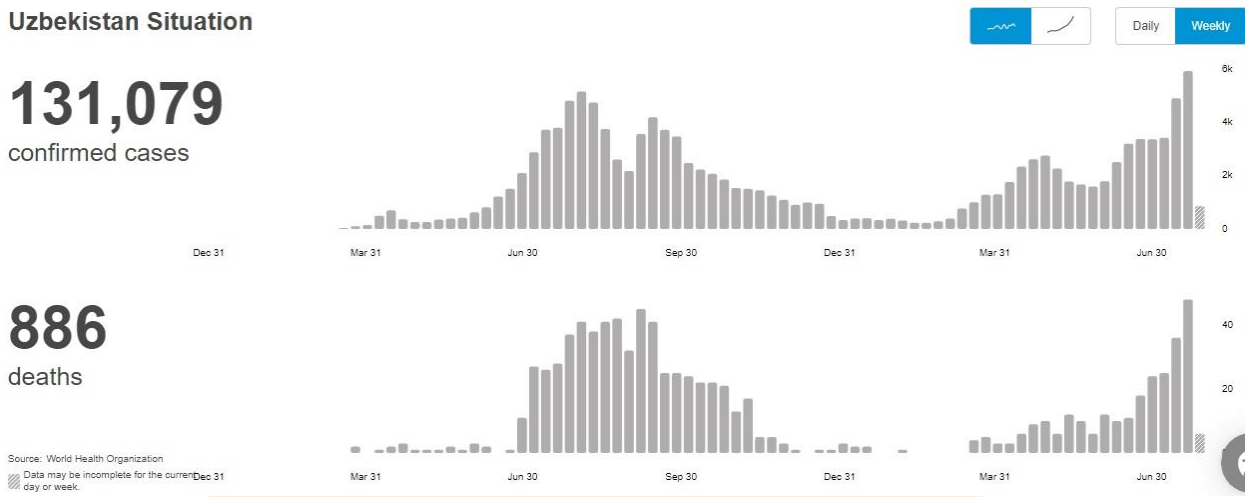
March 11, 2020, the World Health Organization recognized COVID-19 as a pandemic.

As of 08/03/2021, there were 199,622,425 cases of confirmed morbidity worldwide (including 131978 in Uzbekistan), 4,250,338 deaths (including 886 in Uzbekistan). [20]



1. Indicators of morbidity and mortality of COVID-19 in Uzbekistan (number of confirmed cases, data from the World Health Organization).

The infectious disease COVID-19 is caused by the SARS-CoV-2 virus, belonging to a large family of coronaviruses. The virus consists of a single-stranded RNA, a shell and a lipid layer. The new SARS-CoV-2 coronavirus, severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) have a similar genomic sequence and belong to the same genus of β-coraviruses. [17,22,10,8]

Ways of transmission of Covid-19 from person to person: airborne - when sneezing or coughing, contact - directly from an infected person, through infected surfaces. Transmission of infection is possible from the first day of the incubation period. The entrance gates for the virus to enter the body are the mucous membranes of the nose, mouth and eyes. [26,5]

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A group of scientists in a comparative study of the ability of SARS-CoV-1 and SARS-CoV-2 viruses to maintain viability on the surface, it was found that SARS-CoV-2 is more resistant to stainless steel and plastic and less to cardboard and copper. On the first two mentioned surfaces, it can persist for almost 72 hours, but gradually loses its viral load. In an aerosol, SARS-CoV-2 can remain viable for at least three hours, followed by a decrease in the infectious titer, which increases the risks of potential infection with Covid-19 infection of medical personnel and patients in the conditions of a dental appointment using high-speed water-cooled tips and ultrasonic instruments for removing tartar. Taking into account this factor, there is a need for strict control of all precautions and the use of personal protective equipment when providing dental care. [13,3]

The target cells for infection are the endothelial cells of the pulmonary capillaries of type II, epithelial cells of the esophagus, absorptive enterocytes of the ileum and colon, cholangiocytes, myocardial cells, cells of the proximal tubules of the kidneys and urothelial cells of the bladder, namely the angiotensin converting enzyme receptor, glycoprotein (ACE2), which binds to the receptor of viral spikes, after which a large number of viral particles are released, the cells undergo apoptosis and die. Thus, the viral load on the body increases. [16,18]

Also, a number of studies have revealed that the enzyme ACE2 is also expressed in the oral mucosa, namely in the epithelium of the tongue. These results explained the underlying mechanism according to which the oral cavity represents a potentially high risk of infectious susceptibility to 2019-nCoV. [15]

With regard to clinical symptoms, COVID-19 can manifest a number of symptoms, from mild flu-like symptoms in the form of fever, dry cough, fatigue, muscle pain and diarrhea to more serious manifestations characterized by severe pneumonia progressing to respiratory distress syndrome (ARDS). Excessive activation of systemic immunity after infection with SARS-CoV-2 causes a so-called "cytokine storm", in which the released cytokines -

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tumor necrosis factors (TNF), interleukin-6 (IL-6) and interleukin-1ß (IL-1ß) - damage the cells of the body. This can lead to increased vascular permeability, and subsequent damage to organs such as the kidneys and heart, leading to multiple organ failure and death.

In part of the population, the symptoms of the disease are asymptomatic or poorly expressed, but the level of asymptomatic carriers of the disease among the population is unknown. A recent systematic review and meta-analysis show that the proportion of asymptomatic cases was 20%. [7,11,12]

In infected patients, a direct correlation was found between the severity of the Covid-19 disease and the presence of concomitant diseases, such as heart failure, liver failure, tumors, diabetes, hypertension, immunodeficiency, respiratory and cardiovascular diseases. Also, patients with an increased risk of severe course of the disease include elderly people, mostly men. [6,1,14,9]

However, at present, there has been a steady increase in cases of severe course and development of subsequent complications of Covid-19 disease in young healthy patients.

The high probability of collision of the oral mucosa with viral particles of one of the first and the high content of the ACE2 2019-nCoV receptor in the epithelial cells of the tongue and salivary glands create conditions for a rapid increase in viral load and thereby increase the risk of adverse manifestations of Covid-19 disease in the oral cavity.

One of the main and early clinical symptoms of Covid-19 disease affecting the oral cavity are xerostomia and loss of taste sensitivity. [2]

Independent studies were conducted by the authors Egbali Zarkh R., Hosseinzade P., they reviewed seventeen studies involving more than 170 cases with oral manifestations in patients with COVID-19, and summarized the available data. The authors described symptoms such as dry mouth (n = 75), acute dysgeusia (taste disorder) (n = 71), a feeling of soreness and burning of the mucous

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membrane of the lower lip, changes in the sensitivity of the tongue (n = 48), muscle pain during chewing (n = 15), ulceration (n = 28). A couple of days after the manifestation of general systemic disorders associated with the disease Covid-19, the appearance of bubbles on the oral mucosa was noted. The presence of a herpetic infection was recorded in the anamnesis. Manifestations in the oral cavity regressed after a week, and systemic symptoms on day 14. The average time of onset of oral manifestation was 7.21 days after systemic symptoms (range: 10-42 days). In 42 cases, oral lesions resolved spontaneously or with the help of basic treatment within three weeks. [25]

The authors are Van D., Estebanes A., Martin Carreras-Presas S. and co. Three cases have been reported in which patients with confirmed or suspected COVID-19 had ulceration or blisters in the oral cavity. The first reported case is a 56-year-old healthy man with suspected COVID-19. Along with systemic signs and symptoms, the patient reported pain in the palate and throat. In the photo sent by the patient, lesions resembling recurrent herpetic stomatitis were found. The patient was prescribed valacyclovir and local antiseptics (chlorhexidine and hyaluronic acid). The lesions of the oral cavity disappeared after ten days. The second patient who applied was a 58-year-old man with concomitant diabetes and hypertension, who also reported pain in the palate. In the photo sent by the patient, unilateral ulceration of the palate was noted without a previous history of herpes infection. When using a local antiseptic mouthwash, the lesions disappeared within one week. The last case was a 56-year-old woman with concomitant diseases: obesity and hypertension. The patient was hospitalized with bilateral pneumonia due to SARS CoV-2 infection. Since the onset of symptoms, the patient reported pain in the tongue, but during her stay in the hospital, this symptom was not studied. She developed dermatological symptoms, blisters on the lip mucosa and desquamative gingivitis. Local treatment with antiseptic drugs was carried out. [19,27,24]

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Studies conducted by Yu.A. Makedonova et al. in 43 patients (30 women and 13 men) who underwent COVID-19, aged 38 to 63 years, demonstrate a variety of dental manifestations.

The majority of patients (97%), first of all, noted bad breath, while men were less likely to note halitosis relative to females. 25% of patients reported decreased sense of smell after recovery. Almost every second patient (48%) who sought dental care noted the appearance of ulcers on the cheeks. At the same time, patients complained of pain when eating, talking, chewing and swallowing. Against the background of the above unpleasant sensations, patients noted a loss in body weight, a decrease in appetite, some even refused to eat because of the feeling of the taste of food "like cotton wool" and severe pain. 61 % of patients were diagnosed with candidiasis after a bacteriological study.

After prescribing antifungal drugs, the complaints stopped. Petechial changes occurred in 16.3% of patients. The localization of enanthemums was noted only on the hard palate. Erythematous rash in patients differed in appearance. In the latter case, millimeter petechiae without erythema were observed on the hard palate against the background of an unflamed mucous membrane. Also, this patient noted the appearance of petechiae before the height of the COVID-19 disease, which excludes the reaction of the mucosa to medications, the viral etiology is probably the root cause of the pathology. One of the most common diseases of the oral cavity in patients who have had a coronavirus infection is chronic recurrent aphthous stomatitis (HRAS). Patients complained typical of chronic recurrent aphthous stomatitis. Patients complain of the presence of a sharply painful defect. They note the appearance of a small, up to 1 cm in diameter, hyperemic or anemic, sharply limited round or oval spot, which after a few hours rises above the surrounding mucous membrane, erodes and turns into an aphthus. Rashes are often multiple, the localization of aft is a transitional fold, the lateral surfaces of the tongue, the mucous membrane of the lips and cheeks. As the severity and duration of the disease increases,

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the number of afts becomes greater, the period of their healing is lengthened from 7-10 days to 2-4 weeks (Fig. 11). It should be noted that 100% of patients had periodontal diseases. Depending on the age of the patient, the severity of the coronavirus infection, the phenomena of gingivitis and periodontitis were noted. Oral hygiene was unsatisfactory, copious amounts of soft plaque, supra- and subgingival tartar. It can be assumed that the development / exacerbation of periodontal diseases is caused by antibiotic therapy and, as a consequence, a violation of the balance of microorganisms in the oral cavity.

Also, patients noted dryness in the oral cavity, lips crack, peel, may be atrophic. Patients complained of lips sticking to teeth, sometimes there were epithelial particles stuck to the vestibular surfaces of the anterior group of teeth. Patients complained of dry mouth, difficulty chewing and swallowing. Patients were forced to drink water during meals.[23]

The report by Brandao et al. provides information on 8 patients with active COVID-19. These patients also had lesions of the oral cavity in the form of ulcers similar to aphthous ulcers, some also had necrotizing processes and hemorrhagic ulcers. The time before the onset of the disease ranged from two to ten days, and the duration - from 5 to 15 days. Painful ulcers were treated topically with daily photobiomodulation therapy (PBMT) using a PBMT device (Twin Flex, MMOptics, Sao Carlos, Brazil). The authors did not take samples from the lesions of the oral cavity to check for the presence of the virus. However, oral lesions developed and disappeared simultaneously with COVID-19, which led to the assumption that oral lesions were indeed associated with COVID-19. However, it is still unknown whether these manifestations are caused directly by the virus or caused by immunosuppression associated with COVID-19.[4]

Kamil A., Bazu oni A., Salem Z. et al . A direct correlation was found between oral hygiene and the severity of COVID-19 by examining the values of C-reactive protein. The results indicated that the unsatisfactory condition of the oral cavity was associated with elevated

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values of C-reactive protein in the blood and a delayed recovery period. [21]

All of the above authors state the insufficiency of clinical and diagnostic information, the lack of evidence of what is the root cause of the development of complications in the oral cavity in coronavirus infection - whether the virus itself or the drugs that patients received during pharmacotherapy, or they could be caused by other systemic diseases of the body. The obtained results of the examination of patients with COVID-19 justify the necessity and expediency of further thorough fundamental scientific research with appropriate control, for a better understanding of the relationship between SARS-CoV-2 and oral cavity lesions, as well as for the inclusion of dental examination in this category of patients after their clinical recovery.

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