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CASE REPORT

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Infection of Aspergillous and Mucormycosis in Maxillary Region of a Woman with Diabetes After Covid19, A Case Report

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ABSTRACT

Introduction: COVID as a common pandemic respiratory disease has affected many people in the world today. Symptoms of the disease include fever, cough, fatigue and lethargy, shortness of breath, lack of sense of smell and taste, etc. In people with weakened immune systems, especially if they have received corticosteroids, it can cause fungal diseases, especially with two types of aspergillus and mucormycosis, which can cause sinusitis, endocarditis, osteomyelitis and even death. One of the symptoms of this disease in the maxillofacial region is extensive osteomyelitis with sequestration and mobility of the teeth and pus drainage in the maxilla and palatal region. Which can be controlled with proper surgical treatment and medication.

Case Presentation: The patient was a 36-year-old woman with a history of uncontrolled diabetes mellitus who developed Covid 19, 5 months ago. And after a month of taking corticosteroids, she suffered from severe pain and swelling, along with necrosis and secretion of pus and loose teeth in the alveolar, palatal, and part of the masculine butters. Simultaneous presence of Aspergillus and Mucormycosis was reported after sampling and culture. Immediately after controlling the patient's glycemia and initiating Amphotericin and Clindamycin at the same time, the patient underwent infrastructural maxillectomy, including removal of the bone and mucosa of the alveolar, palatal region, part of the maxillary buttress on both sides, nasal septum, nasal floor, nasal mucosa and sinuses along the walls. Both sinuses were anteriorly, laterally, debridement, curettage, and washed with amphotericin. Injection of amphotericin continued for up to two months, and after two endoscopic biopsies and negative margins, both drugs were discontinued. And the patient is controlling for follow-up.

Conclusion: Due to the fatal fungal infection of Mucormycosis and Aspergillus and the extensive involvement of the maxilla, prompt and extensive treatment can effectively help improve the disease. And long-term follow-up and control of the patient's sugar accelerates the healing process.

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Introduction

With the onset of infectious and respiratory disease COVID and its progression and pandemic and the emergence of various subtypes of this disease and with the involvement of many people in every community of different age groups and the existence of significant mortality rates around the world, a series of infections Fatal and sub-lethal agents with increasing origins of bacteria, fungi and viruses are on the rise. What increases the incidence of corona patients to these diseases is a decrease in the ability of the immune system, a decrease in nutrients in the body, weakness and disability, the presence of various drugs from the immune suppressor class, including corticosteroids. Their mechanism of action is stimulation of gluconeogenesis in the liver, hyperglycemia and the development of diabetic conditions even in people without a history, the presence of underlying diseases in patients such as hypertension, diabetes, cancers, rheumatic diseases, cardiovascular and pulmonary problems and old age, all and they all underlie the existence of dangerous diseases with opportunistic factors [1].

Symptoms of COVID disease include fever, fatigue, weakness, cough, shortness of breath, pain, headache, lack of sense of smell and taste, thromboembolism, diarrhea, etc [2]. One of the complications of Covid disease is osteomyelitis. Osteomyelitis is an inflammatory condition in the bone that starts in the bone marrow and progresses slowly to the hover system and periosteum. And edema and inflammation from infection can cause bone loss, ischemia, and necrosis and sequestration [3].

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There are several factors that can play a role in its creation and development. One of them is Aspergillus (Article 1) and the other is Mucormycosis. Mucormycosis is an invasive fungal infection. It is caused by the fungus Mucorales and usually starts in the nose and paranasal sinuses. Infection may be the result of breathing, swallowing, or an infection of an infected mucosa or fungal spores on the skin. Which occurs rapidly and with destructive potential in immunocompromised individuals [4,5].

Aspergillus is one of the most common fungal species in the environment that can live in a wide range of temperatures and pH and due to the hydrophobic properties of the cell wall of these species can be sufficiently dispersed. It is even moved by low currents and is one of the most common pathogenic species in humans. It also has the ability to bind to basement membrane proteins and penetrates the lungs [6, 7]. In the last decade, a twofold increase in infection with Aspergillus infections has been observed. Symptoms of Aspergillus Infection: Sinusitis, bronchopulmonary symptoms, and rarely endocarditis, abscess, and infarction [8,9]. Osteomyelitis, arthritis and thyroiditis can also be among the symptoms, which, of course, are accompanied by symptoms such as fever, shortness of breath and cough [10,11].

The presence of Aspergillus in the jaw and face, especially in the maxilla and sinuses, can be destructive. And is known as a non-invasive fungal infection [12,13]. This type of sinusitis is due to the spread of fungal hyphae inside the sinus mucosa. And causes blockage and thickening of the sinus membrane [12]. Infection is usually seen in people with weakened immune systems and is usually unilateral and sometimes rarely bilateral. Which can be asymptomatic or with rhinosinusitis, nasal congestion and headache [12,14,15]. which are differentiated with allergic rhinitis and sinus stones [16,17]. and its treatment is through direct access or through the endoscope and removal of infected tissues and washing and drainage of the area [15,18-20].

An article published in Japan in 2021 suggested that Aspergillus fungal infection could also grow at the site of an implanted tooth, causing the implant to become infected as a foreign body in that area. And causes looseness, pain and discharge of pus in that area. Which was gently relieved by an ENT specialist after endoscopic resection of the patient's area. And the implant was removed [21].

If we want to talk about mucous membranes in the jaw and face, we must refer to an article published in Egypt in 2021 that deals with the presence of mucous membranes in the maxilla and palatal area. Existence of necrosis, pus drainage, bad odor, palatal and alveolar sequestration and sinus involvement and loosening of the involved teeth. But what makes this article important to us is the similarity of its cases to the main topic of the article [22]. What we are going to talk about in this article is the presentation of a case of the simultaneous presence of Aspergillus and Mucormycosis in the palatal and maxillary areas in a young woman with Covid and underlying diabetes.

Case Presentation

The patient was a 36-year-old woman who referred to the outpatient clinic of Bahonar Hospital in Kerman 3 months ago. The patient had diabetes mellitus and was taking one metformin tablet a day. But the patient states that the patient's blood sugar was not under control. About 5 months ago, he developed covid19 disease and was hospitalized due to lung involvement and received 3 doses of remdesivir and 3 doses of dexamethasone. And after a month of recovery, the pain and swelling in the gums and maxillary alveolar ridge begin on both sides and gradually spread from the anterior to the posterior. The pain and swelling increase over time and pus comes out. And the patient's teeth were mobile. Clinical examination showed the presence of necrotic areas and multiple sequesters in the posterior region of the maxilla in the area of the upper 5 to 8 teeth to the right and near tuberosity, as well as the necrotic area in the palatal area of the upper 7 teeth. Teeth 1, 2, 3, 4 and 7 above left and teeth 1, 2, 3 and 6 above right had mobility grade 2 and 3. And bad breath was evident. Extensive swelling is seen in the palatal region from the foramen incisive to the tuberosity on both sides. Areas erythematous and had tenderness. And marginal gingivitis is seen in the anterior gums. The patient was lethargic and weak, and fever was reported several times. In the experiments, the patient's HbA1C was 7.9 and in the fasting glucose and glucose charts during the day, blood sugars above 200 mg / dL were observed. Consultation was performed with the internal service to initiate regular insulin and NPH and to regular and control glucose. Swab culture was taken from the patient and the answer showed the presence of Aspergillus fungal hyphae in the smear. Then consultation with the Infectious Diseases Service was performed and an incisional biopsy was performed and the 6th upper right tooth, which had mobility grade 3 and was at risk of aspiration, was removed and sent with the sample. Due to the possibility of infection with mucormycosis due to extensive destruction in the palatal and alveolar area that was visible on spiral facial CT scan and the patient's physical condition at the discretion of the infectious disease specialist, drug therapy with amphotericin and clindamycin and creatinine and blood urea nitrogen were checking regularly. In response to sampling, a combination of Aspergillus and Mucormycosis was reported. The patient was then prepared for surgery. During the operation, a sulcular incision was made due to the loose gums around the teeth. After subperiosteal dissection, all necrotic and damaged bones that had a very soft consistency were removed. The maxilla underwent infra-structural maxillectomy, which removed all of the palatal, alveolar, nasal floor, part of the maxillary buttress on both sides, the nasal septum, and part of the nasal mucosa and maxillary sinus on both sides. And all involved teeth were extracted. The area was then completely drained and washed with 6 vials of prepared amphotericin. The removed samples were sent to pathology. The confirmation of Aspergillus and Mucormycosis was confirmed with more involvement in the left sinus. The live, bloody soft-tissue flap was then returned to the bone and mucosa with the vital and bloody residue, and the area was sealed with 0-4 vicryl thread. And the patient was transferred to recovery and then to the maxillofacial ward in good general condition. Then he was treated with amphotericin for up to two months and was sent to an ENT specialist for endoscopic examination of the maxillary and nasal sinuses to stop the drug. Was detected from any fungus. The patient was discharged in good general condition and referred for follow-up.

Figure1: Clinical View

Figure 2: Intral Oral View, Necrotic and Sequestration Bone

Figure 3: Right Side of Maxilla

Figure 4: Left Side, Necrotic Tissue in Alveolar

Figure 5: Necrotic Tissue in Palate

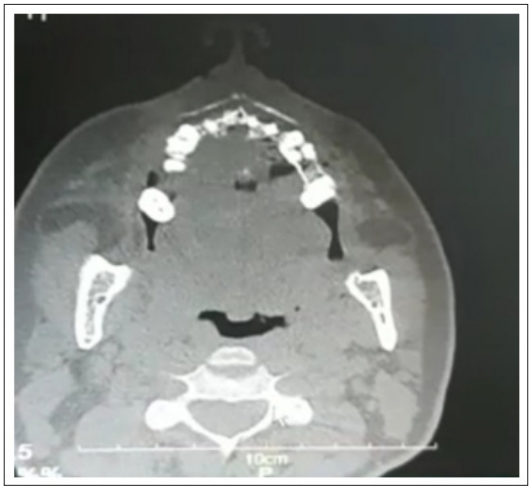

Figure 6: CT Scan Axial View

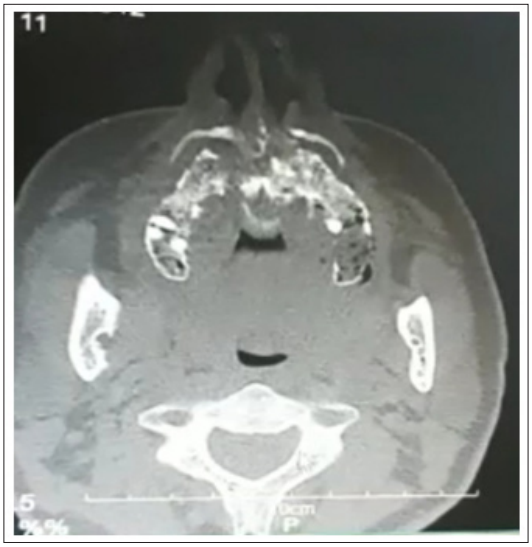

Figure 7: Palatal Destruction

Figure 8: Coronal View

Figure 9: Alveolar Destruction

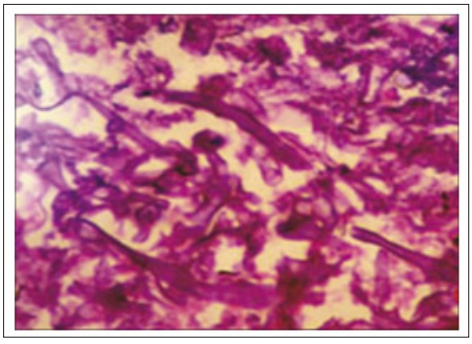

Figure 10: Pathology of Mucormycos

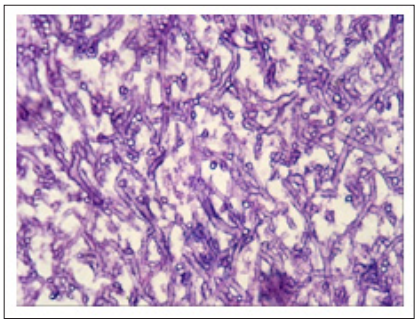

Figure 11: Pathology Aspergillous

Figure 12: Intraoperative, Maxillectomy

Figure 13: Seprating Alveolar Part

Figure 14: Seprating Palatal Bone

Figure 15: Alveolar Part, Amphotericine Syringe

Figure 16: Suturing Flap

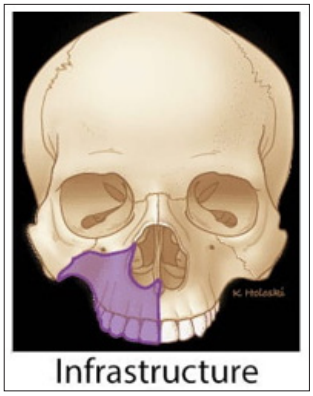

Figure 17

Conclusion and Discussion

During the recent Covid pandemic, numerous manifestations have occurred, including an increased risk of fungal infections. Mucormycosis and Aspergillus are two of the most common of them. The ability of Mucormycosis to grow due to resistance to phagocytosis and Aspergillus due to its ability to penetrate and adhere to the basement membrane protein has made them the main cause of disease, especially in people with weakened immune systems [23]. Although the maxilla is known as a vascular area, involvement of the palatal and maxillary areas occurs due to invasive vascular invasion and ischemia. and due to the respiratory nature of the fungus and its presence in the nose and sinuses complicates the task [24]. On the other hand, the presence of underlying diseases such as diabetes and acidosis in it, especially in the uncontrolled type reduces the strength and capacity of phagocytosis and granulocytosis, destroys the antioxidant system and increases serum iron, causes fungal growth and proliferation [25]. Aspergillus and mucormycosis, and especially mucor, have a wide and rapid invasion potential and can be fatal for the patient due to the proximity of the pink structures to the orbit and cranial. And it needs immediate and aggressive action in this regard. Depending on the type of involvement and the extent and simultaneous use of antifungal drugs along with long follow-ups of patients, as well as control of underlying factors can be an effective way to treat and control fungal disease of the maxillofacial [26].

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