Multiple Cranial Neuropathy and Cerebritis Caused by Mucormycosis: Case Report

Multipl Kraniyal Nöropati ve Serebrite Yol Açan Mukormikozis

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ABSTRACT Rhino-orbitocerebral mucormycosis is an unusual fungal disease. The control of the predisposing systemic diseases, amphotericin-B treatment and surgical approaches may help to reduce the high mortality risk. A 56 years old female patient admitted to hospital with pain and ptosis of her left eye. The neurological examination revealed abnormalities of the left 2nd, 3rd, 4th, 5th, 6th, and 7th cranial nerves. Her cranial and orbital magnetic resonance imaging (MRI) showed T2 hyperintense inflammatory changes of all sinuses spreading towards the left orbita. The pathology of the left nasal cavity biopsy material was specific for the fungal infection. The patient was underwent to amphotericin-B therapy and also debridement operation was applied to the lesion. In the postoperative period, after emerging aphasia and right hemiparesis, control MRI showed cerebritis on the left cerebral hemisphere. We present this biopsy confirmed case to emphasize the importance of early diagnosis and early treatment of mucormycosis.

Anahtar Kelimeler: Mucormycosis; complications

ÖZET Rino-orbitoserebral mukormikoz, nadir bir fungal hastalıktır. Predispoze hastalıkların kontrolü, intravenöz amfoterisin B tedavisi, cerrahi debridman uygulanması ile hastalığın ölümcül özelliği azaltılabilmektedir. 56 yaşında kadın hasta, sol gözde ağrı ve pitoz yakınmasıyla polikliniğe başvurdu. Nörolojik muayenesinde solda unilateral 2., 3., 4., 5., 6. ve 7. kraniyal sinir tutulumu saptandı. Kraniyal ve orbita MR incelemesinde sol orbitaya yayılan tüm paranazal sinüslerde inflamatuar T2 sinyal intensite artışları izlendi. Sol nazal kaviteden alınan biyopsi materyali fungal enfeksiyon ile uyumluydu. Hastaya cerrahi debridman ve İV amfoterisin- B tedavisi uygulandı. Postoperatif dönemde afazi ve sağ hemiparezi kliniği gelişen hastanın kontrol kraniyal MR incelemesinde sol hemisferde serebrit saptandı. Biopsi kanıtlı bu olgu, mukormikozda, erken tanı ve tedavinin önemini vurgulamak amacıyla sunulmuştur.

Key Words: Mukormikoz; komplikasyonlar

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Rhino-orbitocerebral mucormycosis is a rare fatal fungal disease which is directly spread from an infected orbita or the sinuses and subsequently affects the central nervous system.[1,2] The predisposing factors for mucormycosis are diabetes mellitus, hematological malignancies, long-term corticosteroid or immunosuppressive therapy, but also it can be found in healthy subjects.[3] Contamination most commonly occurs in the upper respiratory tract via inhalation, and colonizes in the paranasal sinuses, the nasal cavity or the lungs, then spreads by vascular invasion and tissue necrosis.[4] Here we reported a case of progressive rhino-orbitocerebral mu-

cormycosis in a patient with diabetes mellitus (DM) inorder to emphasize the importance of early diagnosis and treatment of the disease.

CASE REPORT

A 56-year-old woman was admitted to our neurology department due to headache, pain and ptosis in her left eye. She had been previously diagnosed as temporal arteritis and had been treated with 60 mg/day corticosteroid for about a month but there was no follow-up. In her neurological examination, she was alert and cooperative. We detected ptosis, irresponsive light reaction, paresis of abduction, and vertical upwards gaze palsy of her left eye. Her motor, sensory, cerebellar and autonomic systems were found to be normal. Laboratory investigations showed high levels of blood glucose (260 mg/dl), HbA1c (8.1), CRP (8.6 mg/dl), sedimentation rate (72 mm/h), and WBC (26.2 10^3/mm^3). Pansinusitis was detected on the cranial magnetic resonance imaging (MRI) (Figures 1, 2). Antibiotic and insulin therapy was applied. On the second day of the hospitalization, total ophtalmoparesis and visual loss of the left eye developed and on the same day followed by left facial palsy, hypoesthesia of the left ophtalmic and the maxillary branch of the trigeminal nerve. Fluconazol and metronidazole were added to the treatment regimen by infectious disease consultation. On ear, nose and throat (ENT) examination, necrotic crusts were found in her left nasal cavity. Mucorales were isolated from samples

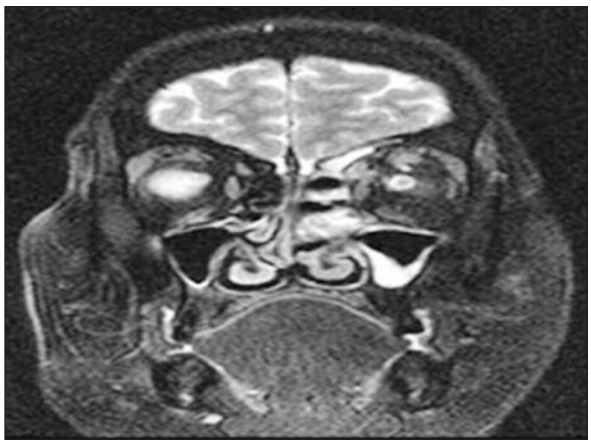

FIGURE 1: T2 Coronal section: Mucosal thickening in the left maxillary sinus, ethmoid cells and the frontal sinus.

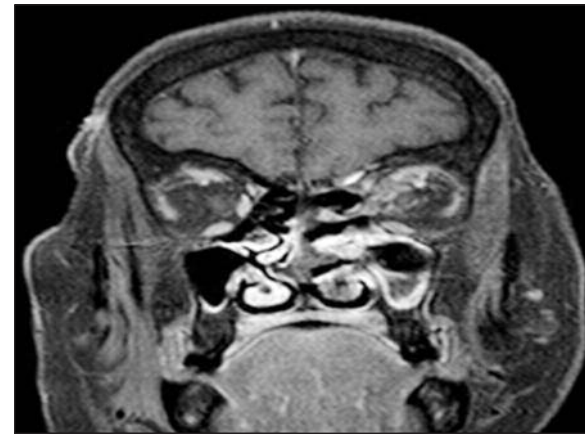

FIGURE 2: Contrast enhancement T1 coronal section: Inflammation extending into the left orbita from the left ethmoid and frontal sinus.

and her antifungal treatment was changed to liposomal amphotericin-B (5 mg/kg/day). An urgent surgical resection was undertaken by the neurosurgeon, ophtalmologist and ENT surgeons. Functional endoscopic sinus surgery and left orbital exenteration were performed. In postop period, posaconazole was replaced by amphotericin-B due to an elevation in blood creatinin. During clinical follow-up, the patient developed motor aphasia and right hemiparesis. The control MRI showed that the inflammation has spread over the left hemisphere (Figures 3, 4).

DISCUSSION

Rhino-orbitocerebral mucormycosis is a rare cause of multiple cranial neuropathy and cerebritis. Diabetes mellitus, malignancy, renal failure, liver failure, malnutrition, and immunosuppressive therapy are usually present as predisposing factors.[3-5] The incidance is unknown, but the disease can occur %60 in patients with DM.[6] In our case, DM and the use of corticosteroids were the predisposing factors. Rhino-orbitocerebral mucormycosis usually begins with the receipt of fungal spores via the respiratory system and then spreads to the orbita and central nervous system (CNS) from the paranasal sinuses.[7] The common symptoms are severe facial and head pain, periorbital cellulitis, fever, and general poor health. Loss of vision may develop due to a thrombosis of retinal artery; involvement of cranial nerves may lead to gaze palsy, ptosis, mydriasis and

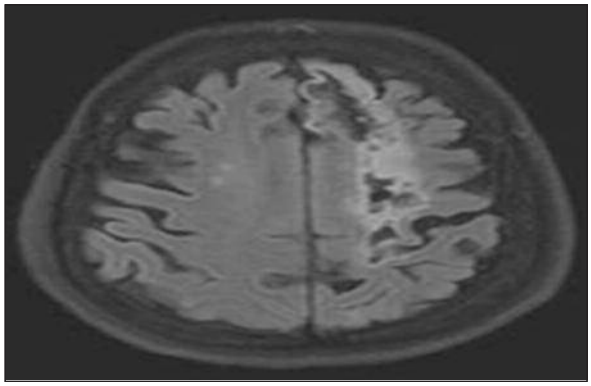

FIGURE 3: Postoperative period T2 Flair Axial section Cerebritis at the left cerebral hemisphere.

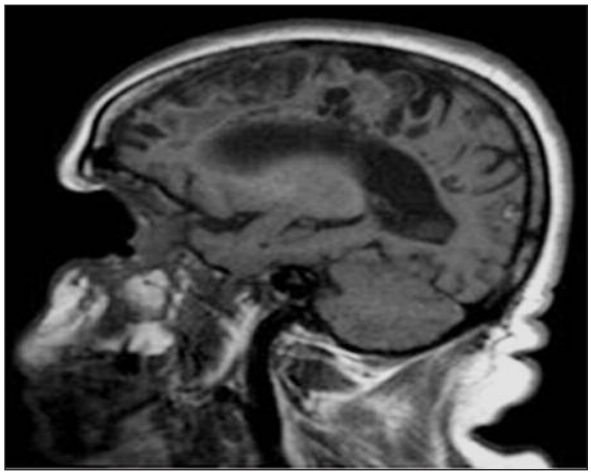

FIGURE 4: Postoperative period T1 Sagital section: Left orbita is not being visualized and cerebritis at the left cerebral hemisphere.

facial paralysis. In most of the studies, it is reported that mucormycosis mostly affects the II., V. VI. and VIIth cranial nerves.[8-11] Changes of consciousness often indicate cerebral involvement. Although it is most often unilateral, after propagation to the midfacial structures, the disease sometimes occurs bilaterally.[12,13] The fungus has a high affinity to the lymphatics and nerves, in addition to the arteries. Ischaemia and infarction are caused by composed fibrin formation in the target tissue, leading to thrombosis. The infarct areas lead to black, necrotic scar formations in the oral and nasal cavities.[14] The rate of the black necrotic scars is 19% in the early period and 38% in advanced stages.[12] Other complications of rhino-orbitocerebral mucormycosis are brain abscesses, cavernous sinuses and internal artery thrombosis.[15] Headache, pain and ptosis on the left eye were initial symptoms of our patient, but the disease progressed to multiple cranial nerve involvement (III, IV, V, VI and VIIth cranial nerves). By the ENT examination, black crusts were identified in the nasal cavity.

A diagnosis of rhino-orbitocerebral mucormycosis can be confirmed by clinical symptoms and signs, radiological findings, mycological cultures and histopathological examinations. In the treatment strategy, control of the underlying disease, parenteral antifungal therapy, and aggressive surgical therapy are recommended.[16,17] In our patient, despite parenteral antifungal treatment, progression continued and functional endoscopic sinus surgery and left orbital exenteratiion were also performed. In the postoperative period, aphasia and right hemiparesis developed, and an extensionto the left hemisphere with the existence of cerebritis was observed on the MRI. Even though the aggressive treatment approaches, rhino-orbitocerebral mucormycosis still has a very high mortality rate. In the literature 929 mucormycosis cases were reported , of whom 470 cases treated by surgical or antifungal theraphy had a survival rate of 70%.[18] In another study, it is reported that age, diabetes mellitus, transplant status or antifungal therapy were not associated with high mortality rate, however, active malignancy or neutropenia at enrollment were associated with increased mortality.[19] Although, there is a high mortality rate for the disease, our case had a better outcome by agressive surgery and an effective antifungal therapy.

CONCLUSION

Mucormycosis should be considered as a cause of cranial neuropathy and cerebritis in patients with DM and pathological or microbiological examinations should not be neglected for an appropriate treatment.

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