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Clival Aspergillosis Excision by Endoscopic Transnasal Surgery: Rare Case Report

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Abstract **Case Report**

Clival aspergillosis is a rare, localized fungal infection caused by Aspergillus species, typically affecting the clivus, a bony structure at the base of the skull. It can be asymptomatic or present with nonspecific symptoms including headache, facial pain, nasal congestion, or cranial nerve deficits, depending on the extent of the lesion and adjacent structures involved. This report presented case of a 57 years old man with headache 20 days ago, had a medical history of 3 years ago with headache on the right side, without other neurological symptoms and performed a CT scan and MRI of brain and diagnosed as mass in clivus. Treatment strategies included surgical excision of clival aspergillosis by endoscopic transnasal, antifungal therapy, and treatment of any underlying conditions that may have led to fungal colonization. It was concluded that endoscopic endonasal transclival approach provides safe removal and good prognosis.

Keywords: Clival aspergillosis, fungal infection, sphenoid, endoscopic.

INTRODUCTION

In general, aspergillosis is a fungal infection resulting from ubiquitous Aspergillus species; an aspergilloma is a noninvasive form of aspergillosis, characterized by a fungal mass comprised of Aspergillus hyphae, cellular debris, and mucus [1, 2]. Aspergillus species are prevalent soil saprophytic moulds that contribute significantly to the decomposition of organic material, facilitating carbon and nitrogen recycling in the environment [3]. These opportunistic fungal species emit a substantial quantity of conidia into the atmosphere, with several hundred ingested by people daily [4]. It is worth noting that aspergilloma forms within a pre-existing cavity, usually in the lungs or paranasal sinuses [5].

Clival aspergillosis is an uncommon symptom of Aspergillus infection, and the presentation, diagnosis, and management of this condition can be quite challenging [6].

It is a rare, life-threatening disease that occurs primarily by direct spread from the adjacent paranasal sinuses. However, its dissemination to the brain results in an extremely mortality rate [7]. Due to the scarcity of documented cases on this subject, there is an urgent need to discuss and clarify the diagnosed cases. This case report presents clival aspergillosis with an exploration of its clinical features, diagnostic approach, and treatment strategies.

CASE REPORT

A 57-year-old man presented with headache 20 days ago, had a medical history of 3 years ago with headache on the right side, radiating to the neck with severe pressure that intensifies in the morning and is accompanied by redness in both eyes, nausea and sometimes vomiting of small to moderate amount of non-projectile non-bloody with or without mixed with food, 2-3 episodes per week and sometimes exceeding 1 day. The patient had no history of the following: diabetes, hypertension, decreased level of consciousness, visual disturbance, weakness, numbness, ataxia, unsteadiness, weight change, night sweats, appetite change or the same condition in a family member. It is worth noting that he does not smoke and had a single congenital kidney without significant symptoms about the urinary system. He was a farmer from 1980 to 2007 but is currently a school employer since 2014. He underwent hemorrhoid surgery twice under general anesthesia since 2023, and right leg varicose since 2022. He consulted many physicians, neurologists and neurosurgeons but without

a definite diagnosis. His condition was worse in the last 20 days, he consulted a neurosurgeon and performed a CT scan (Figures 1, 2) and MRI of the brain (Figure 3-5) and diagnosed a mass in the clivus.

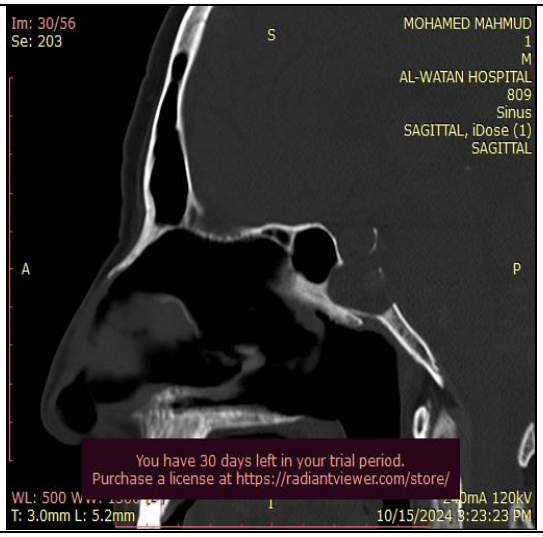

Figure 1: CT scan (sagittal view) shows opacity in the clivus with areas of hyperdencity and erosion of civus and sella.

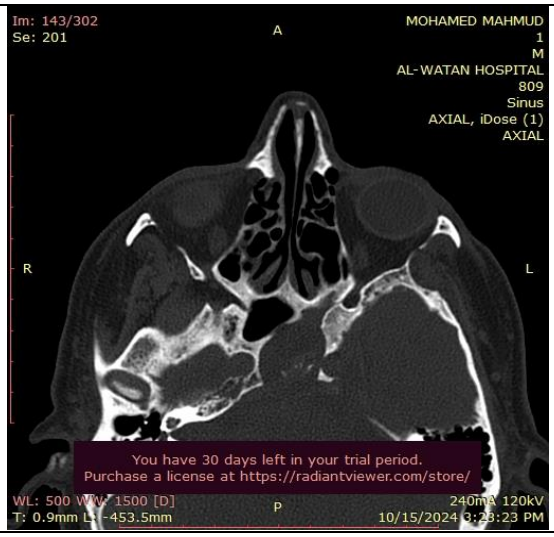

Figure 2: CT scan (axial view) shows opacity of clivus and areas of hyper dencity and erosion of the wall.

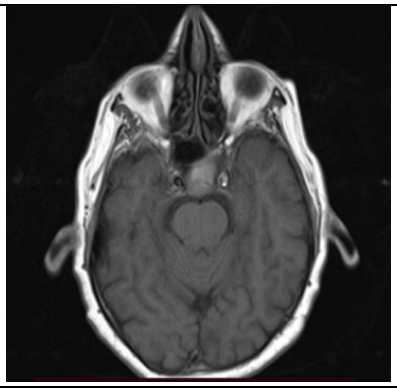

Figure 3: MRI- T1 of brain shows opacity

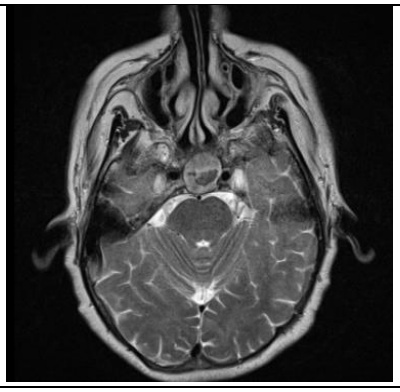

Figure 4: MRI-T2 of brain shows hyperintense with central devoid shadow

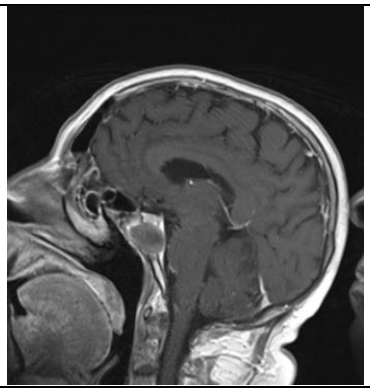

Figure 5: MRI of brain with contrast showing peripheral enhancement

Surgical Steps

Initially, the patient underwent routine investigations including: complete blood count, renal function, thyroid function, ACTH, and echocardiography, and all of which were within normal ranges, and the viral screen was negative. Risk approval was obtained in the first instance. General anesthesia was administered and utilizing aseptic technique measures, the patient was wrapped in the supine position with the head elevated to 30 degrees, turned at a 20 degree angle towards the surgeon, and the head was supported with a padded ring.

Intranasal packing with xylocaine and adrenaline was soaked, wet wick sutures were applied, by using rigid endoscopy zero degree the right mucoperiosteal flap was elevated as a rescue flap, a posterior septectomy was performed. The rostrum of sphenoid was identified with both sphenoid osteum owls eye, then rostrum was removed by drilling and chiseling and entering sphenoid sinus. The sphenoid septum and the anterior wall of clivus bone were removed. The mass, which was fungal debris, was evacuated as seen in Figures (6-8) and sent for culture and sensitivity. Then cavity was washed with normal saline. Biopsy revealed aspergillous species. The postoperative period was uneventful and the patient was discharged from the hospital two days later and continued for follow-up.

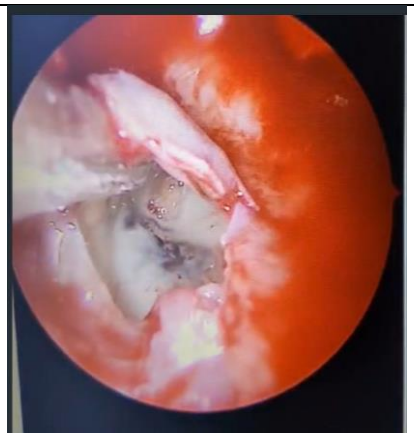

Figure 6: Exposure of aspergilloma after drilling of clivus

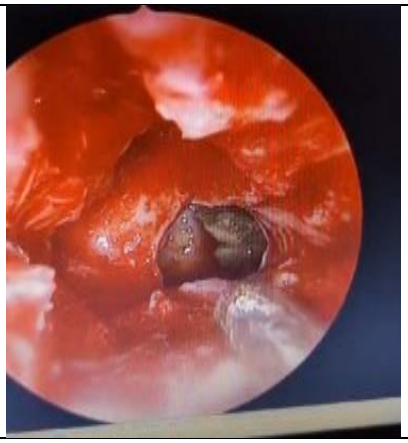

Figure 7: Fungus more clearly seen

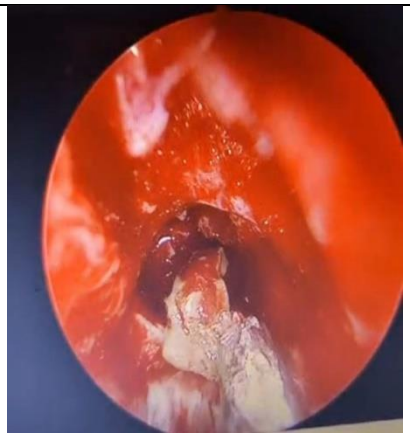

Figure 8: Starting to remove the fungus completely

DISCUSSION

Clival aspergillosis is a rare fungal infection of clivus, a bone located near the base of the skull. It is primarily caused by the Aspergillus species, which typically affects individuals with weakened immune systems, although it can occasionally occur in immunocompetent ones as well. This condition can mimic other skull base tumors and cause symptoms such as headaches, cranial nerve deficits, and even vision problems due to its proximity to critical neural structures [8]. Diagnosis often involves imaging such as CT or MRI to identify the lesion, followed by a biopsy for confirmation, as clival aspergillosis can closely resemble other more common tumors in appearance [9].

Treatment is usually surgical excision or surgical debridement. However, complete resection can be difficult due to the sensitive location, so a multidisciplinary approach is crucial. Differentials include bone-destructive midline clival lesions can be chordoma, aneurysmal bone cyst, solitary plasmacytoma of the bone, or metastases [10]. In general, clival aspergillosis is a rare but serious condition, and early diagnosis and aggressive management are essential to improve outcomes. In addition, CT findings are often nonspecific despite changes in adjacent structures including paranasal sinusitis and bone destruction [11]. The findings are consistent with a hyperdense area evident on CT, and the patterns of contrast enhancement are related to the level of immunocompetence level and vary from ring-shaped, solid, heterogeneous, or homogeneous. There is no contrast effect of fungal masses. The diagnosis of Aspergillus species is confirmed by histopathology and culture [12]. In the case of clival aspergillosis, infection usually occurs through direct extension from the paranasal sinuses or through hematogenous spread from a distant source. Because the clivus is part of the skull base, it is close to several critical structures such as the brainstem, cranial nerves, and cavernous sinus. Fungal invasion of the clival bone can result in osteolysis, creating a cavity in which fungal growth occurs. The mass effect may then lead to neurological symptoms [13]. The prognosis of clival aspergillosis largely depends on the timeliness of diagnosis, the extent of the infection at the time of treatment, and the underlying health of the patient. Early detection and appropriate treatment, including surgical resection and antifungal therapy, can lead to favorable outcomes. However, the prognosis may be poor in patients with extensive disease, particularly those with significant neurological involvement or in immunocompromised individuals who have difficulty mounting an effective immune response [14]. Even with appropriate treatment, some patients may experience recurrence of the infection or long-term neurological squeals due to the close proximity of the lesion to critical brain structures [15].

CONCLUSION

Aspergillosis involving sellar and clival region is still rare particularly in immuno-competent patients. Differentiating the pathology preoperatively is quite challenging and frequently mistaken for a sellar region tumor and could be potentially life-threatening. The extended endoscopic endonasal transclival approach could provide safe removal and a good prognosis.

REFERENCES

1. Cadena, J., Thompson, G. R., & Patterson, T. F. (2021). Aspergillosis: epidemiology, diagnosis, and treatment. *Infectious Disease Clinics*, *35*(2), 415-434.
2. Padaki, P. A., Savio, J., Rathnamma, D., Isloor, S., & Sharada, R. (2024). Aspergillosis. In Textbook of Fungal Zoonoses and Sapronoses 2024 Sep 25 (pp. 271-288). Singapore: Springer Nature Singapore.
3. Nji, Q. N., Babalola, O. O., & Mwanza, M. (2023). Soil Aspergillus species, pathogenicity and control perspectives. *Journal of Fungi*, *9*(7), 766.
4. Ráduly, Z., Szabó, L., Madar, A., Pócsi, I., & Csernoch, L. (2020). Toxicological and medical aspects of Aspergillus-derived mycotoxins entering the feed and food chain. *Frontiers in microbiology*, *10*, 2908.

5. Rice, A. (2019). The Normal Respiratory Tract. Muir's Textbook of Pathology, 165.
6. Radhakrishnan, S., Mujeeb, H., & Radhakrishnan, C. (2020). Central skull base osteomyelitis secondary to invasive aspergillus sphenoid sinusitis presenting with isolated 12th nerve palsy. *IDCases*, *22*, e00930.
7. Vaidya, P., Nair, P., Abraham, M., & Rajalakshmi, P. (2020). A rare case report of aspergillosis of CNS presenting as a clival mass causing SAH from a mycotic aneurysm in an immunocompetent patient. *Neurology India*, *68*(1), 202-203.
8. Borges, A., Ferreira, L., Pacheco, R., & Fonseca, I. (2021). Invasive aspergillosis of the skull base in an immunocompetent patient: a diagnostic challenge. *BMJ Case Reports CP*, *14*(11), e245517.
9. Zhang, H., Jiang, N., Lin, X., Wanggou, S., Olson, J. J., & Li, X. (2020). Invasive sphenoid sinus aspergillosis mimicking sellar tumor: a report of 4 cases and systematic literature review. *Chinese Neurosurgical Journal*, *6*, 1-10.
10. Palsetia, D. R., Vijan, A. V., Gala, F. B., Sahu, A. C., Patkar, D. P., & Sahu, A. (2023). Clival and paraclival lesions: a pictorial review. *Indian Journal of Radiology and Imaging*, *33*(02), 201-217.
11. Nardi, C., Maraghelli, D., Pietragalla, M., Scola, E., Locatello, L. G., Maggiore, G., Gallo, O., & Bartolucci, M. (2022). A practical overview of CT and MRI features of developmental, inflammatory, and neoplastic lesions of the sphenoid body and clivus. Neuroradiology. Aug;64(8), 1483-509.
12. Sethi, K. S., Choudhary, S., Ganesan, P. K., Sood, N., Ramalingum, W. B., Basil, R., & Dhawan, S. (2023). Sphenoid sinus anatomical variants and pathologies: pictorial essay. *Neuroradiology*, *65*(8), 1187-203.
13. Nguyen, P. T., Chang, J., Shahlaie, K., Raslan, O., Ozturk, A., Bobinski, M., & Assadsangabi, R. (2024). Skull base infections, their complications, and management. *The Neuroradiology Journal*, *37*(1), 6-16.
14. Hafrén, L., Saarinen, R., Kurimo, R., Viljanen, M., & Lundberg, M. (2024). Aspergillus Sinusitis: Risk Factors and Phenotyping. *Journal of clinical medicine*, *13*(9), 2579.
15. Pensak, M. L. (2024). The cavernous sinus: An anatomic study with clinical implication. *Laryngoscope Investigative Otolaryngology*, *9*(2), e1226.